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If you are a prospective student and need more information about the University, fees, programs, campus tours, etc., please visit the Admissions website or contact UNH Admissions.

If you are a current student and have additional questions about requirements, programs, classes, etc., please contact the UNH Advising and Career Center, or the specific academic department.

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

What makes UNH the "best of both worlds" for undergraduate education? We offer students the living and learning environment of a classic New England liberal arts college with the breadth, spirit of discovery, and civic commitment of a major research university. This is rare among American institutions of higher education, and students and faculty will tell you it is among our greatest assets.

The University Today

Founded in 1866 as one of the first land-grant colleges in the nation, the University of New Hampshire today is one of the only universities in the U.S. to hold land-, sea-, and space-grant charters.

The University comprises the following academic units: the College of Engineering and Physical Sciences; the College of Health and Human Services; the College of Liberal Arts; the College of Life Sciences and Agriculture, which includes the Thompson School of Applied Science; the Peter T. Paul College of Business and Economics; University of New Hampshire at Manchester; the Graduate School; and the University of New Hampshire School of Law in Concord. UNH serves more than 12,200 undergraduate and 2,300 graduate students in 100 undergraduate and 70 graduate programs of study.

The University has a unique commitment to undergraduate research, and has an endowed undergraduate research program that provides students from all disciplines with faculty mentoring and financial support to pursue independent research and scholarship. Each year, the spring Undergraduate Research Conference highlights the work of more than 1,200 undergraduate students representing all colleges and disciplines. The URC is the largest
undergraduate research conference of its kind in the United States.

The University of New Hampshire is at the forefront of developing nationwide university best practices to address climate change. Through its EcoLine project, UNH became the first university in the U.S. to use renewable landfill gas as its primary energy source, significantly reducing greenhouse gas emissions. UNH also developed the first University greenhouse gas inventory tool, which is now used by more than 300 universities, and established the first endowed University-wide program to integrate sustainability principles into University curriculum, operation, research, and engagement. Today, the UNH Sustainability Institute is recognized nationally as a leading authority regarding sustainability issues within higher education.

**A Powerful Linking of Teaching and Research**

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

Such research power translates into exceptional educational opportunities for our talented students. The University prides itself on graduating students who have undertaken significant research. In recent years, hundreds of students from all disciplines have experienced the thrill of designing their own research projects, collaborating with faculty, and presenting their findings in a public forum. Robust undergraduate research programs enable students to conduct research year-round on campus and around the world.

The University's international research opportunities program is among the largest of its kind and serves as a model for others nationwide. Today the internationalization of the University is an accomplished fact. The study abroad program and international affairs major are strong and growing. Faculty are in demand as visiting professors at universities around the globe (many as Fulbright Fellows), and bring their experiences back to Durham. In October 2010, UNH formalized a partnership with Chengdu University in Sichuan Province, China, and received designation as a Confucius Institute, through which the University offers a broad array of Chinese language and culture courses. More recently, UNH has collaborated with the Australian-based organization Navitas to offer an International University Transfer Program to qualified students from other countries. Since 2011, international students have had the opportunity to increase their English fluency and undertake the first 12 to 18 months of their international baccalaureate program at UNH through the Navitas program.

**Mission**
UNH offers a broad array of undergraduate, graduate, professional, and research programs. Nearly 90 percent of the full-time faculty hold doctoral or terminal degrees, and many have earned national and international reputations.

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

*Teaching.* All undergraduate programs of instruction at the University are built on a specialized program of general education known as Discovery. The objectives of the Discovery Program carry through the undergraduate subject major as students refine and apply their skills and discover the relationships among fields of study. At every level, students enjoy close contact with individual faculty members who are dedicated to research and scholarship; this is an advantage for students because active scholars and researchers teach by sharing their own learning.

*Research.* The activity of research embraces all the arts and sciences at the University: it is an integral part of both undergraduate and graduate programs. In doctoral study and in many master’s programs, thesis research is a primary mode of learning. As a land-, sea-, and space-grant institution, the University of New Hampshire has a particular obligation to conduct applied research in the areas of agriculture, marine sciences, and engineering, and to disseminate the findings to the state and nation.

*Public Service.* The University fulfills its special responsibility for the welfare of the state through UNH Cooperative Extension, and through research and consultation on particular needs of New Hampshire citizens. The University is dedicated to collaborative learning inside and outside the classroom.

**The UNH Library**

The UNH Library supports the educational and research activities of the students, faculty, and staff of the University of New Hampshire as a research-level library. Experienced reference assistance along with group and individual instruction support students learning how to efficiently research and critically evaluate information on the way to becoming effective lifelong learners.

The Library provides access to an extensive collection of electronic resources (e-books, digital collections, an institutional repository, indexes in many subject areas, statistical data sets, and databases supplying full-text periodical and newspaper articles) 24/7 at [www.library.unh.edu](http://www.library.unh.edu). The Library also has approximately 2.7 million print and electronic items and more than 104,000 print and electronic serial subscriptions and is active in digitizing, preserving, and
making accessible materials in its collections.

Dimond Library houses collections in the social sciences, humanities, business, health and human services, education, earth sciences and is the regional depository for federal government publications (including maps). Dimond Library is also home to the Connors Writing Center, the Academic Technology Support Center, the Parker Media Lab, and Zeke’s Café. The UNH Museum and Special Collections and Archives house rare books, manuscripts, and University publications and papers. In addition to the main Dimond Library, there are three branch libraries for physical sciences and engineering that offer customized services for the UNH scientific and engineering communities.

The library’s holdings are supplemented by access to the collections of the Boston Library Consortium members as well as libraries across the country through interlibrary loan. The UNH Library shares resources with the campus library at the University of New Hampshire at Manchester and collaborates with the UNH School of Law library.

All library locations offer wireless Internet access, computer workstations, individual study areas, and collaborative group work spaces. Dimond Library offers seating for more than 1,200 in a variety of settings.

For additional information about UNH Library resources, services, and people, please visit www.library.unh.edu.

The Campus

The home of the main campus of the University is Durham—one of the oldest towns in northern New England—near the picturesque seacoast of New Hampshire. The 200-acre campus is surrounded by more than 2,400 acres of fields, farms, and woodlands owned by the University. College Woods, on the edge of campus, includes five miles of well-kept paths through 260 acres of forest.

Since 2000, major building and renovation projects have revitalized the UNH campus while maintaining its traditions. In 2002, the University celebrated the completion of Mills Hall, its newest and very beautiful residence hall; 2003 saw completion of the new Holloway Dining Commons, which underwent additional expansion in 2015. Renovations of Murkland and Congreve Halls have also been completed. The recent Kingsbury Hall expansion gives science and engineering students new project space, a modern lab wing, and high-tech classrooms. In 2007, DeMeritt Hall was torn down and rebuilt in the same location, reusing approximately 95 percent of the original materials to create a state-of-the-art physics building. In 2010, a two-year renovation of James Hall was completed, resulting in an energy-efficient, green-restored building, and a comprehensive, multiyear renovation of Parsons Hall was also completed in late 2012. In spring 2013, the new Peter T. Paul College of Business and Economics opened its
doors to students and faculty. This new facility, located in the heart of campus on Garrison Avenue, boasts state-of-the-art classrooms, common areas, and breakout rooms that encourage interdisciplinary collaboration and will change the way business education is taught at UNH. Renovations underway for the 2016-17 academic year include an extensive update of iconic Hamilton Smith Hall, one of the oldest and busiest academic buildings on campus; expansion of the Hamel Recreation Center off the Whittemore Center, which will offer increased fitness space, a large multi-activity court, a new 1/10 mile suspended track, and increased social, gathering, and wellness space; and the completion of the new Wildcat Stadium, which will significantly improve the University's athletic facilities and increase seating capacity for football and other events.

Accreditation

The University of New Hampshire is accredited by the New England Association of Schools and Colleges, Inc., which accredits schools and colleges in the six New England states. Accreditation by the association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators. Specialized programs of study are also accredited by various professional organizations.

Veterans and their eligible dependents may apply for educational benefits before the start of each semester. For information, contact the UNH veterans coordinator at UNH.Veterans@unh.edu or by phone at (603) 862-0643.

The University supports the efforts of secondary school officials and governing bodies to have their schools achieve regional accredited status to provide reliable assurance of the quality of the educational preparation of their applicants for admission.

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UNH Search:
Admission

UNH welcomes campus visitors. Campus tours are led by student admissions representatives who provide a general overview of academic programs and campus life opportunities. Professional staff members are available to provide information about the criteria used by the admissions committee in reviewing candidates and to address specific concerns. For further information or to schedule a campus and/or group information session, visit the Admissions website at http://admissions.unh.edu/visit-campus. Registration is required. Complete information and instructions regarding the application process to UNH are found at http://admissions.unh.edu/apply.

Admission Criteria

Admission to a bachelor’s degree program is based upon successful completion of a strong secondary school program of college preparatory coursework. Primary consideration is given to the academic record, as demonstrated by the quality of the candidate’s secondary school course selections and achievement; recommendation; and the results of the SAT and/or ACT exam. Consideration is also given to character, initiative, leadership, and special talents.

Candidates must, at a minimum, present at least four years of English, three years of mathematics (algebra I, geometry, and algebra II), three years of laboratory science, three years of social science, and two years of study in a single foreign language. Three years of a single foreign language are preferred. Recommended mathematics preparation includes the equivalent of algebra I, geometry, algebra II, and trigonometry/advanced math.

Students who plan to specialize in engineering, biological/physical science, mathematics, or forestry should present at least four years of mathematics including trigonometry, as well as laboratory coursework in chemistry and/or physics. Students pursuing business-related studies also should have completed four years of mathematics including trigonometry. For students planning to major in health-related disciplines, four years of math, as well as laboratory courses in biology and chemistry, are strongly recommended. Students interested in nursing must complete high school chemistry.
Applicants may indicate a prospective major on the application for admission. An undecided applicant may apply for admission into a bachelor’s program as an “undeclared” student to any one of the University’s five college divisions in Durham or at UNH Manchester. For information concerning bachelor and associate degree programs offered through UNH Manchester, visit www.unhm.unh.edu; for information concerning the associate degree programs at the Thompson School of Applied Science, visit www.thompsonschool.unh.edu.

Many University students request a change in major during their undergraduate years, and most are approved. Some majors are more restrictive than others and require the completion of specific coursework and an additional application. These changes are considered after a student has been at the University for at least one semester and has permission from the appropriate college dean and department chairperson.

**Admission Test Requirements**

All candidates for admission to bachelor’s degree programs are required to submit the results of the SAT or ACT exam (including writing). Scores must be submitted electronically to UNH by the testing agency. SAT subject tests are not required, but a foreign language subject test may satisfy the foreign language requirement of the bachelor of arts degree. UNH considers all three sections of the SAT score. Required scores vary by test.

International students whose primary language is not English must submit the results of a Test of English as a Foreign Language (TOEFL). The recommended minimum TOEFL score is 213 (computer version) or 550 (paper version) or 80 (Internet version). UNH also accepts the International English Language Testing System (IELTS) English Language proficiency examination in lieu of TOEFL; the minimum acceptable proficiency grade is 6.5.

**Music Candidates**

Candidates applying for programs in the Department of Music must make arrangements with the department chairperson for an audition by calling (603) 862-2404. Details regarding audition requirements may be obtained from the department, or may be found on the Department of Music website at www.unh.edu/music.

**Admission Deadlines**

The Admissions Office welcomes high school students who seek fall semester first-year admission to apply any time after the start of the senior year and before the February 1 regular decision deadline. Admission notifications are provided on a continuous basis through April 15.

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

The review of first-year candidates begins as soon as a complete application (including official grade reports through the first marking period of senior year and a confirmed course schedule, the results of the SAT or ACT, and a letter of recommendation) is on hand. To apply as an early action applicant, candidates must submit an admission application and supporting documents by November 15. In some cases, the admission committee will request senior mid-year grade reports in order to make a final admission decision. Students accepted to UNH through the early action program are not obligated to enroll at UNH since early action programs do not require a commitment from the student.

All offers of admission are considered conditional and are subject to the verification of satisfactory senior year achievement when final high school transcripts are reviewed by the admission committee.

**Deferred Admission**

The University considers applicants for deferred admission, which enables students to reserve a space at the University while taking time off from school for work or travel. With few exceptions, UNH will not approve deferral requests in which the student will be taking college coursework elsewhere. Requests for deferrals must be put in writing and sent to the Admissions Office (admissions@unh.edu). The University may not be able to offer deferred admission in certain program areas.

**Advanced Standing**

The University recognizes outstanding secondary school work by means of advanced placement and credit for those who have taken enriched or accelerated courses before entering college. Applicants qualify for such credit by successfully completing coursework for college credit and satisfactory achievement on University-approved placement examinations, including the College Board Advanced Placement (AP) Tests, International Baccalaureate (IB) Higher Level Examination Test Results, or through the College Level Examination Program (CLEP). Students should have official results sent directly to the Office of Admissions.

The University accepts AP Tests in every subject area, with credit and course equivalency based on the score achieved. Visit http://admissions.unh.edu/academics/advanced-placement-credit for further information.

The University awards 8 semester credits for each IB Higher Level Examination Test Result of 5, 6, or 7. The University recognizes up to 32 semester credits of CLEP General Examination
tests, which may be applied as elective credit only. Scores must be 500 or better in the humanities, natural sciences, and social sciences-history exams. The minimum score for mathematics is 500 and for the English exam with essay, 500. Subject exams, when applicable, may be used to satisfy either departmental or general education requirements. UNH does not accept all CLEP subject exams.

Maximum credit accepted toward a bachelor's degree for all credit by exam and advanced placement testing is 64 semester hours.

**Associate Degree Candidacy**

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

Students may be considered for admission to associate in applied science degree programs offered by the University’s Thompson School of Applied Science in Durham as well as associate in arts or science degrees at the Manchester campus. Candidates applying as high school seniors must submit the application, secondary school record, and results of the SAT or ACT. Students granted first-year admission to the Thompson School are eligible to live in a University residence hall.

**Eligibility for Degree Candidacy**

Applicants may be candidates for any undergraduate degree offered by the University. However, applicants having a bachelor of arts (B.A.) degree will not be admitted into a program of study that awards the same degree (e.g., B.A. History and B.A. Zoology). Applicants can earn more than one bachelor of science (B.S.) degree, provided that each degree is in a different field. Applicants may also be admitted into a program awarding a different degree (e.g., B.A. History and B.S. Biology; or B.A. History and A.A.S. Applied Animal Science).

**Readmission**

An undergraduate who withdraws, does not register for UNH coursework in a given semester, or is suspended or dismissed from the University thereby terminates degree candidacy and must apply for readmission by the following deadlines: fall semester, June 1; spring semester, November 1. Readmission applications are processed in the Office of Admissions; however, decisions regarding readmission are made in consultation with the Division of Student and Academic Services and the dean’s office of the University college division to which the student is applying.

Before seeking readmission, students on academic suspension must remain away from school...
for at least one semester. Suspended students should include a statement about their readiness to resume University work with their application.

Only under extraordinary circumstances will students be readmitted after dismissal for academic reasons. Applications submitted by dismissed students are reviewed by the University’s Academic Standards and Advising Committee.

It may not be possible for readmission applicants to enroll in programs with established enrollment limitations.

Transfer Students

UNH encourages applications from transfer students. Admission consideration includes review of course selection, academic achievement, and the extent to which that selection addresses the University’s general education requirements. Transfer credit is awarded for completed courses taken at an institution that is fully accredited by one of the regional accrediting associations with a grade of C or better, provided those courses are comparable to courses offered at UNH. Each course must carry at least 3 semester credits and receive a letter grade to qualify for general education consideration.

The application deadline for fall semester admission is April 1; October 15 is the application deadline for spring semester. Some programs have enrollment limitations. Students enrolled in one of the University’s associate degree programs who desire admission to a bachelor’s degree program at UNH apply as transfer students through the Office of Admissions.

Transfer students may contact the Department of Housing at (603) 862-2120 or at http://www.unh.edu/housing/campus-request-form-waitlist to determine the availability of on-campus housing, or the Office of Commuter Services for assistance with off-campus housing. In most situations, on-campus housing is not guaranteed to transfer students.

New England Regional Student Program

The University participates in the New England Regional Student Program, in which each state college and university in New England offers certain undergraduate majors to students from other New England states. Under this program, admitted students pay the UNH in-state tuition plus an additional percentage. Students must indicate on the application the specific major for which they are applying. Information about the curricula may be obtained from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111, www.nbhe.org, or (617) 357-9620. Visit http://admissions.unh.edu/tuitionfees/new-england-regional-student-program/ for available UNH majors through this program.

Full-Time Special Student Status
UNH offers a special student classification for persons who wish to participate in University coursework on a full-time basis without entering a degree program. In evaluating requests for special full-time status, the Office of Admissions generally applies the same criteria used in the review of applicants for admission to degree candidacy. Full-time special students have full access to academic support services but are not eligible for University-based financial aid. Students must maintain satisfactory achievement to continue with University coursework. Full-time special (non-degree) students register for coursework through the Registrar’s Office.

Resident Status

All students attending any division of UNH in any capacity shall be charged tuition at a rate to be determined by their primary, legal domicile. Those domiciled within the state of New Hampshire pay the in-state rate. Those domiciled elsewhere pay the out-of-state rate.

Students are classified as residents or nonresidents for tuition purposes at the time of admission to the University. The decisions, made by the Office of Admissions, are based upon information furnished in students’ applications and any other relevant information.

All enrolling students living in New Hampshire are required to submit a notarized statement to the effect that they, if financially independent, or their parents, if financially dependent, have been legally domiciled in New Hampshire continuously for a period of at least twelve months immediately prior to registering for the term for which the student is claiming in-state status. Students admitted from states other than New Hampshire or from foreign countries are considered nonresident throughout their attendance at the University unless they have acquired bona fide domicile in New Hampshire.

If students maintain residency apart from that of their parents, they must clearly establish that they are financially independent and that their residence in New Hampshire is for some purpose other than the temporary one of obtaining an education at the University. To qualify for in-state status, students must have been legally domiciled in New Hampshire continuously for a period of at least twelve months prior to registering for the term for which in-state status is claimed.

The burden of proof in all cases is upon the applicant. The University reserves the right to make the final decision concerning resident status for tuition purposes.

A copy of the rules governing residency may be obtained from the Office of Admissions and on the following website: https://www.usnh.edu/policy/bot/iv-financial-policies/e-classification-students-tuition-purposes-residency-rules.
The University Financial Aid Office assists students who are unable to meet educational expenses entirely from their own family resources. Aid is available in the form of grants and scholarships, loans, and part-time employment. The financial aid website gives program information, application procedures, and deadlines.

In many communities, scholarships and loans are available locally. School principals and guidance counselors have information about these sources of assistance, which are available to both high school seniors and adult students.

Before applicants may be considered for assistance by the University, they must submit the Free Application for Federal Student Aid (FAFSA). Applicants will find this at www.fafsa.ed.gov.

The financial aid application deadline for aid awarded by the University is March 1. This is the date by which your fully completed FAFSA must be received by the federal processor.

The importance of meeting this deadline cannot be overstated. While there are some types of aid (e.g., Pell Grants and Direct Loans) for which you may apply after this deadline, it is likely that you will receive substantially less total aid if your application is late. For the past several years, applicants applying after the deadline did not receive any aid awarded by UNH (SEOG, tuition grant, Perkins Loan, or work study).

It is the University’s position that the student applicant is accountable for the accuracy and timely submission of the FAFSA. We realize that in most cases a student’s parent(s) also participates in completing the form. However, it is the student who is ultimately responsible for monitoring the application process. Students should not wait until being admitted to the University before applying for financial aid.

Note: There is reference on the FAFSA to a “deadline” of June 30. Do not be misled by
this date. It is not the financial aid deadline at UNH or most other colleges.

Grants and Scholarships

Admitted undergraduate degree candidates who will attend UNH on a full- or part-time basis may be considered for tuition grants and University scholarships. The basic consideration is financial need, although some scholarships are awarded on the basis of scholastic attainment, participation in extracurricular activities, or meeting specific requirements of a donor.

The University participates in the federally sponsored Federal Supplemental Educational Opportunity Grant Program, which is designed to assist needy students who are admitted degree candidates.

Federal Pell Grant Program

Students may apply directly to the federal government for a Pell Grant using the FAFSA. Students must reapply each year for a grant.

Loan Programs

The UNH Loan Fund is administered by the University. Admitted undergraduate and graduate degree candidates who will attend the University on at least a half-time basis may be considered for this loan. Financial need must be clearly demonstrated, and loans may be used only for educational expenses.

The University also participates in the federal government's Direct Student Loan Program.

Part-Time Employment

The Federal Work-Study Program, both academic year and summer, assists students who, as determined by the Financial Aid Office, need financial assistance for their educational expenses. Admitted undergraduate and graduate degree candidates attending at least half time are eligible for consideration.

Students who do not qualify for the Work-Study Program may find part-time employment on or near campus.

ROTC Scholarships

Reserve Officer Training Corps scholarships are offered on a competitive basis by both the Army and the Air Force. Entering freshmen may compete for four-year scholarships during the last year of high school. A variety of scholarships are also available to students already
attending the University.

Scholarships pay up to full tuition, all mandatory fees, and for required textbooks. In addition, all scholarship recipients receive a tax-free monthly subsistence allowance. Finally, students with a four-year or three-year ROTC scholarship compete for a room and board grant for the entire time they are on the scholarship.

For more information, contact the Admission Officer: Army ROTC at (603) 862-7075, or Air Force ROTC at (603) 862-1480.
At the University of New Hampshire, getting involved is a big part of campus life. Inside the classroom and beyond, UNH students bring energy and passion to everything they do.

**Housing**

The University offers students a variety of housing options, from small halls of approximately 100 students to medium halls and large halls (ranging from 400 to 600 students). Our newest residence halls offer suite-style living for groups ranging in size from four to eight students. Upperclass undergraduates may also choose to live in one of the two on-campus apartment complexes: The Gables and Woodside. These apartment complexes are designed to meet the more independent and self-reliant lifestyles of upperclass students. Theme-based housing is offered in many buildings on campus as are Residential Learning Communities where first-year students live and take a specific class together. The themed communities include Fairchild Hall where the focus is International Connections and Engelhardt Hall, which houses the Alcohol and Drug Free Community theme for students who commit to abstain from alcohol and drugs.

The Department of Housing and the Residential Life Office are committed to providing living environments that maintain high standards of health and safety. Full-time, live-in professionals manage the residence halls and apartments and work with trained student staff to offer special programs and enforce hall and community standards.

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

Offers for on-campus housing are sent to all accepted new freshmen. Transfer and readmitted students may apply for housing via the housing wait list. Offers will be made on a space-
available basis. Application information is available on the department’s website at www.unh.edu/housing.

For more information, please contact the Department of Housing at (603) 862-2120 or visit the department’s website at www.unh.edu/housing.

**Dining**

UNH Dining is committed to exceeding the expectations of our guests, and we take pride in maintaining our position as a leader in the food service industry. The freshest ingredients, flexible menus, a variety of meal plans, and exciting special events have earned us more than 20 awards from the National Association of College and University Food Services.

Flexible meal plans give students the option of eating at one of any of three dining halls or using Dining Dollars, Cat’s Cache, cash, or credit at one of eight retail locations around campus. Our three dining halls serve all-you-care-to-eat meals in comfortable surroundings. Menu choices reflect today's dining trends, including healthy, made-to-order items as well as traditional favorites such as pizza, burgers, and stir-fry; vegan and vegetarian options; a well-stocked deli; and tremendous salad bars. Fruits, fresh-baked breads, desserts, and many other selections also are available. We also have comprehensive gluten and allergen-friendly programs.

Students who have special dietary needs or concerns can meet with our registered dietitian and executive chef. Parents can purchase goodie packages and personalized birthday cakes through UNH Dining to send to students.

UNH Dining is committed to the sustainability mission of the University. We are proud that our three dining halls and the UNH Dairy Bar are certified as "Green Restaurants" by the Green Restaurant Association. We are active participants in the Partnership for a Healthy America and Menus of Change. We strive to source as much local and regional foods as possible. In 2011, we sourced 23 percent of our products locally and regionally, defined as within 250 miles of the UNH campus. We have invested in energy-efficient equipment and fixtures, composted 25 tons of food waste last year alone, and operate a sustainably themed restaurant, the UNH Dairy Bar. We are also a key player in the Healthy UNH initiative, striving to make UNH the healthiest campus in the nation by 2020. We have eliminated virtually all trans-fats, introduced all-natural and organic foods, are actively reducing sodium in our offerings, and have implemented the Guiding Stars nutritional navigation system.

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

Headquartered in the MUB are the Information Center; Office of Multicultural Student Affairs; two movie theaters; the UNH Bookstore; the Ticket Office; specific lounge/study space for nontraditional, veteran, commuter, and graduate students; and Granite Square Station & Shipping, which provides mail boxes and package shipping services. Information Technology provides a computer cluster. The UNH Computer Store is located on the second floor. The Games Room is equipped with pool tables, ping pong tables, and several electronic gaming stations. The Entertainment Center and Wildcat Den provide a comfortable atmosphere for relaxing with live acoustical performances as well as socializing and study space. The Union Court offers expanded dining options. The Student Senate Office, Graduate Student Senate, WUNH-radio, The New Hampshire (the student newspaper), and more than 75 other student organizations also have office space in the MUB.

The Office of Student Involvement and Leadership (MUB 114 ) currently serves as the hub for student involvement at the University of New Hampshire and is home to Greek Life, Commuter Student Services, Student Organization Services, the Student Activity Fee Office, and the Leadership Certificate Program. Whether a student is interested in joining a student organization or starting a new one, participating in one of many leadership development programs, or simply learning about campus resources—this is the place! Student and professional staff members oversee the University recognition process for all student organizations and are available for advising or training on topics related to organizational development and program planning.

Commuter and Non-Traditional Student Services strives to connect the student population who does not live in University housing and are non-traditional to campus. Programs, such as Good Morning Commuters and the Commuter Connection listserv, bring information to students about campus happenings, events, and activities. Commuter and Non-Traditional Student Services also helps students understand the ins and outs of moving off campus by providing educational sessions and apartment/services fairs.
Recognized student organizations and University departments are encouraged to use rooms in the MUB. Reservations can be arranged via the scheduling website http://unhmub.com/scheduling, calling MUB Scheduling at (603) 862-1526, or stopping in the Office of the Memorial Union to fill out a form. For a complete listing of Memorial Union programs, services, and events, call the Information Center at (603) 862-2600 or visit the MUB web site at www.unhmub.com.

Cultural Events

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

The fine and performing arts are an integral part of undergraduate education. Programs are frequently incorporated into coursework. For further information, contact the departments and organizations listed below:

Paul Creative Arts Center, cola.unh.edu/pcac

Department of Art and Art History, (603) 862-2190, cola.unh.edu/art-and-art-history

Department of Music, (603) 862-2404, cola.unh.edu/music

Department of Theatre and Dance, (603) 862-2919, cola.unh.edu/theatre-dance

The Museum of Art, (603) 862-3712, cola.unh.edu/moa

UNH Celebrity Series, (603) 862-3242, cola.unh.edu/celebrity-series

Traditional Jazz Series, (603) 862-2404, cola.unh.edu/music/traditional-jazz-series

Paul Creative Arts Center Ticket Office, (603) 862-7222, unh.universitytickets.com

Memorial Union Ticket Office, (603) 862-2290, www.unhmub.com/services/mub-ticket-office

Of course, check the University calendar as well: www.unh.edu/calendar.

Campus Recreation

Many opportunities for recreational and leisure activities, regardless of a student's skill or ability, are offered through the Department of Campus Recreation. The Hamel Student Recreation Center is available to all full-time matriculating students and recreation pass
holders, seven days a week (excluding UNH holidays and shutdowns). The center offers participants two multipurpose courts, a group exercise studio, club/martial art studio, a 6000 square foot fitness center with more than 100 exercise stations (some with TV monitors), a cardio-theater area including five TVs, three basketball/volleyball courts, an indoor track, a bouldering wall, a lounge, a classroom, locker rooms, towel and lock service at the equipment room, and saunas.

The Department of Campus Recreation offers a variety of activities designed to make it easier to reach personal **fitness** goals and have fun. Participants may take part in one of the many group exercise classes, such as Zumba, yoga, Pilates, indoor cycling, or cardio kickboxing. Personal training is also available. Noncredit courses are also offered, including CPR and First Aid. In addition to indoor activities, dozens of **outdoor adventure** trips are available throughout the year.

The **intramural sports** program consists of 25 different sports and activities offered to co-rec, men's and women's teams. Intramural sports are organized, competitive leagues and tournaments officiated by trained student staff. Intramural sports are a fun way to play your favorite sport with some friends or to try a new sport.

Joining a **sport club** team is another opportunity to get involved in a specific activity. Some of the 30 sport clubs focus on competition either on an intercollegiate basis with New England teams or sponsor University tournaments. Other sport clubs meet on a casual “come when you can” basis. The wide variety of sport clubs are available to meet every interest or skill level.

Campus Recreation's **aquatics program** oversees the Swazey indoor pool (located in the Field House) and the UNH outdoor pool. The indoor pool is an 8-lane by 25-yard facility with one- and three-meter diving boards. Offerings include many open swim hours, water group exercise classes, American Red Cross courses, swim lessons, masters swimming, and many other programs/events/rentals.

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

In addition to the Recreation Center, the Department of Campus Recreation manages the Whittemore Center Arena. Open skating for students, faculty, and staff is available, as well as opportunities for sport clubs and intramurals for practice and competition.

Campus Recreation manages a large outdoor recreation facility on Mendum's Pond in Barrington, N.H., with its own sailing and canoe center, runs a children’s camp (Camp Wildcat) in the summer, and supports the crew boat house.
Looking for a job? One of the largest student employers on campus, the Department of Campus Recreation provides opportunities for more than 300 student employees in a variety of positions.

For further information, call (603) 862-2031 or visit campusrec.unh.edu.
Undergraduate Course Catalog 2016-2017

General Information

From international education to residential life, academic advising to internships and writing, the University offers programs and services to help every student get the most out of his or her college experience.

Advising Services

Every UNH student is assigned an academic adviser, who provides help in choosing courses and planning a program of study. Each college within the University also has an advising office. Other sources of help, for academic or personal problems, are described below.

Center for Academic Resources (CFAR)

The mission of the Center for Academic Resources is to support undergraduate students in their transition to college academics and as they continue in their courses of study. Our expert professional and student staff help students take on academic challenges, learn from setbacks, and actively develop new strategies that enhance their learning. We offer instruction in learning skills and study strategies in small-group and individualized settings. Professional academic counselors advise students on a range of academic topics, help students to clarify their academic goals, and work with students to devise action plans to meet their educational goals. The center also provides resources and information about additional academic support available on campus and online. Our comprehensive program of academic services for students is offered at no additional cost, and we serve approximately 1,600 students each year.

A federally funded program, TRIO Student Support Services (SSS), provides additional services to students who meet eligibility requirements. The goal of the SSS program is to increase retention and graduation rates for students enrolled in four-year programs who have a high financial need and who are first in their families to go to college, or who have documented disabilities.

The U.S. Department of Education provides 80 percent of the funding for UNH TRIO Student Support Services; UNH funds the remaining 20 percent. (In the 20015-16 academic year,
Located on the second floor of Smith Hall, the center is open weekdays from 8:00 a.m. to 4:30 p.m. and evenings by appointment. For further information call (603) 862-3698 (voice/TTY), fax (603) 862-4043, or visit the website at [www.unh.edu/cfar](http://www.unh.edu/cfar).

**Counseling Center**

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

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

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

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

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

**Athletics, Men's and Women's**

UNH participates in the following intercollegiate men’s athletics programs: basketball, cross country, football, ice hockey, skiing, soccer, and track and field. UNH also participates in the following intercollegiate women’s athletics programs: basketball, cross country, field hockey, gymnastics, ice hockey, lacrosse, skiing, soccer, swimming, track and field, and volleyball. An undergraduate ID provides access to sporting events; football and men’s hockey require picking up a ticket. (See also [Campus Recreation](http://www.unh.edu/archive/undergrad-catalog/2016-2017/gi.cfm@thisid=56&masterid=55&headingid=26.html).)
**Cat's Cache**

Cat’s Cache is a debit account accessed with a UNH ID card. Cat’s Cache is a convenient way to make purchases on-campus at many locations including all UNH dining operations, the UNH bookstore, most vending machines, and the pro shop at the Hamel Recreation Center, as well as many off-campus merchants. Cat’s Cache is available to all campus community members including students, faculty, and staff.

All UNH undergraduate student ID cardholders have a Cat’s Cache account. Graduate students, faculty, and staff members need to request an account before making a deposit. To make a deposit, use one of our convenient account management centers with cash or a credit or debit card, go to [www.blackboard.unh.edu](http://www.blackboard.unh.edu) with a credit or debit card, or visit in person at the Dining and ID Office located in Room 101 of Holloway Commons with cash or a check.

Cat’s Cache accounts have no minimum balance and no fees of any kind. Cat’s Cache is fully refundable upon request without penalty, but the entire balance must be refunded at once. After students have graduated or left UNH, any remaining Cat’s Cache balance of $10 or more will be refunded to the student account. A refund of any balance under $10 will be waived unless the student requests that refund before the account is closed. Accounts of graduated and withdrawn students are typically closed no later than 30 days after separation from UNH. Refund requests for Cat’s Cache balances under $10 should be made to the UNH Dining/ID Office in room 101 of Holloway Commons.

Cat’s Cache is intended for purchases and not for cash withdrawals as an ATM card would allow. Students cannot withdraw cash from their accounts unless they withdraw the entire amount. There is a limit of two withdrawals per semester. For more information about Cat’s Cache, visit [www.unh.edu/dining](http://www.unh.edu/dining) and follow the Cat’s Cache links.

**Information Technology (IT)**

**UNH Information Technology (IT)**

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

**Computer Access.** UNH has approximately 200 public computers in four student computing clusters and throughout Dimond Library. Many department-owned computer labs also exist. The public clusters provide a suite of productivity and design software, access to the Internet, many course-specific software applications, flat-bed scanners, and personal network storage for documents. Spaces specifically designed for group work and available. Paid printing services allow users to print in both black and color. The Dimond Library also houses a dedicated media lab for work with video, audio, and other forms of rich media. For information and cluster hours, visit [www.unh.edu/it/academic-computing-systes/clusters](http://www.unh.edu/it/academic-computing-systes/clusters).
Parker Media Lab. The Parker Media Lab in Dimond Library is available for all students to use. The lab includes high-end audio and video editing workstations along with digital editing software and dedicated staff to assist students with course-related and personal projects. The lab also offers a range of camcorders, audio recorders, and associated equipment for students to borrow. Details can be found at [http://www.unh.edu/it/media-collaboration-services](http://www.unh.edu/it/media-collaboration-services).

Computer Store Tech Connect. The UNH Computer Store Tech Connect offers UNH students, faculty, and staff access to the highest quality, standardized computer products and services, coupled with expert advice and excellent customer service. The store carries Apple and Dell computers; tablets, including iPads; laser and ink jet printers and cartridges; heavily discounted software; and a variety of other supplies and peripherals at educational pricing. Speak to a live staff member at (603) 862-1328 or visit online at [computerstore.unh.edu](http://computerstore.unh.edu). The store is conveniently located on Level 2 of the MUB, across from the student package-pickup window. In addition, there are vending machines throughout campus offering a range of supplies students might need on the go, including batteries, index cards, headphones, and more.

Computer Repair. UNH Computer Repair Services provides warranty service and computer maintenance and repair. Computer Repair Services is conveniently located next to the Computer Store at the MUB, Level 2, East, across from the student mailboxes. For more information, call (603) 862-4242 or visit [unh.edu/it/service/computer-repair](http://unh.edu/it/service/computer-repair).

Technology Support. UNH IT provides support for UNH’s wireless connectivity, email, computing accounts, supported software applications, and other IT needs.

Contact IT Support:

**By Phone**
IT Service Desk
(603) 862-4242

**In Person**
Dimond Academic Commons AT Support Center
Dimond Library, Level 3 (Main Level)
[http://www.library.unh.edu/locations/dimond-library/dimond-academic-commons](http://www.library.unh.edu/locations/dimond-library/dimond-academic-commons)

**Online Webform**
itsupport.unh.edu/help

Twitter
Disability Services for Students

Disability Services for Students (DSS) is committed to establishing a community that ensures full participation for students, and providing assistance that will facilitate independence and academic progress. The office is responsible for determining and ensuring academic and housing accommodations. In addition, we are a source of information and referral; a resource and collaborative partner for the campus community; and a point of support and advocacy regarding access issues in general.

Self-identifying with DSS is the first step in both gathering useful information—what DSS offers and what other resources exist—and establishing accommodations. You will need to provide documentation, make an appointment to review/discuss it, and identify appropriate accommodations. Creating a faculty accommodation letter is part of that process. Please see the Documentation Guidelines for direction on what to provide. If you are unsure, submit/bring whatever you may have so we can review and evaluate it.

There is no deadline to make contact, complete an intake, or provide documentation. Also, the process of identifying and determining accommodations is an ongoing conversation. Students should provide additional documentation and/or talk with DSS as concerns and needs arise, or as the condition of the disability changes.

We invite you to connect with us to learn first-hand about the variety of options available to students with disabilities ([www.unh.edu/disabilityservices](http://www.unh.edu/disabilityservices)). Please visit the DSS website to learn more about the office. Disability Services for Students is located in Smith Hall, Room 201, (603) 862-2607 (voice), 711 (TTY) or 800-735-2964 (Relay NH); (603) 862-4043 (fax), or e-mail [disability.office@unh.edu](mailto:disability.office@unh.edu).

General Information for Students with Disabilities

Students seeking academic accommodations, services, and accessibility should contact Disability Services for Students (DSS): voice (603) 862-2607; TTY Users: 7-1-1 or 800-735-2964 (Relay NH); disability.office@unh.edu.

Most major buildings have ramps and many have elevators and adapted restroom facilities. Contact DSS, (603) 862-2607, or Affirmative Action, (603) 862-2930, with questions about building facilities.

Students with disabilities may use state-issued accessible parking permits in visitor lots and at metered parking (free). State permits are available through a student's home state (Department of Motor Vehicles [DMV]). Please note: on-campus parking in restricted lots ("permit required") requires BOTH the state-issued accessible permit and a UNH campus permit. Questions about
temporary accessible parking should be directed to Parking Services at (603) 862-1010.

For information about dietary restrictions and needs as an accommodation, please see http://www.unh.edu/dining/nutrition.

Students with disabilities who need accessible UNH housing should contact DSS early to allow for identification of appropriate accommodation(s) and notification from DSS to Housing. Wildcat Access Van is a demand-response system that operates within the service area of the Wildcat Transit routes. All of the fixed route buses are lift-equipped. For information on this service or for the special arrangements possible during periods of inclement weather, please contact Disability Services for Students, (603) 862-2607.

All B.A. candidates must fulfill the University’s foreign language requirement by the end of their sophomore year. A student with a documented disability may petition the foreign language board for course substitutions on the basis of that disability. Contact Disability Services for Students to learn about the process.

No otherwise qualified individual may be excluded from or denied access to any program, course of study, or any other offering of the University solely on the basis of a disability. Concerns regarding the institution's compliance with the Americans with Disabilities Amendments Act (ADAA) of 2008, or Section 504 of the Rehabilitation Act of 1973 should be addressed to the ADA/504 Compliance Officer in the Affirmative Action Office at (603) 862-2930 (Voice/TTY).

Greek Life at UNH

Greek life at UNH has a long and rich history, with the first fraternity founded in 1881 and the first sorority founded in 1913. Today, the Greek community at UNH has more than 1,350 members, representing about ten percent of the student body. The Greek community is made up of five National Panhellenic Conference sororities, eleven North American Interfraternity Conference fraternities, a National Multicultural Greek Council sorority, an agricultural sorority, and a co-ed society. The governing bodies for the majority of these organizations are the Interfraternity and Panhellenic Councils and the United Greek Association. As values-based organizations, fraternities and sororities are committed to intellectual growth, leadership and campus/community involvement, social development, philanthropy and community service, and friendship.

Believing that involvement in or with a Greek organization can promote learning, development, and growth, the Office of Greek Life aims to cultivate a values-based and inclusive Greek community of excellence at UNH. This office is staffed by a full-time coordinator and several student interns. More information about the UNH Greek community can be found by visiting the
Office of Greek Life at the Memorial Union Building, Office of Student Involvement and Leadership (Room 114), visiting www.unhmub.com/greek, or by calling (603) 862-1002.

Honor Societies

The University of New Hampshire has a long and valued tradition of recognizing outstanding student academic achievement through election to a variety of honor societies. Some of these national societies recognize performance in any academic field, while others are limited to specific disciplines.

Honor societies are most prevalent in colleges and universities, and invitation to become a member is based on varying criteria, including high academic achievement and leadership activities. Students are most commonly invited to join in their junior or senior year. Although students are initiated into the campus chapter, they become members of the national society for life.

<table>
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<th>Discipline</th>
<th>Society Name and Sash/Stole/Cord Color</th>
<th>UNH Contact</th>
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<tbody>
<tr>
<td>Athletics</td>
<td>Chi Alpha Sigma Black and Gold Cord</td>
<td>Joanne Maldari <a href="mailto:joanne.maldari@unh.edu">joanne.maldari@unh.edu</a></td>
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<tr>
<td>Band</td>
<td>Kappa Kappa Psi Blue and White Cord</td>
<td>Casey Goodwin <a href="mailto:casey.goodwin@unh.edu">casey.goodwin@unh.edu</a></td>
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<tr>
<td>Biological Sciences</td>
<td>Phi Sigma Yellow, Green and White Cord</td>
<td>Estelle Hrabak <a href="mailto:estelle.hrabak@unh.edu">estelle.hrabak@unh.edu</a></td>
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<tr>
<td>Business</td>
<td>Beta Gamma Sigma Gold and Blue Cord</td>
<td>Eleanne S. Dowd <a href="mailto:eleanne.solorzano@unh.edu">eleanne.solorzano@unh.edu</a></td>
</tr>
<tr>
<td>Campus-Wide</td>
<td>Golden Key Blue and Gold Sash</td>
<td>Marianne Fortescue and Sylvia Foster <a href="mailto:marianne.fortescue@unh.edu">marianne.fortescue@unh.edu</a> <a href="mailto:sylvia.foster@unh.edu">sylvia.foster@unh.edu</a></td>
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<tr>
<td>Classics</td>
<td>Eta Sigma Phi Gold and Purple Cord</td>
<td>Richard Clairmont and R. Scott Smith <a href="mailto:richard.clairmont@unh.edu">richard.clairmont@unh.edu</a> <a href="mailto:scott.smith@unh.edu">scott.smith@unh.edu</a></td>
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<tr>
<td>Communications</td>
<td>Lambda Pi Eta Red, White and Gold Cord</td>
<td>Joshua Meyrowitz <a href="mailto:joshua.meyrowitz@unh.edu">joshua.meyrowitz@unh.edu</a></td>
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<tr>
<td>Computer Science</td>
<td>Upsilon Pi Epsilon Maroon and White Cord</td>
<td>Radim Bartos <a href="mailto:rbartos@cs.unh.edu">rbartos@cs.unh.edu</a></td>
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<tr>
<td>Economics</td>
<td>Omicron Delta Epsilon Gold and Blue Cord</td>
<td>Marc Herold <a href="mailto:marc.herold@unh.edu">marc.herold@unh.edu</a></td>
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<tr>
<td>Engineering</td>
<td>Tau Beta Pi Orange and White Cord</td>
<td>Michael Carter <a href="mailto:mike.carter@unh.edu">mike.carter@unh.edu</a></td>
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<td>UNH Society of Women Engineers Green and Yellow Stole</td>
<td>May-Win Thein <a href="mailto:may-win.thein@unh.edu">may-win.thein@unh.edu</a></td>
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<tr>
<td>English</td>
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<td>Fraternity/Sorority</td>
<td>Order of Omega</td>
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<td>Purple and Red Cord</td>
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<td>Cathy Frierson</td>
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<td>Clayton Barrows and Dan Innis</td>
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<td></td>
<td>Yellow</td>
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<td><a href="mailto:dan.innis@unh.edu">dan.innis@unh.edu</a></td>
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<td>Ellen Cohn</td>
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<td>Matty Leighton</td>
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<td></td>
<td>Gold, Purple and Lilac Cord</td>
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<td>Green and White Cord</td>
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<td>Stacy VanDeveer</td>
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<td>Rebecca Glauber</td>
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<tr>
<td></td>
<td>Teal Cord</td>
<td><a href="mailto:rebecca.glauber@unh.edu">rebecca.glauber@unh.edu</a></td>
</tr>
</tbody>
</table>

**International Students and Scholars**

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

The OISS staff provides immigration advising, information on University policies, administrative support, and referral services. A variety of social and educational programming activities are offered, including orientation for incoming students, faculty, and staff, and others designed to
enhance student interaction with the broader community. For more information on programs and services, visit www.unh.edu/oiss and https://www.facebook.com/UNHOISS. To schedule an appointment, call (603) 862-1288 or send an e-mail to OISS@unh.edu.

All international students are encouraged to maintain contact with the OISS and are required by law to report changes of address, academic program, or source of educational funds.

**Multicultural Student Affairs**

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

Providing support and development for Asian/Asian American/Pacific Islanders; Black/African American/Caribbean/African; Latino/Latina/Hispanic; Middle Eastern/Middle Eastern American; Native American/First Nations; multiracial students; lesbian, gay, bisexual, transgender, questioning students; and first-generation college students as well as ally students is a key focus of OMSA's work.

OMSA offers cultural and educational programs to all students; offers opportunities for exploring leadership potential within a multicultural and social justice context; provides support and advocacy for students as well as coordinating support from additional colleagues, programs, and offices on campus; gets students connected; helps students to learn more about race, sexuality, gender, class, and other social identities; responds to acts of bias; and helps all members of the University community to feel safe and welcome at UNH. OMSA's work encompasses professional development opportunities for colleagues as well.

The office provides computers for student use, social and study space, a media library, and educational resources and support for faculty and staff. Staff members include the director, the assistant director/coordinator of LGBTQA+ initiatives, and the multicultural coordinator. For more information, stop by the office in Room 327 of the Memorial Union Building (MUB), phone (603) 862-0324, or e-mail omsa.info@unh.edu.

**Nontraditional Student Services**

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

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

Commuter and Non-Traditional Student Services is located in the Office of Student Involvement and Leadership, within the Memorial Union Building, room 122. Information about services, resources, campus, and local communities can be found at www.unhmub.com/off-campus or by calling (603) 862-0303.

Office of Community Standards

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

More specific information regarding the Student Code of Conduct and the conduct process can be found in Student Rights, Rules and Responsibilities. For more information, please call the Office of Community Standards at (603) 862-3377, or visit the website at www.unh.edu/ocs.

President's Commission on the Status of People with Disabilities

The President's Commission on the Status of People with Disabilities promotes empowerment and inclusion of UNH students, faculty, staff, and guests with invisible and/or apparent disabilities by working on the goal of universal access. Its mission is to assess disability-related issues, services, attitudes, and practices in the creative engagement of diversity and advocate for an accessible environment for all students. The Office of Community, Equity, and Diversity oversees commission initiatives in Thompson Hall G14. Call (603) 862-1058 or visit the Disabilities Commission web page at http://www.unh.edu/cspd/.

A central resource for people with disabilities on campus is the Office of Disability Services for Students, located at 201 Smith Hall on 3 Garrison Avenue, (603) 862-2607 (711 TTY; 800-735-2964 NH Relay); (603) 862-4043 (fax); or e-mail disability.office@unh.edu. Find the Disability
Services office on the web at www.unh.edu/disabilityservices.

President's Commission on the Status of People of Color

The UNH President’s Commission on the Status of People of Color, housed under The Office of Community, Equity, and Diversity, advocates for the recruitment and retention of faculty, staff, and students from under-represented groups. It provides educational programs and encourages curriculum development to promote equity and inclusion of diverse voices and cultures. Established in 1997 as an advocacy group, it works to establish effective and collaborative relationships among departments, offices, committees, commissions, and special programs that play a role in fostering diversity on campus and ensuring that the environment is supportive of diverse populations. The commission is located in Thompson Hall G14. Call (603) 862-1058 or visit the commission’s web page at http://www.unh.edu/cspc for more information.

President's Commission on the Status of GLBT Issues

The mission of the UNH President’s Commission on the Status of Lesbian, Gay, Bisexual, Transgender, Queer+ People is to facilitate the development of a University community that understands and appreciates the values of equity and inclusion in campus life. The commission accomplishes its goals through advocacy, education, and activism in support of the full participation of people of all sexual orientations, gender identities, and gender expressions.

Established in 1992, the commission meets monthly during the academic year. Its membership includes lesbian, gay, bisexual, transgender, queer+, as well as allied University faculty, staff, and students who are appointed by the president. Students from the lesbian, gay, bisexual, transgender, queer+, and allied community who are interested in participating on the commission are encouraged to contact the chair. The commission works under the umbrella organization of The Office of Community, Equity, and Diversity. Call (603) 862-1058, or visit the commission’s web page at http://www.unh.edu/glbt.

President's Commission on the Status of Women

The mission of the UNH President’s Commission on the Status of Women is to create equal employment and educational opportunities for all UNH women by promoting an environment free of sexism and discrimination through policy, advocacy, and education. It continues to build a learning community that engages a diversity of experiences to invite equity and inclusion in the curriculum, classroom, programming, and workplace. Established in February 1972, the commission collects information on the status of UNH women and informs the community of its findings. Located in Thompson Hall and housed under The Office of Community, Equity, and Diversity, the commission also maintains a Facebook page for those interested in its activities and programs. Call (603) 862-1058 or visit the commission’s web page at http://www.unh.edu/glbt.
Police, University

The University Police Department is committed to enforcing the laws of the state of New Hampshire and University policies while supporting the rights and dignity of all persons and maintaining a campus environment in which learning may thrive. Officers, professionally trained in their respective areas, staff both the Police and Support Services divisions. The department holds accreditation from both CALEA and IACLEA.

University Police Department personnel participate in a number of safety programs for the UNH community including adopt-a-dorm and a nationally recognized women’s self-defense program called R.A.D.—the Rape Aggression Defense Basic Personal Defense System. Department personnel will meet with groups to provide crime prevention information and tips for increasing personal safety and protection of personal property. A walking patrol provides an escort service for students, faculty, and staff. Engraving pencils to inscribe identification numbers on property in case of theft are loaned free of charge to members of the campus community. To take advantage of any of these services, contact the University Police Department, (603) 862-1427.

Residential Life

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

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

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

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

Sexual Harassment and Rape Prevention Program (SHARPP)
SHARPP is a University of New Hampshire-based crisis intervention center dedicated to providing free and confidential services to survivors of sexual assault, relationship abuse, sexual harassment, childhood sexual abuse, and stalking, and their allies. In addition, SHARPP’s outreach program provides education and awareness programs on sexual and relationship violence to the greater University of New Hampshire community. SHARPP’s services are largely supported by volunteers. Volunteering for SHARPP provides many opportunities for hands-on experience working with survivors and for the development of leadership skills.

SHARPP’s direct services include a 24-hour crisis line, emergency medical accompaniment, criminal justice and University judicial support, systems advocacy, academic intervention, support groups, and information and referrals. SHARPP also provides crisis services and support for those who are close to the survivor, including roommates, parents, friends, family members, and instructors.

SHARPP’s outreach program provides the highest quality awareness and educational programming, including education programs for students in the residential halls, classrooms, and Greek life, and orientation activities and training for athletic teams, student organizations, and faculty and staff. SHARPP also sponsors awareness events and activities throughout the year.

The SHARPP office is located at Wolff House, in front of Health Services at the corner of Pettee Brook and Main Streets. The office is open Monday through Friday, 8:00 a.m. to 4:30 p.m. The website is www.unh.edu/sharpp and features Ask an Advocate, an online resource for help and information. SHARPP’s support line and administrative number is (603) 862-3494. SHARPP is also available through a toll free number at 1-888-271-7233 and by TTY at 1-800-735-2964. After hours, all calls will be returned by a trained advocate within 10 minutes. All calls are free and confidential.

**Student Life**

The University of New Hampshire is committed to providing our students with an innovative, high-quality, coherent, and integrated educational experience. Fulfilling this commitment requires us to create a learning environment that offers students the greatest opportunity to grow and to test the relevance and the effectiveness of what they are learning. Such an approach to higher education also requires that we provide the support and direction necessary for the success of students’ endeavors.

Student Life, a community of student affairs professionals, forges integral links between the
academic and non-academic aspects of students' lives, creates better connections between the curriculum and co-curricular experiences, and fosters high expectations for academic and personal excellence for all students. Student Life professionals contribute to the intellectual, personal, and social development that produces graduates who are well educated, well adjusted, and prepared to contribute to their communities and society with knowledge, professional competence, social awareness, the capacity for effective civic engagement, and respect and understanding for the diversity of people and the world around them.

The office of the senior vice provost and dean of students provides students with information, direction, and assistance in problem resolution. For more information or assistance, call the office at (603) 862-2053 or visit our website at www.unh.edu/student-life.

**University Advising and Career Center**

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

The University Advising and Career Center, Hood House, (603) 862-2064, provides academic advising to undeclared students in the College of Liberal Arts and provisional English and provisional psychology majors. It supports all students and alumni in career exploration. The center’s professional staff provides assistance to students in clarifying their interests and skills as they relate to developing a program of study at the University and declaring a major, offering opportunities to explore career possibilities, and aiding in securing employment. The Jackson Career Explorer is offered to help individuals identify potential majors and careers. An internship office helps students explore career possibilities. Internship and job opportunities are posted online in the Center's Wildcat Careers. Additionally, the center sponsors fairs and activities that bring students into contact with prospective employers and internship opportunities, and help to prepare students for careers.

The center is also the campus resource for students seeking admission to medical and related health profession schools and law school. More broadly, the center assists students considering graduate education, sponsors graduate and professional school fairs, administers national tests for post-baccalaureate study, and guides individuals to resources across the University.

**University Internships**

Supported by the federally funded Job Locator Development Program, the internship office in the University Advising and Career Center helps students locate preprofessional internships in settings ranging from traditional business and research facilities to more uniquely tailored environments that reflect academic and career interests. Students who wish to engage in career-oriented work experiences for credit should consult with an appropriate faculty sponsor.
regarding the possibility of receiving academic credit.

Students who wish to secure internships should consult the internship postings listed on the Wildcat Careers link on the center’s website. Postings are also listed in the center. Several academic departments also have internship listings posted.

For more information regarding internships, consult the center’s website at www.unh.edu/uacc or contact the center at (603) 862-2064.

Veterans Information

UNH Military & Veterans Services, located in Thompson Hall, Room 301 and at (603) 862-0643, provides counseling on all aspects of veterans benefits and assistance in procuring and completing the required forms and certifications for veterans benefits. We maintain a comprehensive directory to assist veterans in contacting state, local, and University resources for housing, day care, career planning, employment, financial aid, tutorial assistance, remedial training, handicapped services, VA vocational rehabilitation, and veterans outreach. UNH Military & Veterans Services also provides a framework for networking among campus veterans. For further information, go to www.unh.edu/veterans or e-mail UNH.Veterans@unh.edu.

University Writing Program

The University writing program is dedicated to making all UNH students successful writers. The University writing committee and program staff research, organize, develop, and support a wide range of activities that help students and faculty. The writing program conducts routine and directed assessments of the University writing requirement and the writing-intensive (WI) courses that all undergraduates must take. The writing committee reviews applications for WI course status as well as student petitions and transfer courses for writing-intensive credit. Frequent seminars, workshops, and classes offer both faculty and students the opportunity to learn more about writing, teaching with writing, and emerging technologies for writing.

Robert J. Connors Writing Center

The Robert J. Connors Writing Center provides individual writing conferences to members of the University community. Collaborating on writing helps students excel in classes and beyond. Writers of all skill levels are encouraged to visit the center to have conversations about their writing. Peer tutors are trained to help students with writing issues from thesis clarity to sentence structure to questions about genre writing and citation styles.

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

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

Students may call (603) 862-3272 for an appointment or visit the Writing Center in Hamilton Smith, room 7. The Writing Center also offers a satellite location at Dimond Library. Visit the writing program’s website at www.unh.edu/writing.
The University has a nationally accredited (aaahc.org) health and wellness program.

Health and Counseling Fee

All UNH degree students who take five or more credit hours/semester or non-degree students who take thirteen or more credit hours/semester are required to pay the UNH health and wellness and counseling fees. These fees allow students to access services at Health and Wellness Center and/or the Counseling Center on campus and cover many services at no or reduced cost. When combined with a student’s health insurance coverage, the health and wellness and counseling fees provide for a complete health care package. A student’s health insurance is never billed for services covered by the UNH health and wellness and counseling fees.

Health Insurance

UNH requires health insurance as a condition of enrollment for full-time degree students at its Durham, Manchester, and Concord campuses. Students who already have health insurance are able to waive coverage under the University-sponsored plan if their insurance plan meets or exceeds the established UNH waiver criteria by completing a waiver prior to the deadline. International students with F-1 and J-1 visas will be required to purchase the UNH Student Health Benefits Plan.

Health Record Requirement

Undergraduate students who have been formally accepted for bachelor’s or associate’s degree candidacy are required to have health information on file with UNH Health and Wellness. The three requirements are 1) a physical assessment, 2) immunization form, and 3) a health history form, to be completed and submitted by the student online. This information is listed on the Health and Wellness website at www.unh.edu/health-services.

Documentation of proof of immunity to MMR (measles, mumps, and rubella) is required (UNH Academic Policy 02.14) and is typically shown on the immunization form. Students must meet...
one of the following criteria for proof of immunity: received two vaccinations at least one month apart after 12 months of age; three positive measles, mumps, and rubella titers (blood test); health provider documentation of past history of the diseases including three positive measles, mumps, and rubella titers proving immunity; or born before 1957. Students requesting a religious exemption from measles vaccinations must complete the UNH Health and Wellness Request for Exemption and submit appropriate documentation. Students from countries where TB is endemic are required to either provide documentation of being tested within six months prior to enrollment or provide documentation of treatment for either latent or active TB or a negative chest radiograph if the test is positive. It is the responsibility of students to provide the documentation before attending any classes. Any student failing to complete these requirements may be prevented from registering for future classes.

**Medical Services**

UNH Health and Wellness provides comprehensive, student-focused, primary medical care through a team approach. The clinical staff consists of board-certified physicians, nurse practitioners, physician assistant, nurses, and medical assistants who are committed to prevention and holistic care. Primary medical care is provided for a large variety of common concerns. Examples include respiratory illnesses such as asthma, all kinds of infections, injuries, dermatologic issues, intestinal disorders, men’s health, and mental health. Women’s health services include annual examinations, diagnoses and treatment related to abnormal Pap smears, testing and treatment for sexually transmitted infections, contraceptive services, pregnancy testing and counseling, limited sexual assault services, and other women’s health concerns. A community health nurse assists with problems arising from hospitalization and health withdrawals and return to campus. Other services include allergy/immunization clinics and a travel clinic. Students may speak by telephone with a triage nurse for advice at any time. Clinical support services include laboratory, radiology, and pharmacy. A nurse is available by phone for advice when UNH Health and Wellness is closed. Not all services are available during the summer or breaks. For more information, visit [http://www.unh.edu/health-services](http://www.unh.edu/health-services).

Well-staffed and well-equipped community hospitals are nearby, and emergency ambulance service is available in Durham at all times.

**Medical/Psychological Withdrawals**

All undergraduate students seeking assistance with health-related (physical or mental) withdrawals from the University, or those who will be out for extended periods of time due to health issues, should be in touch with the executive director of UNH Health and Wellness at (603) 862-1098. Health-related withdrawal information is also available on the web at [www.unh.edu/health-services/withdrawals.html](http://www.unh.edu/health-services/withdrawals.html).
Office of Health Education and Promotion

The Office of Health Education and Promotion coordinates health promotion activities on campus. Services provided include educational programs/workshops, individual and group support to promote healthy lifestyle choices, education and support to students living with chronic illnesses, alcohol and other drug counseling, nutritional counseling, stress management counseling/services, biofeedback, light therapy, massage therapy, tobacco cessation services, and a resource library with materials on a variety of health and wellness topics. For more information, visit the UNH Health and Wellness website at [www.unh.edu/health-services](http://www.unh.edu/health-services).

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UNH Search:
[Google](https://www.google.com)
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General Information

« Fees and Expenses

The expected cost for 2016 - 2017 at the University will average about $30,000 for residents of New Hampshire and about $43,000 for nonresidents. See the UNH Business Services website for the most up-to-date listing of rates.

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

Tuition

Students are permitted to enroll for more than 20 credits only with the approval of their college or school dean. Persons carrying more than 20 credits will be billed a per-credit fee for each credit above 20 credits, whether or not a student has obtained the dean’s approval. Courses taken for audit are charged at the same rates as for-credit registrations. No refund will be made after the additional charges have been applied if a student subsequently drops a course, bringing the credits to 20 or fewer. Undergraduates registering for fewer than 12 credits pay the per-credit hour charge, plus a registration fee of $20 per semester. Undergraduates registered for fewer than 12 credits are charged 50 percent of the usual mandatory fees. Students registered for fewer than 5 credits pay the technology fee but are not charged for the other mandatory fees. The minimum charge for any recorded course is the per-credit charge of 1 credit hour.

Tuition differential charges apply to some majors. Students in the College of Engineering and Physical Sciences (CEPS), including engineering and computer science, and the Peter T. Paul College of Business and Economics (PAUL) will be charged a tuition differential. The differential is the same rate for both N.H. residents and nonresident students. CEPS and PAUL students who register for fewer than 12 credits pay a differential per-credit hour. Music majors are charged an applied music fee of $450 each semester.

All admitted students must pay an enrollment fee. The fee is $350 for residents and
nonresidents. If a student decides not to attend the University, these payments may be refunded on a prorated basis until August 15, according to the guidelines set by the Office of Admissions.

Tuition and mandatory fee charges will be refunded to students withdrawing or dropping courses by the second Tuesday of the semester; three-fourths will be refunded after the second Tuesday and until the second Friday; one-half after the second Friday and until the fifth Friday; and none thereafter (see the University Calendar). Students receiving federal financial aid will have their return of unearned aid calculated in accordance with the U.S. Department of Education regulations in effect at the time of their withdrawal. For more information concerning withdrawal, call Business Services, (603) 862-2230. A degree candidate who withdraws from UNH and subsequently enrolls as a special student within the following year will be billed for tuition and fees on the same basis as degree candidates. Students with outstanding financial obligations to the University must clear their accounts before their registration will be confirmed.

Fees

Expected mandatory fees for 2016 - 2017 include a Memorial Union fee for the use and administration of the student union; a recreational fee for support of recreational facilities; a student activity fee for support of the undergraduate newspaper, yearbook, student government, student lawyer, student radio station, and other student organizations; a technology fee; a student athletic fee to provide support for athletic programs; a health and counseling fee to provide general health care through University Health Services; and a transportation fee to provide student transportation services.

There are no waivers of these fees. The services and facilities are available to all—the extent to which each student uses them cannot be the factor by which assessment is determined. Students who withdraw or drop to part-time after classes begin are eligible for refund of fees at the same rate as tuition refunds listed previously.

As a condition of enrollment, all full-time UNH students will be required to carry health insurance. Students may elect coverage under the University's student health benefits plan, or may waive the requirement by providing proof of adequate coverage through another plan. International students with F1 or J1 visas are required to purchase the UNH-sponsored coverage. There are no exceptions to this policy.

Mandatory Fees Include

Recreation Fee
Use of indoor pool at the field house
Use of athletic facilities at the Whittemore Center, which includes:

- Aerobics
- Saunas
- Locker rooms

With an additional fee:
- CPR/first aid course
- Ballroom dancing
- Lifeguard instruction

**Health Services Fee**
For information, see Health Services.

**Memorial Union Fee**
For information, see Memorial Union.

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

**Activity Fee**
Support for the following organizations:
- The undergraduate newspaper
- Yearbook
- Student government
- Student lawyer
- Student radio station
- Movies at reduced rates

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

**Technology Fee**
Support for the following:
- Student computing clusters
- Walk-in Help Desk services
- Technology-enhanced classroom infrastructure
- Academic technology liaisons
Technology-enhanced learning

Transportation Fee
Student transportation services:

- Campus Connector
- Wildcat Transit
- Safe Rides
- Amtrak Quik Ticket trip
- Non-emergency rides

Room and Board

New first-year students accepting a space on campus must include a $200 housing deposit with their housing application. For returning students, no deposit is required; instead, a cancellation fee will apply if the housing agreement is cancelled. Written notification of cancellation of the room application or assignment received by Housing before June 1 will result in a $250 cancellation fee applied to the student's account. Written notification of cancellation received by Housing between June 2 and July 1 will result in a $375 cancellation fee applied to the student's account. Written notification of cancellation received by Housing between July 2 and August 15 will result in a $500 cancellation fee applied to the student's account. Written notification of cancellation received by Housing between August 15 and before Friday of the first week of fall semester class will result in a charge of one-fourth of the full semester's housing fee.

If by Friday of the first week of fall class the student fails to occupy the assigned room or cancels the agreement by mutual consent, or if for disciplinary or nonrenewal actions the agreement is canceled, the student will receive a 75 percent refund of the semester's housing fee. Cancellation after the first Friday of fall classes and before 30 days after registration will result in a 50 percent refund of the semester's housing fee. Cancellation 30 days after registration will result in no refund of the housing fee. Students who check in or move in to a hall or apartment, move out, and do not withdraw from the University are charged the full housing fee. If the agreement is canceled, any refund of the housing deposit will first be applied against any unpaid University charges.

Refunds of meal plans will be granted only with approval or upon withdrawal from the University. If a refund is approved for an Unlimited Access meal plan, the refund will be prorated by the number of weeks and partial weeks the student attended classes or used the meal plan. Block meal plans will be prorated by the number of meals consumed and charged at the highest prevailing meal rate. Unspent dining dollars will be refunded.
Rebates

Any amount owed to the University will be deducted from any rebate due to a student.

Deposits and Course Fees

Refundable deposits may be required to cover locker keys or loss or breakage in certain departments. A semester charge will be made for individual lessons in music, as noted in the description of applied music courses. (Non-music majors taking music courses or sections will be charged an applied music fee). A charge will be made for riding lessons and SCUBA, as noted in the sections on animal sciences and physical education. Some courses carry special fees to cover the costs of special equipment, field trips, etc.; these are noted in the course descriptions. Thompson School students pay curriculum fees to cover special costs in their programs (see the Thompson School section). Students will be charged a computer-use fee for courses requiring computer access and/or common access accounts. For certain courses, there are also lab fees.

Other Expenses

Books and classroom supplies cost approximately $800 to $1,000 annually. These may be purchased at the University Bookstore.

Personal expenses vary considerably with individual students and include clothing, laundry, recreation, incidentals, and travel.

Payment

All bills for tuition, fees, room and board, and other semester charges are due in full on the payment due date for each semester. A late fee may be assessed to student accounts not paid in full by the payment due date. Student accounts not paid in full within 30 days after the payment due date may be assessed additional late fees, default charges, interest and/or collection costs, and the student may be subject to deregistration from classes.

Parents and students who wish to make periodic payments for tuition, fees, room and board, and other semester charges should contact UNH Business Services well in advance of the semester payment due date for information on approved payment plans.

Undergraduate bills are sent electronically through posting to students’ MyUNH (blackboard.unh.edu) accounts. Tuition bills are posted twice a year, in mid-July for the fall semester and in mid-November for the spring semester. Monthly statements are also posted as needed. E-mails are sent to students’ UNH-assigned e-mail addresses notifying students when
new bills have been posted. Students may set up Parent Portal or Proxy accounts to allow parents or others to access their student accounts.

Through the online system, students can view a history of electronic bills and payments and access a real-time view of their accounts. Payment may be made online, or the bill may be printed and mailed with payment. Credit card transactions will be charged a nonrefundable 2.75 percent service fee.
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About the Catalog

The University provides information pertaining to the Family Educational Rights and Privacy Act of 1974 (the "Buckley Amendment") in the annual student handbook. Information is also available from the office of the Senior Vice Provost for Student Life and Dean of Students. The annual student publication, *Student Rights, Rules, and Responsibilities* (http://www.unh.edu/student-life/handbook), also contains University regulations and policies regarding student conduct.

The University will supply information about the employment of its graduates who have graduated from our degree and/or certificate programs. This information may be obtained upon request from the University's Advising and Career Center and is available by university, college, or school to current and prospective students. Information on employment outcomes depends on student self-reporting. The University does not guarantee employment to its graduates. Chances for employment are enhanced if students have begun career planning early in their degree programs.

Program descriptions may vary from the actual content or requirements because of advancements in the discipline or the active nature of academic planning and decision making. Accordingly, the University reserves the right to make whatever changes are deemed necessary in schedules, course content, requirements, academic programs (including their termination), calendar, tuition and fees, services, or any other aspect of the University's operations, giving whatever notice thereof is reasonable under the circumstances. Therefore, the provisions of this catalog are not an irrevocable contract between the students and the University. The University is also not responsible for failure to provide or for delay in providing expected services and/or facilities when such failure arises from causes beyond the reasonable control of the University.

All aforementioned publications are available in alternate formats upon request.
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UNH Affirmative Action and Equity Statement

The University of New Hampshire (UNH) is a public institution with a long-standing commitment to equal opportunity for all. It does not discriminate on the basis of race, color, religion, sex, national origin, age, veteran's status, gender identity or expression, sexual orientation, marital status, or disability in admission or access to, or treatment or employment in, its programs, services, or activities. Sexual harassment and sexual violence are types of sex discrimination. Inquiries regarding discriminatory harassment (including sexual harassment or violence) should be directed to Donna Marie Sorrentino, dms@unh.edu, Director & Title IX Coordinator, Affirmative Action and Equity, Room 305, Thompson Hall, 105 Main Street, Durham, N.H. 03824, phone (603) 862-2930 (voice), (603) 862-1527 (TTY), 7-1-1 (Relay NH), (603) 862-2936 (fax); or to the Office for Civil Rights, U.S. Department of Education, 8th Floor, 5 Post Office Square, Boston, MA 02109-3921, phone (617) 289-0111, fax (617) 289-0150, e-mail OCR.Boston@ed.gov.

There are various grievance procedures to provide for the resolution of complaints under this policy. See the UNH Discrimination and Discriminatory Harassment Policy and Grievance and Complaint Procedures in UNH Student Rights, Rules, and Responsibilities. Further information may be obtained at the Affirmative Action and Equity Office or via e-mail affirmaction.equity@unh.edu.
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Amy Begg
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University Academic Requirements

To graduate from the University of New Hampshire, all baccalaureate and associate in art students enrolling for academic year 2016-17 must fulfill four types of University requirements: writing, Discovery (core curriculum), degree, and major.

University Writing Requirement

http://www.unh.edu/writing/

As the cornerstone of any higher education, academic and disciplinary literacy is the concern of the entire faculty and the whole University curriculum. Understanding that literacy is a long-term development process, the University community is committed to the following goals for student writing and learning:

- Students should use writing as an intellectual process to learn material and to discover, construct, and order meaning.
- Students should learn to write effectively in various academic and disciplinary genres for professional and lay audiences.
- Students should learn to display competence with the generic features and conventions of academic language.

Writing-Intensive Courses

All bachelor's degree candidates are required to complete four "writing-intensive" courses, which must include English 401 (First-Year Writing) and three additional "writing-intensive" courses, one of which must be in the student's major, and one of which must be at the 600 level or above. Specific courses that fulfill the writing requirement are listed at http://www.unh.edu/registrar/registration-courses/writing-intensive.html. Some courses have both writing-intensive and nonwriting-intensive versions, such as HIST 405 and HIST 405W. In those cases, only the sections attached to the "W" courses will be writing intensive.

Discovery Program (Core Curriculum Requirement)

The Discovery Program provides the intellectual framework for students in any major. It
represents the faculty's collective belief in what constitutes and contributes to essential knowledge of the world. Together, students and faculty attempt to understand fully and use ethically that knowledge, both in the present and as a reservoir from which to draw in the future.

The University of New Hampshire Discovery Program is the core curriculum that provides students a solid foundation for inquisitive problem solving, scientific reasoning, an appreciation of the arts and humanities, research skills, and communication. It is based on a breadth of courses in a variety of disciplines that the faculty collectively believe are essential to a liberal education. Courses within the eight disciplinary categories expose students to topics in the arts, humanities, philosophy, social sciences, physical and biological sciences, and technology to prepare them with transferable skills for a lifetime of learning and creative endeavors as globally focused, socially responsible citizens in the world in which they live.

“He who learns but does not think is lost. He who thinks but does not learn is in great danger.” Confucius.

Discovery Program Requirements

Discovery Foundation Skills

- Inquiry course. This course may fulfill a Discovery category and/or a departmental requirement. It should be taken during a student's first or second year or prior to completion of 57 credits. For students who transfer in with 26 or more credits, the INQ requirement is waived automatically.
- One course in writing skills. Most students will satisfy the first-year writing requirement with English 401. This course should be taken during a student's first year or prior to completion of 32 credits.
- One course in quantitative reasoning. This course is normally completed by the end of the first year or 32 credits.

Discovery in the Disciplines

Students must take one course from each Discovery category at the 400-600 levels. Inquiry courses that carry Discovery category designations may be used to satisfy this requirement.

- One course in Biological Science (BS);*
- One course in Physical Science (PS);*
- One course in Environment, Technology, and Society (ETS);
- One course in Fine and Performing Arts (FPA);
- One course in Historical Perspectives (HP);
- One course in Humanities (HUMA);
- One course in Social Science (SS); and
- One course in **World Cultures (WC)** (also may be satisfied by approved study abroad programs).

* One of these courses must have a lab component (**DLab**).

**Discovery and Integrative Understanding**

**One senior capstone experience**, supervised and approved within the major.

The capstone experience is typically completed by senior students within the major and is designed to elicit opportunities for educational reflection and synthesis of knowledge and skills; however, students who have completed 90 credits at the end of their junior year may complete their capstone during the summer prior to their senior year. The capstone may be met with an approved experience (as described below). It is not necessarily a course.

Suggested ways of meeting capstone may include: McNair research theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, URA, INCO 790), and senior honors theses. Examples of capstone experiences include courses, projects, independent research, internships, artistic expression, or community and service learning opportunities.

The senior capstone experience must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.
4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

- The capstone requirement will vary across departments and colleges and may be satisfied through a course, thesis, created work or product, mentored research project, or some form of experiential learning (e.g., fieldwork).
- The capstone should occur during the student's senior year.
- Departments designate capstones as appropriate to their respective disciplines following the usual administrative procedures for their college or school.
- Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

**Additional Information**

Discovery Program requirements shall not be waived on the basis of special examinations or placement tests, except for the College Board Advanced Placement tests and the College Level Examination Program (CLEP) tests. All students transferring to UNH in academic year 2016-17 will come in under Discovery Program requirements. For students who transfer in with 26 or more credits, the INQ requirement is waived automatically.
**Note to Faculty:** Waiver of requirements in the Discovery Program. Students may petition the Discovery Committee to waive or replace a requirement. The student's petition must be approved by his or her major adviser and the dean of his or her college.

The required courses cannot be taken on a pass/fail basis. No single course may be counted in more than one Discovery discipline category. Academic departments may or may not permit Discovery courses to count toward requirements for a major. TSAS courses may not be used for general-education (1984-2009), writing-intensive, or foreign language requirements. TSAS courses that are 400-600 level and Discovery-approved may count for Discovery requirements. All Discovery courses carry 3-4 credits.

The most current list of Discovery courses may be found on the Registrar's Office website.

» Discovery Foundations:

» Discovery in the Disciplines:

» Discovery and Integrative Understanding:

**Discovery Program courses**

The complete list of Discovery courses can be found on the Registrar's Office website. Click [here](http://www.unh.edu/archive/undergrad-catalog/2016-2017/gi.cfm@thisid=28&masterid=27&headingid=27.html).

**Inquiry (INQ)**

Click [here](http://www.unh.edu/archive/undergrad-catalog/2016-2017/gi.cfm@thisid=28&masterid=27&headingid=27.html) and select Discovery Program Information from the list of links on the left-hand side of the page to open the list in PDF format.

**Degree Requirements**

Requirements in this catalog apply to students who enter the University between July 1, 2016 and June 30, 2017. (Students who entered the University at an earlier time but who wish to change to the requirements of this catalog must apply to the appropriate office for the change.) Students will be held responsible for all work required for graduation and for the scheduling of all necessary courses.

Modifications tend to occur in major programs during the period of students’ undergraduate careers. Students are expected to conform to these changes insofar as they do not represent substantive alterations in their course of study.

*Note:* Although the University will try to provide sufficient facilities so that students may pursue any major or curriculum for which they meet the requirements, such a privilege cannot be
guaranteed, since rapidly increasing enrollment sometimes results in the overcrowding of required specialized courses. On occasion, students may remain in a crowded curriculum if they are willing to take certain courses during the summer session.

» Bachelor of Arts
» Bachelor of Fine Arts, Bachelor of Music
» Bachelor of Science
» Associate in Arts
» Associate in Applied Science
» Dual Degrees
» Minimum Graduation Average
» Quota of Semester Credits
» Residence
» Leave of Absence or Withdrawal from the University

Majors, Minors, and Options

Majors and some interdisciplinary minors are described under their various schools and colleges; other interdisciplinary and intercollege minors are described in the section on Special University Programs.

» Student-Designed Majors
» Second Majors
» Minors
» Options

Grades

Grading and honors policies as stated in this catalog apply to all undergraduate students.

Instructors assign grades as listed below; grade points per credit are indicated in parentheses. For all undergraduate courses, grading standards established by the Academic Senate are that a C indicates competent, acceptable performance and learning; B indicates superior performance and learning; and A indicates excellent performance and learning. These standards apply to all undergraduate courses, instructors, departments, subjects, and colleges. The University reserves the right to modify grading and honors practices.

A (4.0) Excellent
A- (3.67) Intermediate grade
B+ (3.33) Intermediate grade
B (3.0) Superior
B- (2.67) Intermediate grade
C+ (2.33) Intermediate grade
C (2.0) Satisfactory, competent
C- (1.67) Intermediate grade
D+ (1.33) Intermediate grade
D (1.0) Marginal grade
D- (0.67) Intermediate grade
F (0.0) Failure, academic performance so deficient in quality as to be unacceptable for credit

AF (0.00) Administrative F (usually indicates student stopped attending without dropping the course); is included in grade-point average

CR—Credit, given in specific courses having no letter grades, designated credit/fail

P—Passing grade in a course taken under the student pass/fail grading alternative

W—Withdrawal, assigned if withdrawal is later than fifth Friday of classes (but not after midsemester); is not included in grade-point average

WP—Withdrawal, assigned if withdrawal is after mid-semester and if student is passing; is not included in grade-point average

WF—Withdrawal, assigned if withdrawal is after mid-semester and if student is failing; is included in grade-point average

AU—Audit, no credit earned

IC—Grade report notation for student's incomplete coursework

IA—Indicates "incomplete" in a thesis or continuing course of more than one semester; the grade earned will replace "IA" assigned in previous semesters

IX—Grade not reported by instructor

Students earning a semester or cumulative grade-point average less than 2.00 are placed on "academic warning."

Pass/Fail

While earning a bachelor's degree, students may choose the pass/fail grading alternative for a
maximum of 4 credits per semester up to a total of 16 credits toward the degree.

Pass/fail cannot be used for Discovery requirements, for writing-intensive courses, for courses required by a student’s major or second major, for option or minor requirements, for ENGL 401, or for repeated courses. In addition, B.A., B.F.A., and B.M. degree candidates may not use pass/fail for courses taken to meet the foreign language requirement, and no Paul College course may be taken on a pass/fail basis by a student majoring in administration, economics, or hospitality management.

The minimum passing grade for credit is a D- (0.67); any grade below this minimum is a fail. All grades will be recorded on the grade roster as A, B, C, D, F, or intermediate grades. The pass/fail marks will be placed on students’ transcripts and grade reports by the Registrar’s Office. The course will not be included in the grade-point calculation, but the pass or fail will be recorded, and in the case of a pass, the course credits will be counted toward degree requirements. Associate in arts students, see the University of New Hampshire at Manchester.

Honors
An undergraduate degree student, after completion of at least 12 graded credits in University of New Hampshire courses, is designated as an honor student for a given semester if the student has (a) completed at least 12 graded credits for that semester and earned at least a 3.50 semester grade-point average; or (b) earned at least a 3.50 cumulative grade-point average and at least a 3.50 semester grade-point average regardless of the number of graded credits that semester.

Beginning in the fall of 2012, these categories are used: 3.50 to 3.64 (honors); 3.65 to 3.84 (high honors); 3.85 to 4.0 (highest honors).

Bachelor's degree candidates who have earned honors for their entire work at the University will be graduated with honors based on the final cumulative grade-point average, provided that a minimum of 64 graded credits have been completed in University of New Hampshire courses. The Latin equivalent of the honors classification will appear on the student's academic record and diploma. The student's honors classification will be noted in the commencement program.

Students graduating in academic year 2015-2016 and subsequent years will be graduated with honors according to the following categories: 3.50 to 3.64 (honors); 3.65 to 3.84 (high honors); and 3.85 to 4.00 (highest honors).

UNH Credit Hour Policy
The University of New Hampshire is in compliance with the federal definition of credit hour. For each credit hour, the University requires, at a minimum, the equivalent of three hours of student academic work each week. Academic work includes, but is not limited to, direct faculty instruction, e-learning, recitation, laboratory work, studio work, field work, performance, internships, and practica. Additional academic activities include, but are not limited to, readings, reflections, essays, reports, inquiry, problem solving, rehearsal, collaborations, theses, and electronic interactions. Student work reflects intended learning outcomes and is verified through evidence of student achievement.

**Course Descriptions**

**Explanation of Arrangement**

The title and Arabic number designate the particular course. When two course numbers are connected by a hyphen, the first semester of the course, or its equivalent, is a prerequisite to the second. If the course numbers are separated by a comma, qualified students may take the second semester without having had the first. Course numbers separated by a slash indicate same subject offerings at lower and upper levels.

In courses that are not designated by title as laboratory courses, the notation “Lab” indicates that laboratory sessions are a part of the course.

All courses marked with “#” have not been offered in the last three years.

**Prerequisites and Corequisites**

Each prerequisite for a course is separated from the other prerequisites by a semicolon; e.g., Prereq: EDUC 601; PSYC 635. If permission (of the instructor, department, adviser, or committee) is a prerequisite for all students, it is listed among the prerequisites (e.g., Prereq: EDUC 601; PSYC 635; permission). If, on the other hand, permission may be substituted for one or more of the listed prerequisites, it follows the other prerequisites and is separated from them by a semicolon and slash mark (e.g., Prereq: EDUC 601; PSYC 635;/ or permission). If permission may be substituted for only one of the prerequisite courses, it is listed with the course for which it may be substituted (e.g., Prereq: EDUC 601 or permission; PSYC 635).

Corequisites are courses that must be taken in the same semester.

**Credits**

The number of credits listed is the number of semester credits each course number will count toward graduation (except in the case of variable credit courses). Students must register for the number of credits shown or, if the course is variable credit, within the range of credits shown.

“Cr/F” following the description indicates that no letter grade is given but that the course is graded Credit or Fail.
For up-to-date information about when a course is offered; who teaches the course; the number of recitations, lectures, labs, and such, students are referred to each semester’s Time and Room Schedule.

*The system of numeric designation is as follows:*

- **200–299** Courses in Thompson School of Applied Science.
- **300–399** Associate in arts /associate in science courses. Courses may be taken for credit only by associate’s degree or nondegree students. Credits may not be applied to baccalaureate degrees.
- **400–499** Introductory courses not carrying prerequisites and courses generally falling within University and college requirements.
- **500–599** Intermediate-level courses for undergraduate credit only.
- **600–699** Advanced-level undergraduate courses. Entrance to courses numbered 600 and above normally requires junior standing.
- **700–799** Advanced-level undergraduate courses. Ordinarily not open to freshmen and sophomores.
- **800–999** Courses that carry graduate credit only and therefore are open only to admitted or special graduate students.

**Academic Honesty**

Academic honesty is a core value at the University of New Hampshire. The members of its academic community both require and expect one another to conduct themselves with integrity. This means that each member will adhere to the principles and rules of the University and pursue academic work in a straightforward and truthful manner, free from deception or fraud. The academic policy can be found in the annual publication, *Student Rights, Rules, and Responsibilities*. 

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Undergraduate Course Catalog 2016-2017
University Academic Requirements

« Discovery Program Requirements

Discovery Foundation Skills

- Inquiry course. This course may fulfill a Discovery category and/or a departmental requirement. It should be taken during a student’s first or second year or prior to completion of 57 credits. For students who transfer in with 26 or more credits, the INQ requirement is waived automatically.
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- One course in Biological Science (BS);*
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* One of these courses must have a lab component (DLab).

Discovery and Integrative Understanding

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- The capstone requirement will vary across departments and colleges and may be satisfied through a course, thesis, created work or product, mentored research project, or some form of experiential learning (e.g., fieldwork).
- The capstone should occur during the student’s senior year.
- Departments designate capstones as appropriate to their respective disciplines following the usual administrative procedures for their college or school.
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for general-education (1984-2009), writing-intensive, or foreign language requirements. TSAS courses that are 400-600 level and Discovery-approved may count for Discovery requirements. All Discovery courses carry 3-4 credits.

The most current list of Discovery courses may be found on the Registrar’s Office website.

**Discovery Foundations:**

**Inquiry**

All Inquiry courses must contain four individually necessary and collectively sufficient features:

1. *Inspire curiosity*: an Inquiry student will compose open-ended questions that lead to further investigation into increasingly focused problems and issues.
2. *Develop understanding and perspective*: an Inquiry student will explain a central issue or question of the course using at least two unique perspectives.
3. *Clarify standards of thinking*: an Inquiry student will be able to identify, compare, and evaluate different interpretations (hypotheses, explanations) of a given phenomenon.
4. *Create effective communicators*: an Inquiry student will present in clearly organized form the results of the investigation into questions or problems he or she has posed.

A complete list of Inquiry courses can be found on the Registrar's Office homepage. Click [here](http://www.unh.edu/archive/undergrad-catalog/2016-2017/gi.cfm) to download a PDF version of the page.

**Writing Skills**

Please refer to the [University Writing Requirement](http://www.unh.edu/archive/undergrad-catalog/2016-2017/gi.cfm) section for complete information about this Discovery Foundation.

**Quantitative Reasoning**

Quantitative reasoning refers to the ability to think critically and analytically using abstract formal methods with broad application. Mathematics is the foundation for the physical sciences and, increasingly, for the biological sciences. Its principles and processes illuminate significant aspects of the social sciences as well. In its most precise forms, it enables the design of bridges and the orbiting of satellites. Mathematics discloses invisible truths about the world, makes sense of patterns of which we may or may not be aware, and introduces some order to chaos. In its purest form, it creates its own world of beauty and logic. In its more applied forms, it attempts to make sense of individual and collective human behaviors and complex systems. Many courses listed under this category will help students appreciate the principles of mathematics and gain some skill in its applications to realistic situations, while other courses will introduce kindred subjects including symbolic logic, information theory, statistics, and computer science.
**Discovery in the Disciplines:**

**Biological Sciences**
Biology is a branch of science that investigates the structure and function of living organisms. Scientists investigate ideas and observations that solidify our understanding of the diversity of life from single cells to complex organisms. Biology has deep relations with agriculture, chemistry, psychology, and many other fields of study, and it is the foundation of our knowledge of health and disease. Courses under this category deal with the basic structure and function of organisms, the interaction of organisms with their environment, human health, biotechnology, and the concepts and mechanisms of evolution as a fundamental biological paradigm. All courses will provide some understanding of the methods of scientific inquiry and seek knowledge about the living world.

**Environment, Technology, and Society**
The exponential growth of the sciences and engineering has bred an equally dramatic growth in technological advances. From the flint arrowhead to the latest communication device or weapon, human beings have been inventing things and transforming their lives, their societies, and their environments as they do. But they seldom foresee all the transformations and consequences their inventions bring about. This category stresses the interplay between at least two of these three realms: environment, technology, and society. Topics might include, but are not limited to, the history of a particular kind of technology (such as transport, fuel, writing, or weaponry), how technological change comes about in general, the scientific and/or social bases for a given technology, its impact for good or ill on human society and the natural environment, the effects of a changing environment on the arts and literature, and/or the ethical questions these topics raise.

**Fine and Performing Arts**
The arts communicate through the intellect, the emotions, and the body, sometimes all at once, in ways simple and subtle, direct and subliminal, gentle and soul shaking. Understanding and appreciating the arts enriches our lives and preserves our cultural heritage for the future. Through its performances, publications, and exhibits, UNH offers many artistic experiences for students and the larger community, some of which are linked to courses under this category. Such courses, which may be about painting, sculpture, architecture, music, dance, theater, or film, will often include learning through practical experience.

**Historical Perspectives**
Even though we are faced daily with evidence of change in our social world and technology, we easily forget that how we live, where we live, and what we see around us are transient states of affairs. It is important to be able to look on one’s own world with an imaginative grasp of its history and the forces behind that history. Courses under this category will give students the opportunity to learn about major historical developments and how these developments have
shaped contemporary life in all its complexity. Through the study of particular periods and places, students will gain both “historical perspective” and some skill at the methods of historical inquiry. Common to all courses in historical analysis is the presumption that the categories of social analysis are themselves historical and historically contingent, and that to understand the past requires entering imaginatively into languages, institutions, and worldviews quite different from those of the present day.

**Humanities**

The humanities arose in Renaissance universities as an alternative to theology and consisted mainly of Greek and Latin literature, which dealt with any and every aspect of human life; they became central to the liberal arts. Since the nineteenth century, the humanities also have embraced modern literature, the creative arts, philosophy, and history. They focus on questions about meaning, ethics, aesthetics, and the foundations of knowledge; they are as concerned with form as with content. Courses under this category explore major works, ideas, and traditions that have shaped our understandings of the world and our sense of self at different times and places while examining the distinctive methods of humanistic inquiry.

**Physical Sciences**

The physical sciences seek to discover the components, structures, properties, and laws of the material world from subatomic particles to the entire universe. Through them, we appreciate both the wondrous complexity of the world and its order. The traditional domains of chemistry, physics, astronomy, cosmology, and Earth sciences are the foundations of knowledge in numberless arenas of human activity, while the intersections between these domains and the biological sciences yield astonishing discoveries about living organisms. All courses will provide some understanding of the methods of scientific inquiry, seek knowledge about the physical universe, and evaluate claims in both technical literature and popular media.

**Social Sciences**

The social sciences investigate human beings and their societies from the smallest bands of hunter gatherers to huge nations and global institutions. Everything from marriage and kinship to law and crime, from ceremonial gift giving to mortgage derivatives, from witchcraft to health insurance, from ancient ritual to modern communication, is a subject of a social science. Courses under this category will explore different theories, methods, and data-gathering techniques as they apply to different social issues. They also will examine how individuals create, interact with, and are shaped by social groups and institutions, including those associated with politics, economics, religion, family, the arts, health, and education.

**World Cultures**

Living in a world of many cultures has created both cooperation and conflict across borders, between and within nations. This category, which includes intermediate language courses and
approved study abroad programs, encourages students to become cosmopolitan citizens by gaining knowledge and understanding of cultures other than those of the United States. Students will learn to recognize others’ values and, ultimately, accept the many ways in which we all are human. They are thus encouraged to see their own culture with fresh eyes and know the sheer diversity of human outlooks.

**Discovery Lab, please note:** A course that fulfills the laboratory requirement in the Discovery Program should provide students with hands-on experience that reinforces, supports, and/or augments the material presented in other formats throughout the course. It should teach them how the discipline uncovers and validates knowledge; how phenomena are understood through observation, experimentation, and quantitative analysis; how data are collected and interpreted; and how hypotheses are created, tested, modified, confirmed, or invalidated. These experiences also are likely to provide insights into how scientific theories and models are constructed. A significant portion of specified course time must be devoted to laboratory and laboratory-related activities. For example, a conventional model for a 4-credit laboratory course consists of three 50-minute (or two 75-minute) weekly lecture periods plus one 80-minute weekly laboratory period. However, courses may include different and/or innovative laboratory experiences provided the total amount of course and laboratory time is comparable.

**Discovery and Integrative Understanding:**

1. The capstone fosters reflection on undergraduate learning and experience.
2. The capstone demonstrates emerging professional competencies.
3. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
4. The capstone explores areas of interest based on the integration of prior learning.
Requirements in this catalog apply to students who enter the University between July 1, 2016 and June 30, 2017. (Students who entered the University at an earlier time but who wish to change to the requirements of this catalog must apply to the appropriate office for the change.) Students will be held responsible for all work required for graduation and for the scheduling of all necessary courses.

Modifications tend to occur in major programs during the period of students’ undergraduate careers. Students are expected to conform to these changes insofar as they do not represent substantive alterations in their course of study.

Note: Although the University will try to provide sufficient facilities so that students may pursue any major or curriculum for which they meet the requirements, such a privilege cannot be guaranteed, since rapidly increasing enrollment sometimes results in the overcrowding of required specialized courses. On occasion, students may remain in a crowded curriculum if they are willing to take certain courses during the summer session.

Bachelor of Arts

1. At least 128 credits in courses numbered 200-799, with a cumulative grade-point average of 2.0 for all courses taken at the University in which a grade is given.
2. Completion of Discovery Program (University core curriculum) requirements.
3. Completion of the University writing requirement.
4. Proficiency in a foreign language. This requirement may be fulfilled by completing the equivalent of a full-year elementary-level course in a language not previously studied, or by completing the equivalent of a semester of a course in a foreign language at the intermediate or higher level, or by earning credit through an approved Advanced Placement or College Board foreign language achievement test (minimum scores vary). The proficiency in a foreign language requirement must be satisfied by the end of the sophomore year. No credit is awarded for elementary year college coursework if the
student has had two or more years of that language in high school. It is strongly advised
that students check with academic departments to identify department-advised specific
foreign language proficiency options.

*Note: A student with a documented disability who wishes accommodation on the basis
that the disability will prevent him or her from successfully mastering a foreign language
requirement, or whose foreign language requirement was waived in high school because
of a documented disability, must contact the Disability Services for Students Office,
Smith Hall, (603) 862-2607 (Voice/TDD).*

5. An approved major.

**Bachelor of Fine Arts, Bachelor of Music**

Requirements for the B.F.A. degree are outlined in the Department of Art and Art History,
College of Liberal Arts; for the B.M. degree, go to the Department of Music, College of Liberal
Arts.

**Bachelor of Science**

1. At least 128 credits in courses numbered 200-799, with a cumulative grade-point
   average of 2.0 for all courses taken at the University in which a grade is given.
2. Completion of Discovery Program (University core curriculum) requirements.
3. Completion of the University writing requirement.
4. For specific requirements, check individual departmental or program listings.
5. An approved major.

**Associate in Arts**

For degree requirements, see the University of New Hampshire at Manchester.

**Associate in Applied Science**

For degree requirements, see the Thompson School of Applied Science.

**Dual Degrees**
The opportunity to pursue two undergraduate degrees simultaneously enhances and broadens the education of certain students. The program is only for those students who can adequately handle the requirements for two different degrees and who can reasonably allocate the additional time and effort needed for the program. Except for specific five-year degree programs, a student may not pursue two different degree levels simultaneously.

Requirements

1. Students desiring dual degrees must petition the college dean or deans involved for permission.
2. Students must have a minimum 2.5 cumulative grade-point average.
3. Students planning to take one degree in a highly prescribed curriculum should register as freshmen in the appropriate school or college for that curriculum.
4. It is expected that candidates for two degrees will complete 32 credits beyond those required for the first degree.
5. Students can earn more than one bachelor of science (B.S.) degree, provided that each degree is in a different field. Students cannot earn more than one bachelor of arts (B.A.) degree.
6. Transfer students already holding a baccalaureate degree from another accredited institution may pursue an additional baccalaureate degree at the University of New Hampshire provided they fulfill the previously listed requirements. The degree received at the first institution will be accepted by UNH as awarded by that institution.

Supervision

As soon as a student is accepted as a candidate for two degrees, the appropriate dean(s) will appoint supervisors for each of the proposed majors. The supervisors and the student will work out a basic course plan for the two degrees and inform the appropriate dual degree dean(s) of the plan. The supervisors will maintain joint control over the student’s academic program. The college offices and the supervisors will receive copies of grade reports and other records for students pursuing two degrees.

Minimum Graduation Average

A cumulative grade-point average of 2.0 in University of New Hampshire courses is the minimum acceptable level for undergraduate work in the University and for graduation. In addition, some majors require a grade-point average greater than 2.0 in certain courses or combinations of courses. The Academic Standards and Advising Committee examines the records of students periodically and may place academically deficient or potentially deficient students on warning, or may exclude, suspend, or dismiss those who are academically deficient.

Quota of Semester Credits
Students registering for more than 20 credits must receive the approval of the college dean. Additionally, students taking more than 20 credits in a single term will pay a per-credit surcharge.

Baccalaureate and associate in arts undergraduates are assigned class standing on the basis of semester credits of academic work completed with a passing grade, as follows: to be a sophomore, 26 credits; to be a junior, 58 credits; to be a senior, 90 credits.

**Residence**

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

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

Students who leave the University are required to file formal notification with the Registrar.
Undergraduate Course Catalog 2016-2017

University Academic Requirements ▼

« Majors, Minors, and Options

Majors and some interdisciplinary minors are described under their various schools and colleges; other interdisciplinary and intercollege minors are described in the section on Special University Programs.

Student-Designed Majors

See Special University Programs for the requirements of a student-designed major.

Second Majors

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

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

2. If the two majors have two distinct degrees; e.g., B.A., B.S., or some other designated degree, students must choose which of the two degrees is to be awarded and fulfill all requirements for that degree.

3. No more than 8 credits used to satisfy requirements for one major may be used as requirements for the other major.

Minors

Bachelor’s degree students may earn a minor in any undergraduate discipline designated by the University. A list of minors is available from the advising coordinator in each college or school (or see the program descriptions for each college or school in this catalog). Students must consult with their major adviser and also the minor supervisor. A minor typically consists of 20 credits with C- or better and a 2.0 grade-point average in courses that the minor
department approves. Courses taken on a pass/fail basis may not be used for a minor. No more than 8 credits used to satisfy major requirements may be used for the minor. Students should declare an intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean to have the minor shown on the academic record.

Options

Some degree programs offer a selection of options (e.g., art history and art studio through the Department of Art and Art History). These concentrations allow students to specialize within a discipline. The choice of option is recorded on the student's transcript.
Undergraduate Course Catalog 2016-2017
Degrees and Major Programs of Study

**College of Liberal Arts**
Please note that the teacher education division of the College of Liberal Arts coordinates the five-year undergraduate/graduate teacher education program.

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

**Bachelor of Arts**

**Anthropology**

**The Arts**
- Art History
- Studio Art
- Studio Art/Art Education

**Classics**
- Classical Languages and Literatures
- Ancient Mediterranean Civilizations
- Latin and Latin Teaching

**Communication**
- Business Applications
- Media Practices

**English**

**English/Journalism**

**English Literature**

**English Teaching**

**French**

**French Studies**

**Geography**

**German**

**History**

**Humanities**

**Italian Studies**

**International Affairs (dual major)**
Justice Studies (dual major)  
Linguistics  
Music  
  Liberal Studies  
  Composition  
  Performance Study  
Philosophy  
Political Science  
Psychology  
Russian  
Sociology  
Spanish  
Theatre  
  Acting  
  Dance  
  Design and Theatre Technology  
  Musical Theatre  
  Secondary Theatre Education  
  Youth Drama  
Women’s Studies  

*Bachelor of Fine Arts*  
Fine Arts  

*Bachelor of Music*  
Composition  
Music Education  
Performance  
Preteaching  

*Bachelor of Science*  
Neuroscience and Behavior  

**College of Engineering and Physical Sciences**  
*Bachelor of Arts*  
Chemistry  
Earth Science Teaching  
Earth Sciences
Mathematics
Physics

**Bachelor of Science**

Bioengineering*
Chemical Engineering*
  Bioengineering
  Energy
  Environmental Engineering
Chemistry*
Civil Engineering*
Computer Engineering*
Computer Science*
  Bioinformatics
Earth Sciences*
Electrical Engineering*
Environmental Engineering*
Environmental Sciences*
  Hydrology
Engineering Physics
Information Technology*
Mathematics*
Mathematics, Applied
  Computation
  Dynamics and Controls
  Economics
  Fluid Dynamics
  Solid Mechanics and Vibrations
Mathematics Education*
  Elementary
  Middle/Junior High
  Secondary
Mechanical Engineering*
Ocean Engineering
Physics*
  Astronomy
  Chemical
  Materials Science
Statistics*
College of Health and Human Services

*Bachelor of Science*

Athletic Training
Communication Sciences and Disorders
Health Management and Policy
Human Development and Family Studies
Kinesiology
  - Exercise Science
  - Health & Physical Education
  - Outdoor Education
  - Sport Studies
Nursing
Occupational Therapy
Recreation Management and Policy
  - Program and Event Management
  - Therapeutic Recreation
Social Work

College of Life Sciences and Agriculture

*Bachelor of Arts*

Sustainable Agriculture and Food Systems
Zoology

*Bachelor of Science in Forestry*

Forestry*

*Bachelor of Science*

Animal Science
  - Dairy Management
Biochemistry, Molecular and Cellular Biology
Biology
Biomedical Science
  - Medical Laboratory Science
  - Medical Microbiology
  - Medical and Veterinary Sciences
Community and Environmental Planning
Environmental and Resource Economics
Environmental Conservation and Sustainability
Environmental Sciences*

Ecosystems
Soil and Watershed Management

Equine Studies

Equine Industry and Management
Therapeutic Riding
Equine Science

Genetics

Genomics

Marine, Estuarine, and Freshwater Biology

Neuroscience and Behavior

Animal Behavior
Integrative

Nutrition

Dietetics
Nutrition and Wellness
Nutritional Sciences

Sustainable Agriculture and Food Systems

Tourism Planning and Development

Wildlife and Conservation Biology

Zoology

*Designated degree (the name of the specialization is on the diploma, e.g., B.S. in forestry).

Peter T. Paul College of Business and Economics

Bachelor of Arts

Economics

Global Trade and Finance
Money and Financial Markets
Public Policy and Sustainability

Bachelor of Science

Business Administration

Accounting
Entrepreneurial Studies
Finance
Information Systems and Business Analytics
International Business and Economics
Management
Marketing
Student-Designed
Economics
Hospitality Management

Thompson School of Applied Science
Associate in Applied Science
Applied Animal Science
Civil Technology
Culinary Arts and Nutrition
Forest Technology
Horticultural Technology
Integrated Agriculture Management
Veterinary Technology

University of New Hampshire at Manchester
Associate in Arts
General Studies

Associate in Science
Biological Sciences
Business Administration

Bachelor of Arts
Biological Sciences
Business
Communication Arts
    Cinema and Media Arts
    Digital Media
English
English Teaching
History
Humanities
Politics and Society
    American Politics and Public Policy
International and Comparative Studies
Law and Justice

Psychology

*Bachelor of Science*

Analytics
ASL/English Interpreting
Biotechnology
Computer Information Systems
Computer Science & Entrepreneurship
Engineering Technology
Homeland Security
Neuropsychology

Five-Year Accelerated Programs at UNHM
Five-Year Master's of Information Technology
Five-Year Teacher's Education

Minors

American Sign Language and Deaf Studies
The Arts
Business
Communication Arts
Computer Information Systems
Education
English
Entrepreneurship
History
Homeland Security
Humanities
Philosophy
Political Economy
Political Science
Professional Writing
Psychology
Public History
Sociology

Interdisciplinary Dual Majors

*Bachelor of Arts/Bachelor of Science*
EcoGastronomy
International Affairs
Justice Studies
Sustainability

Five-Year Degree Programs
Bachelor of Arts and Master of Education**
Bachelor of Science and Master of Education**
Bachelor of Science and Master of Science in Accounting
Bachelor of Science and Master of Science in Biochemistry
Bachelor of Science and Master of Science in Occupational Therapy

Minors
Students may earn a minor in most undergraduate disciplines designated by the University. In addition, minors may be earned in the following interdisciplinary areas.

Interdisciplinary Minors
Adolescent and Youth Development
Africana and African American Studies
Agribusiness
Air Force Leadership Studies
American Studies
Animal Behavior
Architectural Studies
Asian Studies
Child Life
Cinema Studies
Coaching
Deaf and Hard of Hearing Studies
Disabilities
Forensics
Gerontology
Green Real Estate
History and Philosophy of Science
Humanities
International Affairs
Justice Studies
Latin American Studies
Advisory Committees

Prelaw
Premeical/Prehealth Care Professional

Accelerated Master’s – University of New Hampshire Seniors

Qualified senior students at the University of New Hampshire may be admitted to the Graduate School provided they have followed normal application procedures; they must have been admitted for the semester in which they wish to enroll in courses for graduate credit. A 3.20 cumulative grade-point average is normally required to be considered for admission to the accelerated master's program.

Such seniors are normally admitted prior to the start of their last undergraduate semester, but may be eligible to apply for admission the first semester of their senior year. Seniors who have been admitted under early admission may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree. Such courses may upon recommendation of the department and approval of the Graduate School count toward both a bachelor's and master's degree.

When seniors admitted to the accelerated master's program have registered for graduate courses, they must maintain a grade-point average of 3.20, complete their undergraduate degree as planned, and pass graduate courses taken for credit with a grade of B- or better. If these conditions are not met, admission is withdrawn.

Not all graduate programs participate; each program's faculty retain discretion regarding whether their program admits students under the accelerated master's program, as well as the maximum number of graduate credits permitted (not exceeding 12; e.g., some programs will accept one course, others two). Applicants are strongly encouraged to meet with the graduate
coordinator in the program's faculty to discuss specifics. Dual-credit forms must be completed and approved by the dean of the Graduate School at the beginning of the semester for which dual credit is sought.

**Five-Year Degree Programs**
Bachelor of Arts and Master of Education  
Bachelor of Arts and Master of Arts in Teaching  
Bachelor of Science and Master of Education  
Bachelor of Science and Master of Science in Accounting  
Bachelor of Science and Master of Science in Biochemistry  
Bachelor of Science and Master of Science in Occupational Therapy  
Bachelor of Science and Master of Arts in Political Science  
Bachelor of Science and Master of Arts in Teaching

**Graduate School**
Master of Arts  
Master of Science  
Master of Arts in Liberal Studies  
Master of Arts in Teaching  
Master of Business Administration  
Master of Education  
Master of Fine Arts  
Master of Public Administration  
Master of Public Health  
Master of Science for Teachers  
Master of Social Work  
Education Specialist  
Doctor of Philosophy

*Designated degree (the name of the specialization is included on the diploma; e.g., B.S. in Chemistry).*
Undergraduate Course Catalog 2016-2017
Program Abbreviations

College of Liberal Arts

ANTH  Anthropology
ARBC  Arabic
ARTS  Art and Art History
CHIN  Chinese
CLAS  Classics
CHI   Classics, Humanities, and Italian Studies
COLA  College of Liberal Arts
CMN   Communication
EDUC  Education
ENGL  English
FREN  French
GEOG  Geography
GERM  German
GREK  Greek
HIST  History
HUMA  Humanities
IA  International Affairs Dual Major
ITAL  Italian Studies
JPN  Japanese
JUST  Justice Studies
LLC  Languages, Literatures, and Cultures
LATN  Latin
LING  Linguistics
MUSI, MUED  Music
MUED  Music Education
NSB  Neuroscience and Behavior
PHIL  Philosophy
POLT  Political Science
PORT  Portuguese
PSYC  Psychology
RS  Religious Studies
RUSS  Russian
SOC  Sociology
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Department/Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN</td>
<td>Spanish</td>
</tr>
<tr>
<td>THDA</td>
<td>Theatre and Dance</td>
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<tr>
<td>WS</td>
<td>Women's Studies</td>
</tr>
<tr>
<td></td>
<td><strong>College of Engineering and Physical Sciences</strong></td>
</tr>
<tr>
<td>BENG</td>
<td>Bioengineering</td>
</tr>
<tr>
<td>CHE</td>
<td>Chemical Engineering</td>
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<tr>
<td>CHEM</td>
<td>Chemistry</td>
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<tr>
<td>CIE</td>
<td>Civil Engineering</td>
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<tr>
<td>CS</td>
<td>Computer Science</td>
</tr>
<tr>
<td>ESCI</td>
<td>Earth Sciences</td>
</tr>
<tr>
<td>ECE</td>
<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td>ENE</td>
<td>Environmental Engineering</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>IAM</td>
<td>Integrated Applied Mathematics</td>
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<tr>
<td>MS</td>
<td>Materials Science</td>
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<tr>
<td>MATH</td>
<td>Mathematics and Statistics</td>
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<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>OE</td>
<td>Ocean Engineering</td>
</tr>
</tbody>
</table>
PHYS  Physics

TECH  Technology

**College of Health and Human Services**

ATH  Athletic Training

COMM  Communication Sciences and Disorders

HHS  Health and Human Services

HMP  Health Management and Policy

HDFS  Human Development and Family Studies

International Affairs (dual major)

KIN  Kinesiology

NURS  Nursing

OT  Occupational Therapy

RMP  Recreation Management and Policy

SW  Social Work

**College of Life Sciences and Agriculture**

ANSC  Animal Science

BMCB  Biochemistry, Molecular and Cellular Biology

BIOL  Biology

BMS  Biomedical Science

CEP  Community and Environmental Planning
ERE C Environmental and Resource Economics

Environmental Conservation and Sustainability

Environmental Sciences

Equine Studies

Forestry

GEN Genetics

International Affairs (Dual major)

LSA Life Sciences and Agriculture

MEFB Marine, Estuarine, and Freshwater Biology

NR Natural Resources

NSB Neuroscience and Behavior

NUTR Nutrition

SAFS Sustainable Agriculture and Food Systems

TOUR Tourism

Wildlife and Conservation Biology

ZOOL Zoology

Peter T. Paul College of Business and Economics

ACFI Accounting and Finance

ADMN Business Administration
DS  Decision Sciences

ECON  Economics

HMGT  Hospitality Management

International Affairs (dual major)

MGT  Management

MKTG  Marketing

Thompson School of Applied Science

AM  Agricultural Mechanization

AAS  Applied Animal Science

ABM  Applied Business Management

CT  Civil Technology

CSL  Community Leadership

CAN  Culinary Arts and Nutrition

FORT  Forest Technology

HT  Horticultural Technology

IAG  Integrated Agriculture Management

COM  TSAS Communication

TSAS  TSAS Courses

MTH  TSAS Mathematics
SSCI  TSAS Social Science

VTEC  Veterinary Technology

University of New Hampshire at Manchester

ASL  American Sign Language

DATA  Analytics

ANTH  Anthropology

ARTS  Art and Art History

ASL  ASL/English Interpreting

BMCB  Biochemistry, Molecular, and Cellular Biology

BSCI  Biological Science

BIOL  Biological Sciences

Biotech  Biotechnology

BUS  Business

Bus  Business Administration

CHEM  Chemistry

CHIN  Chinese

CMN  Communication
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<td>CA</td>
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<td>COMP</td>
<td>Computer Information Systems</td>
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<tr>
<td>CS</td>
<td>Computer Science</td>
</tr>
<tr>
<td>CS&amp;E</td>
<td>Computer Science &amp; Entrepreneurship</td>
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<tr>
<td>ESCI</td>
<td>Earth Sciences</td>
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<tr>
<td>ECN</td>
<td>Economics</td>
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<td>EDUC</td>
<td>Education</td>
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<td>Engineering Technology</td>
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<td>English Teaching</td>
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<td>Exchange</td>
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<tr>
<td>FREN</td>
<td>French</td>
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<td>Geography</td>
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<td>HIST</td>
<td>History</td>
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<td>HLS</td>
<td>Homeland Security</td>
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<tr>
<td>HUMA</td>
<td>Humanities</td>
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<td>Abbreviation</td>
<td>Program Description</td>
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<td>INCO</td>
<td>Intercollege</td>
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<td>Mathematics</td>
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<td>Nutrition</td>
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<td>Philosophy</td>
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<td>Physics</td>
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<tr>
<td>PBIO</td>
<td>Plant Biology</td>
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<td>Political Science</td>
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<td>Politics and Society</td>
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<td>Psychology</td>
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<td>INTR</td>
<td>Sign Language Interpreting</td>
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<td>Sociology</td>
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<td>SPAN</td>
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<tr>
<td>THDA</td>
<td>Theatre &amp; Dance</td>
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<tr>
<td>UMIS</td>
<td>UNHM Independent Study</td>
</tr>
<tr>
<td>UMNA</td>
<td>UNHM Misc. Non-Credit</td>
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<td>UMST</td>
<td>UNHM Special Topics</td>
</tr>
</tbody>
</table>
WS      Women's Studies

ZOOL    Zoology

Continuing Education and Summer Session

Special University Programs

Hamel Center for Undergraduate Research

Office of National Fellowships

University Honors Program

Earth, Oceans, and Space

INCO    Intercollege Courses

IA      International Affairs (dual major)

Marine Science and Ocean Engineering

RES     Race and Ethnic Studies

Student-Designed Majors

Prelaw

Premedical/Prehealth Care Professional Study

Consortium (NHCUC) Student Exchange Program

Exchange Programs Within the U.S.

New England Land-Grant Exchange Program

UNH/UNHM Cross Registration

Study Abroad Programs
AERO  Aerospace Studies

MILT  Military Science

ROTC  Reserve Officer Training Corps Programs
Undergraduate Course Catalog 2016-2017

Special University Programs

Introduction

This section describes University-wide programs (including the University Honors Program and the Hamel Center for Undergraduate Research), interdisciplinary study opportunities, preprofessional programs (prelaw, premed/prehealth, and prevet), off-campus and study abroad programs, and other special programs at UNH.

For details about a specific program of study, please visit the programs link.
The undergraduate sustainability dual major provides an innovative pathway for emerging leaders to gain the skills and knowledge needed to be agents of change in a complex, ever-changing global environment. Students from any UNH college or major can pair the sustainability dual major with the first major. From local to global, you’ll learn to analyze, evaluate, critique, and create new ideas and models around sustainability. As a cross-disciplinary field of study and practice, you’ll make connections across issues of science and ethics, policy and technology, and culture and history to better understand and take action on pressing issues of our time.

- Study grand challenges in a flexible format
- Apply your principles and passions to your academic work
- Add value to your primary major
- Work collaboratively across disciplines with students and faculty
- Develop skills needed to create sustainability solutions in any profession
- Prepare for a career in the expanding sustainability field
- Hone your leadership abilities to help create a better world

**Requirements**

SUST consists of 32 credits, including core and elective courses, and a capstone experience.

Students are required to take three (3) SUST courses (in order)

SUST 401, Surveying Sustainability
SUST 501, Sustainability Perspectives & Methods
SUST 750, Sustainability Capstone

Students choose elective courses to complete the remaining 20 credits for the dual major. All SUST majors will take at least one (1) elective course from the natural & biological sciences list and at least one (1) elective course from the social science and humanities list.
Approved Electives

Natural Biological Systems
BIOL 541, General Ecology
CIE 781, Green Building Design
ECOG 401, Introduction to EcoGastronomy
ENE 797/CIE 896, Environmental Life Cycle Assessment
ESCI 405, Global Environmental Change
NR 435, Contemporary Conservation Issues & Environmental Awareness
NR 502, Forest Ecosystems and Environmental Change
NR 507, Introduction to Our Energy Grid
NR 650, Principles of Conservation Biology
NR 703/803, Watershed Water Quality Management (WI)
NR 785/885, Systems Thinking for Sustainable Solutions
NUTR 595, Mediterranean Diet & Culture
NUTR 730/830, From Seed to Sea
SAFS 405, Sustainable & Organic Food Production
SAFS 410, A Taste of the Tropics
SAFS 510, Agriculture and Development in the Neotropics

Social Systems & Humanities
CLAS 540A, Sustaining Ancient Rome
ECON 698, The Social Economy
ECON 706, Economics of Climate Change
ENGL 747, Studies in American Poetry: Environmental Poetry
ENGL/AM Studies 521, The Nature Writers
ENGL/WS 787, English Major Seminar: The Writer's Cabin
EREC 444, New Pirates of the Caribbean
GEOG 650, Field Methods in Geography
GEOG 673, Political Ecology
NR 701, Ecological Sustainability and Values
NR 784/884, Ecological Ethics and Values
NR 787, Advanced Topics in Sustainable Energy
PHIL 450, Environmental Ethics
POLT 444, Politics and Policy in a Warming World
POLT 547, Race and Justice in the Americas
POLT 548, The Drug Wars: Views from the South and the North
POLT 567, Politics of Global Resources
POLT 750/850, The Politics of Poverty
POLT 751, Comparative Environmental Politics and Policy
POLT 780, International Environmental Politics, Policy and Law
RMP 511, Issues of Wilderness & Nature in American Society
SOC 444A, Society in the Arctic
SOC 565, Environment and Society
SOC 665, Environmental Sociology
SOC 730/830, Communities & the Environment
TOUR 767-RAM 867, Social Impact Assessment
Navitas Pathway Program

The Navitas at UNH International Pathway Program, which assists international students in their transition to university, was established in 2011 in partnership with the University of New Hampshire. The program encompasses academic course instruction and is equivalent to the first year of a bachelor’s degree. ESL courses are offered through the UNH ESL Institute for students who require additional English instruction. Students who successfully complete the program and meet the entrance criteria of their selected major continue directly into the second year of their undergraduate degree.

The Pathway Program offers small classes, increased face-to-face time with instructors, individual attention, and academic and welfare support programs and services. The program supports students academically, culturally, and socially with students being able to enter and study in three semesters per year. Students have full access to the beautiful, state-of-the-art campus and facilities. Also, as admitted UNH students from day one of the program, students enjoy all the same benefits as a student admitted directly to UNH.

The Navitas office is located on the Durham campus where the co-location assists students to integrate both with, and within, the University of New Hampshire.
In keeping with this research University’s mission to create and disseminate knowledge, UNH’s Hamel Center for Undergraduate Research offers undergraduates—working in collaboration with UNH faculty mentors—both funding and administrative support for individually designed academic projects ranging from laboratory research to humanist scholarship and fine and performing arts creations. Once projects are completed, student researchers may receive further support from the Hamel Center for presentations at national and international conferences and for online publication in UNH's undergraduate research journal, Inquiry.

Initially known as UROP (the Undergraduate Research Opportunities Program), the Hamel Center for Undergraduate Research currently offers year-round research opportunities both in the U.S. and abroad via competitive grant applications. Research Experience and Apprenticeship Program (REAP) grants offer honors students the opportunity to apprentice with a UNH faculty mentor for ten weeks of full-time research in the summer after their first year; Undergraduate Research Awards (URAs) are available each semester, including January term (research time commitment is flexible); Summer Undergraduate Research Fellowships (SURFs) for the U.S. offer support for ten weeks of full-time research in the summer following sophomore or junior year; and the SURF Abroad and International Research Opportunities Program (IROP) offers support for rising seniors to conduct nine weeks of full-time summer research abroad. Also, by registering for INCO 590: Student Research Experience, or INCO 790: Advanced Research Experience, students at any level can work directly with faculty members while receiving academic credit and support for research expenses.

Hamel Center research opportunities are available to students across all colleges and disciplines.

Grants from the Hamel Center for Undergraduate Research open doors on real-world
disciplinary practice, graduate school, post-baccalaureate fellowships, and professional careers; undergraduate research develops first-hand knowledge of the world and one's place in it. For information about all awards, programs, and the *Inquiry* journal, contact the Hamel Center for Undergraduate Research, 209 Hood House, (603) 862-4323, or visit the website at [www.unh.edu/undergrad-research](http://www.unh.edu/undergrad-research).

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### Office of National Fellowships

The UNH Office of National Fellowships provides information, counseling, and editorial support to highly motivated and high-achieving students applying for national and international fellowships and scholarships. The office also assists faculty members who serve as mentors and recommenders, and arranges for members of the faculty to take part in interviews and serve on screening committees.

In recruiting, advising, and supporting students who excel in various areas, the office collaborates campus-wide with other offices and departments of the University, including the Office of Multicultural Student Affairs, the McNair program, the Honors Program, the Center for International Education, and the Hamel Center for Undergraduate Research, in support of the University’s Academic Plan.

The services of the Fellowships Office are available to undergraduates, graduate students, and alumni of the University. The Office of National Fellowships holds membership in the National Association of Fellowships Advisors. For more information, please contact Jeanne Sokolowski, director, Office of National Fellowships Office, 207 Hood House, (603) 862-0733; e-mail: Jeanne.Sokolowski@unh.edu.

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### University Honors Program

The University Honors Program (UHP), established by the Academic Senate in 1983, recognizes the achievements and capabilities of outstanding students. The program enriches undergraduate education by offering a personal, intensive approach to learning through small classes of 25 or fewer students. UHP students take a minimum of four honors-designated courses in their freshman and sophomore years, one of which must be an honors 444 seminar. These courses count toward the Discovery Program requirements that all students must fulfill. Students also must complete their department's honors-in-major requirements in order to earn...
a "University Honors" designation upon graduation (see the "Honors in Major" description below).

Honors courses can be searched for in the online catalog by selecting the attribute "Honors Courses." Enrollment in these courses is generally restricted to members of the University Honors Program. Honors courses are open with special permission to non-honors students with a 3.4 or higher GPA on a space-available basis.

**Honors in Major**

Currently, there are more than 50 different departments from all five of the University's undergraduate schools and colleges offering honors-in-major programs. Academic work for honors in major requires a minimum of 16 credits, at least four of which will be devoted to a senior thesis project. Students should familiarize themselves with their departments' requirements and should meet with their departmental honors liaison (http://www.unh.edu/honors-program/liaisons.html). After successful completion of the program, students will earn an honors designation on their transcripts and diplomas.

**Admissions and Aid**

Students gain admittance into the UHP in one of two ways:

1. The Office of Admissions identifies a number of qualified incoming freshmen to be admitted to the honors program.
2. Freshman who demonstrate academic excellence are also invited to join the program.

To satisfy University Honors Program requirements, UHP students must meet designated grade-point average requirements. Students admitted to the program prior to the fall semester of 2008 must have a final cumulative grade-point average of 3.2, while students admitted in the fall semester of 2008 or thereafter must have a final cumulative grade-point average of 3.4. All students must meet the grade-point average requirements of their honors-in-major program.

Full-tuition and partial-tuition merit-based scholarships are available to a select number of incoming freshmen. Several partial-tuition scholarships are also awarded to upper-class students. For more information, contact Kate Gaudet, University Honors Program, 211 Hood House, (603) 862-3928, or visit the UHP website at www.unh.edu/honors-program.

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**Interdisciplinary Programs**

**Earth, Oceans, and Space**

» http://www.eos.unh.edu/
The Institute for the Study of Earth, Oceans, and Space (EOS) is UNH's largest research organization and its first University institute. It brings together, under common themes, many well-established research programs focused in EOS's three centers: the Earth Systems Research Center, the Ocean Process Analysis Laboratory, and the Space Science Center. EOS is also home to the newly formed School of Marine Science and Ocean Engineering (SMSOE).

EOS and SMSOE scientists are exploring processes on the Sun, solar influences on Earth and its magnetosphere, the chemistry and dynamics of the atmosphere, changing climate, and large-scale terrestrial and marine ecosystems. Much of this research emphasizes complex impacts on and by human activities.

Research takes EOS investigators from the most distant energetic phenomena in the universe and Earth's environment in space to tropical, temperate, and boreal forests; from the coast of New Hampshire and the Gulf of Maine to the world's great oceans; from the grasslands and agricultural fields of China to those of the American Midwest; and from the great ice sheets of Greenland and Antarctica to the summit of Mount McKinley. EOS scientists and students use satellites, aircraft, ships, and increasingly complex computing systems to explore and investigate the most important processes in the universe and on our planet.

EOS and SMSOE's advanced research contributes substantively to the training and development of graduate students. This research is funded by major national and international organizations including the National Aeronautics and Space Administration, the National Science Foundation, and the National Oceanic and Atmospheric Administration. EOS faculty
also teach and mentor undergraduate students, and there are numerous opportunities for undergraduates to participate in the research activities of the Institute. Undergraduates interested in EOS activities should contact either EOS faculty in their academic departments, or e-mail the EOS director’s office, eos.director@unh.edu.

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Intercollege Courses (INCO) ▼
» Click to view course offerings

International Affairs (dual major) (IA) ▼
» Click to view course offerings

Lecturer: Dilsa Deniz

The Center for International Education (CIE) offers undergraduate students the opportunity to pursue a dual major in international affairs (IA). The dual major requires completion of the interdisciplinary international affairs program and any other major. The purpose of the program is to expand students’ global horizons, enhance their disciplinary major, and expand their career opportunities into the international arena. The courses in the dual major program are multidisciplinary, taught by faculty from many different departments in the University. They are designed to help students appreciate the complex interrelationships and interdependencies among nations and peoples and to equip students with the analytical skills and broad perspectives necessary for both public and private sector international careers.

Students who wish to declare international affairs dual major must earn a C or better in IA 401, have declared (or be prepared to declare) a disciplinary major, and have a 2.5 cumulative grade-point average. After declaration, students are expected to maintain at least a 2.5 grade-point average, which is also the minimum required for study abroad at UNH.

**IA Dual Major Requirements**

Students who matriculated into UNH prior to fall semester 2010 should refer to the undergraduate catalog of their year of matriculation to see the IA dual-major requirements that apply to them. For those who matriculated into UNH fall 2010 or later, please see below:

**Required Core Courses (four total)**
IA 401, International Perspectives: Science, Geography, and Politics
IA 501, Global Issues in International Affairs
IA 701, Seminar in International Affairs
ECON 401A, Principles of Economics (Macro), or ECON 402A, Principles of Economics (Micro), or EREC 411, Environmental and Resource Economics Perspectives

Please note: IA 401, a prerequisite for IA 501, should be taken no later than spring of the sophomore year. IA 501 should be taken prior to foreign experience, and after ENGL 401 has been taken.

Electives (three total)
Choose one elective course from each category below:

Foreign Area (to be taken prior to foreign experience)
ANTH 500, Peoples & Cultures of the World (area specific)*
ANTH 501, World Archaeological Cultures
ANTH 627, Urbanization in Africa
ANTH 685, Gender, Sex, & HIV in Sub-Saharan Africa
ANTH 697, Islam and Gender
ANTH 750, Islam and Gender
ARTS 585, History of Islamic Art
ARTS 674, Greek Art
ARTS 678, Romanesque and Gothic Art
ARTS 679, Northern Renaissance Art I
ARTS 680, Northern Renaissance Art II
ARTS 681, Early Renaissance Art in Italy
ARTS 684, Baroque Art in Northern Europe
ARTS 687, Paris: Art and Modernity
ARTS 688, Gauguin to Hitler
ARTS 695, Michelangelo and his Followings
ARTS 697, Art of the Far East
CHIN 425, Introduction to Chinese Culture and Civilization
CHIN 521, Chinese Literature in Translation
CLAS 405, Introduction to Greek Civilization
CLAS 406, Introduction to Roman Civilization
CLAS 421, Major Greek Authors in English
CLAS 510, Building Rome
CLAS 550A, Greek & Roman Women
FREN 522, French Drama in Translation
FREN 525, Introduction to French Civilization
FREN 526, Introduction to Francophone Civilization
FREN 625, Cuisine and French Culture
FREN 651/652, Readings in French Literature
FREN 675, Topics in French Civilization
FREN 676, Topics in Francophone Civilization
FREN 677, France in the European Union
FREN 762, 17th Century French Literature
GEOG 401/402, Regional Geography of Western and Non-Western World
GEOG 520, Geography of Latin America and the Caribbean
GEOG 540, Geography of the Middle East
GEOG 541, Geography of Japan
GEOG 550, Geography of Sub-Saharan Africa
GEOG 796, Conflict in Africa
GERM 521, Major German Authors in English
GERM 524, Love & Nation in German Film
GERM 525, Introduction to German Culture & Civilization
GERM 601, Introduction to German Literature
GERM 721, German Culture & Civilization: Austria
GERM 798, Post-Wall German Literature
GERM 798, Austrian Literature and Culture
HIST 425, Foreign Cultures (area specific)*
HIST 444B, Revolutions Across Atlantic
HIST 444D, Slavery & Society Africa
HIST 503, Soviet Dreamers, Despots, & Dissidents
HIST 531, The Americas: Introduction to Latin America & the Caribbean
HIST 532, Modern Latin America
HIST 538, Modern European War and Society
HIST 560, History of Great Britain
HIST 563, Introduction to Russian Culture & Civilization
HIST 564, WWII in Russia and Soviet Union
HIST 565, Women in Modern Europe
HIST 566, Revolution in World pre-Marx
HIST 579, History of China in Modern Times
HIST 580, History of Japan in Modern Times
HIST 585, Venture of Islam: 6th to 15th Century
HIST 586, Islam in the Modern Age, 15th Century to present
HIST 587/588, History of Africa South of the Sahara
HIST 589, Islam in Africa
HIST 595, Russia’s Intel Outlaws
HIST 595, Military and Politics of Ancient Greece - Modern
HIST 595, Filthy Lucre: History of Money (Europe)  
HIST 596, Carnal Pleasures  
HIST 600, Topics vary*  
HIST 602, Holocaust/War on Europe’s Jews  
HIST 632, Latin American History: Topics vary*  
HIST 641, Europe after the Black Death  
HIST 642, Religious Conflict Early Europe  
HIST 648, Modern France  
HIST 652, Topics in European Intellectual History*  
HIST 656, 20th Century Europe  
HIST 662, England in Tudor and Stuart Period  
HIST 664, Russia: Modernization through Soviet Empire  
HIST 669, Germany from 1918 to the Present  
HIST 675, Early History of Ancient Greece  
HIST 676, Class & Hellenistic Greek Worlds  
HIST 677, Roman Republic  
HIST 678, Roman Empire  
HIST 681, Modern China Topics  
HIST 684, History of Southern Africa since 1652  
HIST 688, African Religions  
IA 599, Special Topics*  
IA 699, Topics in International Affairs*  
ITAL 425, Introduction to Italian Studies  
ITAL 444B, Mamma Mia! Italian Motherhood  
ITAL 521, Italian Literature Translation 13-16 C  
ITAL 522, Italian Literature Translation 18-20 C  
ITAL 525, Italian Cinema/Introduction to Italian Civilization & Culture  
ITAL 651, Introduction to Italian Civilization & Culture  
ITAL 652, Introduction to Italian Civilization and Culture II  
JPN 425, Introduction to Japanese Culture and Civilization  
LLC 444A, Love and Nation in German Film  
LLC 444B, France and the European Union in a Global World  
LLC 444C, World of Salvador Dali  
LLC 444D, Love in Disguise  
LLC 444E, Italians Come to America  
PHIL 520, Introduction to Eastern Philosophy  
POLT 552, Contemporary European Politics  
POLT 555, Politics in Russia  
POLT 556, Politics in China
POLT 558, Politics and Government of Canada
POLT 569, Rise of China
POLT 740, States and Societies in the Middle East
POLT 798E, Politics of the Middle East
RUSS 425, Contemporary Russian Society and Culture
RUSS 521W, Devils, Deities, Mad Russ Lit
RUSS 522, Morality, Sex, and Revolution in Russian Lit
RUSS 525, Russia: Mythology and Propaganda
RUSS 691, Readings in Russian Literature
SPAN 525, Spanish Culture and Civilization
SPAN 526, Latin American Culture and Civilization
SPAN 647, Hispanic Cultural Studies
SPAN 651, 652, Introduction to Spanish Literature and Thought
SPAN 653, 654, Introduction to Latin American Literature and Thought

*Check with CIE

Science, Technology, and the Private Sector
ACFI 703, International Financial Management
ANTH 440A, Honors/Medicine and Culture
ANTH 610, Medical Anthropology: Illness and Healing
BIOL 420, Parasites and Pestilence
BIOL 520, Our Changing Planet
CHE 410/H, Energy and the Environment
CLAS 540B, Roman Houses & Public Life
CMN 515, Analysis of News
ECON 645, International Economics
ECON 698, Micro Finance
ECON 707, Economic Growth and Environmental Quality
ECON 746, International Finance
ENE 520, Environmental Pollution/Protection-Global Context
EOS/ESCI 405, Global Environmental Change
EOS/ESCI 715, Global Atmospheric Chemistry
EREC 633, Economics of Travel and Tourism
ESCI 444, Water: How Much is Enough?
GEOG 560, Geography of Natural Hazards & Disasters
GEOG 673, Environmental Geography
GEOG 796, Crowdsourcing Mapping
HIST 522, Science in the Modern World
HIST 600, Topics vary*
HIST 652, Topics vary*
HIST 654, Topics vary*
HIST 789, Topics vary*
HMGT 771, Beverage Management (for HMGT majors only)
IA 599, Special Topics*
IA 699, Topics in International Affairs*
MGT 755, International Management
MGT 798, Topics in International Management*
MKTG 756, International Franchising
MKTG 760, International Marketing
NR 415, Global Biological Change
NR 435, Contemporary Conservation Issues
NR 502, Forest Ecosystems & Environmental Change
NR 720, International Environmental Politics & Policies of the 21st Century
PHIL 424, Science, Technology, and Society
POLT 444, Science, Technology, & Politics
POLT 563, Global Information Grid
POLT 567, Politics of Global Resources
POLT 592B, Global Information Grid
POLT 751, Comparative Environmental Politics & Policy
POLT 780, International Environmental Politics
SOC 565, Environment & Society
TOUR 510, Tourism & Global Understanding

*Check with CIE

Policy and Theory in International Affairs
ADMN 444, Business for People, Planet & Profits
AMST 444A, The Portable, Exportable Nation
ANTH 411, Global Perspectives
ANTH 515, Anthropology and Contemporary Issues
ANTH 520, Anthropology of Migration
ANTH 614, Economy, Culture, and Society
ANTH 616, Religion, Culture and Society
ANTH 618, Political Anthropology
ANTH 627, Urbanization in Africa
ANTH 680, Globalization, Development, and Poverty
ANTH 695, Globalization and Global Population Health
ANTH 697, Islam and Gender
ANTH 720, Roots and Routes: Migration and Globalization
ANTH 750, Islam and Gender
ARTS 695-1, The Art of Revolution
ARTS 695-2, Modern and Contemporary Sculpture
ECON 645, International Economics
ECON 668, Economic Development
ECON 669, Women and Economic Development
ECON 698, Micro Finance
ECON 706, Economics of Climate Change
ECON 707, Economic Growth and Environmental Quality
ECON 745, International Trade
ECON 746, International Finance
ECON 747, Multinational Enterprises
ECON 768, Seminar in Economic Development
EDUC 620, Education, Poverty & Development
EREC 409, Catastrophe & Terrorism
EREC 633, Economics of Travel and Tourism
ESCI 444, Water: How Much is Enough?
FS 772, International Approaches to Child Advocacy
FS 773, International Perspectives on Children and Families
GEOG 514, Geography of Canada and the United States
GEOG 581, Human Geography
GEOG 582, Economic Geography
GEOG 583, Urban Geography
GEOG 584, Political Geography
GEOG 588, Geography of Food
GEOG 685, Geography of Population and Development
GEOG 796, Conflict in Africa
GEOG 796, Geography of Narcotics
HIST 421, World History to the 16th Century
HIST 422, World History in the Modern Era
HIST 435/6, Western Civilization
HIST 444C, World War Propaganda in Britain and the United States
HIST 444D, Slavery & Society Africa
HIST 483/RS 483, History of World Religions
HIST 537, Espionage and History
HIST 538, Modern European War and Society
HIST 585, Venture of Islam: 6th to 15th Century
HIST 586, Islam in the Modern Age
HIST 595, Comparative Revolutions
HIST 600, Topics vary*
HIST 619/20, Foreign Relations of the United States
HIST 631/2, Latin American History *
HIST 642, Religious Conflict Early Europe
HMGT 570, International Food & Culture (for HMGT majors only)
HMP 440A, Global Public Health Issues
HMP 444A, Global Public Health Issues
HUMA 514, The Twentieth Century 1900-1945
HUMA 515, The Twentieth Century 1945-1999
IA 444H, Philosophy and Politics of Nonviolent Action
IA 599, Special Topics *
IA 699, Topics in International Affairs *
LLC 440, Cultural Approaches to Film and Fascism
LLC 444, Walls: Mortar & Metaphor
MGT 798, Social Entrepreneurship
MKTG 598, Topics in Global Marketing
NR 720, International Environmental Politics & Policies of the 21st Century
NURS 794, Beyond our Borders: Global Health Issues
PHIL 520, Introduction to Eastern Philosophy
PHIL 620, 20th Century European Philosophy
POLT 403, United States in World Affairs
POLT 522, Dissent and the Political Community
POLT 544, Pathways to Democracy
POLT 545, People and Politics in Asia
POLT 546, Wealth and Politics in Asia
POLT 550, Comparative Government and Society
POLT 551, Global Urban Politics
POLT 552, Contemporary European Politics
POLT 553, Politics in the Developing World
POLT 554, Latin American Politics
POLT 555, Politics in Russia
POLT 556, Politics in China
POLT 557, Politics in Italy
POLT 558, Politics and Government of Canada
POLT 559, Comparative Politics of the Middle East
POLT 560, World Politics
POLT 561, Introduction to International Political Economy
POLT 562, Strategy and National Security Policy
POLT 565, U.S.-Latin American Relations
POLT 566, Foreign Policies of Asia and the Pacific
POLT 567, Politics of Global Resources
POLT 568, Introduction to Intelligence
POLT 569, Chinese Foreign Policy
POLT 569, Rise of China
POLT 588, Managing Ethnic Diversity
POLT 592, Politics of Immigration
POLT 592B, Global Information Grid
POLT 740, States and Societies in the Middle East
POLT 743, Comparative Political Economy
POLT 751, Comparative Environmental Politics & Policy
POLT 760, Theories of International Relations
POLT 762, International Political Economy
POLT 778, International Organization
POLT 780, International Environmental Politics
POLT 797/798, Nationalism & Ethnicity
SOC 444A, Society in the Arctic
SOC 565, Environment & Society
SOC 597, Peace, Conflict and War
SOC 656, Terrorism
SOC 697, Global Social Change
SPAN 647, Hispanic Cultural Studies
TOUR 510, Tourism & Global Understanding
TOUR 560, New Pirates of the Caribbean
WS 595, Global Feminist Perspectives

*Check with CIE

Courses used to satisfy international affairs elective requirements must be from outside the student's disciplinary major(s). Students pursuing two disciplinary majors in addition to international affairs may count one of the courses in either disciplinary major as an international affairs elective. For any major with 14 or more required courses (or 56 or more required credit hours), the IA program permits counting a maximum of three courses or 12 credits from the major program as international affairs electives.
Competency in a Foreign Language
Functional reading, writing, and speaking ability equivalent to a third-year, second-semester college level (632).

Foreign Experience
Minimum of eight weeks. The international affairs foreign experience is ordinarily conducted in a country consistent with the student’s language study but may also be conducted in a select list of countries where English is an official language or where UNH does not offer language training. Students who desire to study in such a country must petition the Center for International Education. Plans of study must include rigorous local language training while in-country.

The foreign experience (usually completed during the junior year) and the foreign language requirement are completed before taking IA 701 in the senior year. To acquire the knowledge, skills, and experience that come from residence in a foreign culture, students may spend an academic year, semester, or summer in an academic institution, in an internship with a private or public organization, or in purposeful travel/research. All foreign experiences must be pre-approved by the IA major adviser or the University Committee on International Studies.

The completion of the dual major requires no additional credits for graduation beyond the 128 required of all UNH students. All coursework required for international affairs must be completed with a grade of C or better. For information, contact the Center for International Education, Hood House, (603) 862-2398, www.unh.edu/cie.

The Department of Civil Engineering has worked with the UNH Center for International Education to develop a dual-major program in civil engineering and international affairs. Civil engineering students participating in this program spend at least one semester studying abroad in a foreign experience. Students can complete the international affairs dual major in five years or less and do not need to have pre-existing skills in a foreign language before coming to UNH. For more information, contact Ray Cook at (603) 862-1411 or by e-mail to ray.cook@unh.edu.

IA Minor Requirements
The international affairs minor adds a recognized distinction and global context to any academic major. It was developed for those students who, due to the demands of their primary majors, are unable to complete the more rigorous requirements of the IA dual major. Students take IA 401, the core course that provides a broad overview of international affairs from a geographic, scientific, and political perspective. Micro or macroeconomics is required. Undergraduates work toward intermediate proficiency in a foreign language, participate in a foreign experience of at least three weeks (or 4 credits), and take two globally relevant
electives.

**Required Core Courses (two total)**

IA 401, International Perspectives: Science, Geography, and Politics
ECON 401A, Principles of Economics (Macro), or ECON 402A, Principles of Economics (Micro), or EREC 411, Environmental and Resource Economics Perspectives

**Electives (two total)**

*Choose one elective course from each category below:*

- **Foreign Area (to be taken prior to foreign experience)**
  Science, Technology, and the Private Sector, or Policy and Theory in International Affairs (See list above for IA dual major requirements.)

Courses used to satisfy international affairs elective requirements must be from outside the student's disciplinary major(s).

**Foreign Language**

Functional reading, writing, and speaking ability equivalent to a second-year, second-semester college level (504).

**Foreign Experience**

Minimum of three weeks (4 credits). The international affairs foreign experience is ordinarily conducted in a country consistent with the student’s language study but may also be conducted in a select list of countries where English is an official language or where UNH does not offer language training. Students who desire to study in such a country must petition the Center for International Education. Plans of study must include rigorous local language training while in-country.

All coursework required for international affairs must be completed with a grade of C or better.

A maximum of two courses can be taken away from UNH. Students are expected to maintain at least a 2.5 grade-point average, which is also the minimum required for study abroad at UNH.

» [Click to view course offerings](#)

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**Marine Science and Ocean Engineering ▼**

*Professor:* Kenneth C. Baldwin, David L. Berlinsky, Barbaros Celikkol, Wayne R. Fagerberg, Larry G. Harris, W. Huntting Howell, Nancy E. Kinner, Marianne Klauser Litvaitis, Aaron B.
Undergraduate programs in marine science and ocean engineering at the University of New Hampshire reflect the diversity of the ocean itself and are enriched by easy access to a variety of natural laboratories, including tidal rivers, estuaries, coastal areas, and the open ocean. Studies in marine science and ocean engineering are offered through various colleges and departments of the University and are supported by the School of Marine Science and Ocean Engineering and a number of marine research programs and institutes.

**Curricula in Marine Science and Ocean Engineering**

Students interested in marine science and ocean engineering generally identify specific degree programs in those areas or degree programs in core disciplines ranging from, for example, zoology to earth sciences to mechanical engineering, with marine specializations or minors related to that area of study. There are currently two undergraduate majors and four minors in marine science and ocean engineering. The College of Life Sciences and Agriculture offers a B.S. in marine, estuarine, and freshwater biology through the Department of Biological Sciences, while the College of Engineering and Physical Sciences offers a B.S. in Ocean Engineering through the Department of Mechanical Engineering and an oceanography track as part of its B.S. in Earth sciences through the Department of Earth Sciences. In addition to these
offerings, students can declare a major in any established discipline and augment it with a minor in marine biology, ocean engineering, oceanography, or wetland ecology. Students are encouraged to declare their intention to follow these programs as soon as possible.

**B.S. in Earth Sciences, Oceanography Track**
See College of Engineering and Physical Sciences: [Earth Sciences](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm)

**B.S. in Marine, Estuarine, and Freshwater Biology (MEFB)**

**B.S. in Ocean Engineering**

**Marine Biology Minor**
See College of Life Sciences and Agriculture Interdisciplinary Programs: [Marine Biology](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm)

**Ocean Engineering Minor**
The ocean engineering minor allows undergraduate engineering students to acquire a nucleus of knowledge about engineering pertaining to the ocean and the coastal zone.

To meet the University minor requirement, students must satisfactorily complete a minimum of five courses from the following list: ESCI 501, Introduction to Oceanography; OE 690, Introduction to Ocean Engineering; ESCI 752, Chemical Oceanography; ESCI 758, Introductory Physical Oceanography; ESCI 759, Geological Oceanography; OE 710, Ocean Measurements Lab; OE 744, Corrosion; OE 754, Ocean Waves and Tides; OE 756, Principles of Naval Architecture and Model Testing; OE 757, Coastal Engineering and Processes; OE 765, Underwater Acoustics; OE 771, Geodesy and Positioning for Ocean Mapping; OE 795, Special Topics in Ocean Engineering; ENE 747, Introduction to Marine Pollution and Control; and TECH 797, Undergraduate Ocean Research Program. Ordinarily, students typically take ESCI 501, TECH 797, and OE 690 plus two additional engineering courses from the above list to complete the minor.

Students wishing to take the ocean engineering minor should indicate their interest to the ocean engineering minor adviser, Kenneth C. Baldwin, (603) 862-1898 or Kenneth.Baldwin@unh.edu no later than the beginning of the junior year. During the final semester, students must apply to the dean to have the minor shown on their transcript.

**Oceanography Minor**
The minor in oceanography is available to all students in the University interested in obtaining a broad background in oceanography and is offered through the Department of Earth Sciences.
The minor consists of a minimum of five courses with grades of C (2.0) or better and no pass/fail courses. No more than eight major requirement credits may be used. All courses in the program are selected in consultation with the oceanography minor adviser, James Pringle, (jpringle@unh.edu). Students should contact him to complete an Intent to Minor form no later than their junior year. Forms can be picked up in the Earth Sciences departmental office, 214 James Hall.

Required courses include 1) ESCI 501, Introduction to Oceanography; 2) two of the following courses: ESCI 750, Biological Oceanography; ESCI 752, Chemical Oceanography; ESCI 758, Introductory Physical Oceanography; or ESCI 759, Geological Oceanography; 3) any two of the following courses, or a suitable substitute approved by the minor adviser (at least one of these courses should be in the biological sciences): PBIO 625, 722; CIE 757; ENE 747, 753; ESCI 653, 658, 754, 756, 760, 770, 771; MICR 707; OE 690, 710, 753, 754, 757, 785; EREC 611; TECH 797; ZOOL 503, 560, 674, 720, 725, 730, 751, 753, 772, 775; or ZOOL/ESCI/750. During the final semester, students should apply to the dean to have the minor shown on their transcript.

**Wetland Ecology Minor**

See College of Life Sciences and Agriculture Interdisciplinary Programs: [Wetland Ecology](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm?id=8&page=programs.html)

**School of Marine Science and Ocean Engineering**

The School of Marine Science and Ocean Engineering (SMSOE) provides a campus-wide umbrella for marine activities and maintains specialized facilities to support efforts of faculty in individual departments and organized research units. The SMSOE is administratively housed within UNH’s Institute for the Study of Earth, Oceans and Space (EOS).

The SMSOE directly supports academic graduate programs focused broadly on ocean engineering, oceanography, and marine biology, and supports experiential learning and research opportunities for undergraduates beyond the formal classroom. The on-campus Chase Ocean Engineering Laboratory houses both educational and research activities including large acoustic and wave research tanks. Estuarine research is pursued at the Jackson Estuarine Laboratory on Great Bay, which is designated as a National Estuarine Research Reserve. The Gregg Marine Science Complex, which includes the Coastal Marine Laboratory, a flow-through seawater laboratory, and a research pier, is located in nearby Newcastle, N.H. Research on salmonids and other freshwater animals is conducted at the Anadromous Fish and Aquatic Invertebrate Research Laboratory, located near the Durham reservoir. Off-shore and coastal studies are carried out aboard the University’s 50-foot research vessel, *Gulf Challenger*, and a number of smaller boats.
Each of the SMSOE facilities features modern, specialized equipment and opportunities for undergraduate students to work and carry out independent research. There are many opportunities for undergraduates to participate in marine research under the supervision of SMSOE faculty.

The University has a Sea Grant College Program that supports research, teaching, and service projects through numerous partnerships with the National Oceanic and Atmospheric Administration. Marine research projects are also supported through the National Science Foundation, the Environmental Protection Agency, the Office of Naval Research, and other state and federal agencies, foundations, and private donors.

Extensive research, interdisciplinary academic programs, and the extraordinary variety of marine environments and facilities allow students to observe and learn about the frontiers of science and technology being explored in the ocean. For further information about marine opportunities, contact the School of Marine Science and Ocean Engineering at marine.information@unh.edu or through the website at marine.unh.edu.

**Shoals Marine Laboratory**

The Shoals Marine Laboratory (SML) is a summer field station located on Appledore Island, Maine, the largest island in the Isles of Shoals archipelago in the southwestern Gulf of Maine. SML is operated by UNH and Cornell University with a focused emphasis on the undergraduate student experience.

Just six miles offshore from Portsmouth, New Hampshire, students and faculty from UNH, Cornell, and the world live together in a small, closely knit academic community away from mainland distractions. Facilities include vessels (research vessels 47 ft. John M. Kingsbury and 36 ft. John B. Heiser), waterfront and diving facilities, dry and wet laboratories, classrooms, dining, and residence halls. SML offers introductory and advanced courses in marine biology for undergraduates (generally 2-4 credits each); opportunities for student research; college courses for high school students; and public education programs. Appledore Island also provides a superb setting for investigations in sustainable engineering through courses and the summer Sustainable Engineering Internships. The fee includes all costs: full tuition, room, board, field trips, and transportation to and from the island.

SML is proud of its ability to make several forms of financial aid available to applicants on the basis of both merit and need. In addition, many short-term work positions are available to students enrolled in SML courses. SML courses can help a student decide whether marine science is the right major or career while fulfilling university major and minor requirements and providing a hands-on, field-based academic experience.

Join our island community!
Diving Program

UNH has maintained an active research diving program for nearly 40 years to provide assistance for faculty, staff, and students with both instruction and support for research diving, allowing many certified student divers to participate in University-sponsored underwater research projects. Today, the UNH Diving Program consists of two areas: the academic portion where students, faculty, and staff may enroll in courses for academic credit (through the Department of Kinesiology), and the research portion, which supports faculty and student divers in University-sponsored underwater projects.

For further information about the UNH Diving Program as well as the offered workshops in rescue diving and diving accident management, contact Liz Kintzing (elizabeth.kintzing@unh.edu), diving program officer, through the Diving Program Office at (603) 862-3896.

Race and Ethnic Studies (RES)

» Click to view course offerings

For program description, see race and ethnic studies interdisciplinary minor.

» Click to view course offerings

Student-Designed Majors

Under special circumstances, students may design their own majors. This option is offered for highly motivated and self-disciplined students who seek a course of study that is not available through existing programs at the University. It allows students, with the close supervision of faculty members, to cross department and college lines and to create educational experiences on and off campus as part of individual programs of study.

Student-designed majors are administered by a committee of elected faculty that operates through the Office of the Provost and Vice President for Academic Affairs. Students who want to design their own majors are required to give the committee evidence of careful thought and planning in a proposal.
Fall submissions are due by October 15 of the student’s junior year. Proposals are only reviewed once a semester. Spring submissions are due by February 25. The committee will convene soon after the deadline to review the proposals. Under no circumstances will the committee consider a senior year proposal.

Proposal guidelines are available in the Office of the Provost and Vice President for Academic Affairs and on the Academic Affairs website, www.unh.edu/academic-affairs/student-designed-major-sdm. Click on "Academic Enrichment."

Preprofessional Programs

Prelaw

Many graduates of UNH attend law school. The faculty and staff advisers of the Prelaw Advising Committee work closely with students and alumni to identify interests and explore opportunities within legal education. The committee helps students undertake the best possible preparation for legal education while also bringing the excitement of law to UNH students. The committee achieves this goal through careful consideration of the American Bar Association’s (ABA) statement on preparation for legal education (found on the web at http://www.abanet.org/legaled/prelaw/prep.html).

In that statement, the ABA explains why no single major or course is required or recommended for students wishing to explore or prepare for legal study. The ABA does, however, describe certain skills and values that are essential to success in law school and to life as a lawyer. These include analytic and problem solving skills, critical reading abilities, writing skills, oral communication and listening abilities, general research skills, task organization and management skills, and the values of serving others and promoting justice.

Prelaw Advising implements the ABA statement by working with student interests and strengths to select UNH courses, internships, and experiences that will develop those skills and values. Programmatically, the committee provides a prelaw resource library, offers visits to local law schools, and sponsors discussions with law school students, admission and financial aid representatives, and with members of the legal community. The committee also provides support for LSAT preparation, law school search, writing personal statements, and the application and selection processes.

Interested students should register with the committee by contacting the Prelaw Advising Office, 106 Hood House, at (603) 862-2064. Additional information is available at
Premedical/Prehealth Care Professional Study

The Pre-Professional Health Programs Advising Office in Hood House provides advising for all students preparing for postgraduate careers in medicine, dentistry, optometry, chiropractic, podiatry, physical therapy, pharmacy, naturopathic medicine, and physician assistant programs. There is no pre-medical or pre-dental major at UNH. A student’s major is not considered in the application process and students from majors in all five UNH colleges have been admitted to postgraduate health professional programs. Though pre-medical/pre-dental is not a major, interested students are expected to register with the Pre-Professional Health Programs Advising Office in Hood House as soon as possible so as to be kept informed of important events, opportunities, and deadlines regarding preparation for application.

A pre-medical/pre-dental program at UNH consists of the following:

1. Taking the prerequisite courses for admission to a health professional program. Medical and dental schools generally require biology, physics, general chemistry, and organic chemistry—all two semesters each with laboratory. A semester of biochemistry is also required. A year of English is required, as is one year of math including one semester each of calculus and statistics. Students are encouraged to have courses in psychology and sociology as well. Prerequisite courses can be taken as part of a student’s major curriculum, as part of the Discovery Program requirements, or as electives.

2. Gaining volunteer/healthcare experience. Applicants to health professional programs will be expected to demonstrate a sustained involvement in volunteer and community service. A significant portion of this experience must take place in a health professional setting and include direct patient contact. Most students gain this experience by volunteering at a hospital, though volunteer opportunities are available in a wide range of settings, including nursing homes and community clinics.

3. Preparing for the requisite entrance exam. Students applying to medical school are required to take the MCAT exam. Students applying to dental programs are required to take the DAT, and applicants to optometry programs take the OAT. The MCAT, DAT, and OAT are standardized, comprehensive exams that test students’ knowledge of biological and physical sciences as well as verbal reasoning and writing skills. Exams are usually taken by students no earlier than the spring of their junior year and should be taken only if the student has completed or is within a month of completing prerequisite coursework. Students applying for physician assistant and physical therapy programs may be required to take the GRE, a more general
exam similar to the SAT in structure and content.

**Application Process**

The Pre-Professional Health Programs Advising Office works with the Pre-Professional Health Advisory Committee—a body of 10-12 UNH faculty members and local healthcare providers with interest and/or experience in medical/dental education—to provide students with comprehensive, confidential evaluation services at the time of application. An orientation meeting is held each fall to outline the application process and establish timetables/deadlines. Students should note that the medical and dental school application process begins a full two years before matriculation; e.g., in the fall of a student’s junior year if they wish acceptance following graduation. However, a delay of a year or more between graduation and admission is neither unusual nor detrimental, and in many cases, students can use this time to improve their credentials by taking additional courses and/or gaining exposure to the profession.

It is important that students understand that in order to gain admission to a health professional program they must not only satisfy the prerequisite requirements, they must satisfy these requirements at a high level of achievement. The Pre-Professional Health Programs Advising Office can provide students with information on competitive grade-point average and entrance exam scores for each of the postgraduate health professional programs.

The Pre-Professional Health Programs Advising Office is located in Hood House and can be contacted by phone at (603) 862-7740 or by email at Premed.Advising@unh.edu. The office also has a website at [http://www.unh.edu/uacc/premed-advising](http://www.unh.edu/uacc/premed-advising).

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**Off-Campus Programs**

**Consortium (NHCUC) Student Exchange Program**

Under the Student Exchange Program of the New Hampshire College and University Council (NHCUC), UNH students may be eligible to enroll for one course per semester, one semester of courses, or a full year of coursework at a member school on a space-available basis. The NHCUC exchange allows matriculated undergraduates to use educational resources that are not available at the home campus and are considered appropriate for their degree programs. This exchange will be used only when academic reasons or other special circumstances warrant it. Approval of the UNH academic adviser and college dean is required, and students must meet all UNH Study Away eligibility standards. Schools in the NHCUC consortium include Colby-Sawyer College, Franklin Pierce University, New England College, New Hampshire Institute of Art, Southern New Hampshire University, Rivier College, Saint Anselm College, UNH Durham, UNH Manchester, Keene State College, and Plymouth State University.
Students will remain as degree candidates and continue to pay normal UNH tuition and fees, but must make their own room and board arrangements if they plan to spend a full semester at another consortium school. For more information and application forms, students should contact the Study Away USA office, Hood House, (603) 862-3485.

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**Exchange Programs Within the U.S.**

The University offers many opportunities for exchange study with other institutions within the U.S. The National Student Exchange (NSE) program provides an educational experience in a different environment, within North America. It is hoped that students will develop new ways of viewing the country and expand their knowledge of our complex society.

Through the National Student Exchange, UNH students can study at one of more than 170 colleges and universities throughout the United States, U.S. territories (Guam, Puerto Rico, and U.S. Virgin Islands), and Canada. Several historically black colleges and universities are exchange members, and several are members of the Hispanic Association of Colleges and Universities. In addition, a one-semester or full-year exchange program is available with the University of California, Santa Cruz.

To qualify for exchange study, students must be full-time undergraduate degree candidates in good standing, with at least a 2.5 grade-point average, have earned at least 32 credits (16 of which must be from UNH at the baccalaureate level), have declared a major, receive permission from their college dean and academic adviser, and receive permission from the UNH NSE coordinator.

Students in exchange programs are expected to return to UNH to complete their studies. Participation in an exchange program does not disrupt the continuity of a student’s educational process. Exchange program participants continue to maintain their status as UNH students, even while temporarily located at another university. Students do not have to withdraw from UNH and later be readmitted. Maintaining UNH student status also facilitates reentry into classes, on-campus housing, and many other dimensions of University life.

Interested students should contact the Study Away USA office in Hood House, (603) 862-3485, or visit [www.unh.edu/nse](http://www.unh.edu/nse).
New England Land-Grant Exchange Program ▼

In order to provide students at the New England land-grant universities with expanded access to unique programs and faculty expertise, the institutions have agreed to encourage student exchanges of one, but not more than two, semesters. To qualify, students must identify a course or combination of courses related to their area of academic interest and not available on their home campus, be degree candidates in good standing with at least a 2.5 grade-point average, be at least first-semester sophomores, and receive permission from the appropriate university exchange authorities at both the home and host institutions. Interested students should contact the Study Away USA office, Hood House, (603) 862-3485.

UNH/UNHM Cross Registration ▼

Matriculated students at the University of New Hampshire and the University of New Hampshire at Manchester may take UNH courses at either campus. Students must have permission from their academic adviser to cross register for the fall and spring semesters. Students may register at either registration office for the courses on a space-available basis during cross registration periods. Course restrictions may apply. For more information, students should contact Donna Reed, Associate Registrar, Stoke Hall, Durham or Doreen Palmer, Associate Registrar, UNH Manchester, 88 Commercial Street.

Study Abroad Programs ▼

The University offers opportunities for full-time degree candidates meeting eligibility criteria to study abroad in many foreign institutions. UNH-managed and exchange programs are described in this section. Students may study abroad in other locations through UNH-approved programs by using the intercollegiate option (INCO). All students who study abroad pay a study abroad or exchange fee and an international travel insurance fee. For information on study abroad programs, students should contact the Center for International Education or the department identified in the UNH-managed program descriptions.

Study Abroad Eligibility
Students enrolled in UNH baccalaureate degree programs may participate in approved study abroad programs provided they meet the following eligibility criteria at the time of application:

1. must be in good standing with the student conduct system at the time of application and throughout the study abroad program;
2. must have earned at least 32 credit hours, at least 12 of which must have been earned at the University of New Hampshire at the baccalaureate level;
3. must have a minimum 2.5 cumulative grade point average at the time of application to and at the time of departure for the study abroad program. Study abroad programs provided by UNH or other approved institutions may have higher minimum GPA requirements;
4. must have a declared major.

Transfer students, including transfer students from the Thompson School of Applied Science (TSAS), are not eligible to study abroad during the first semester of their baccalaureate program at UNH.

Students enrolled in the degree programs of the Thompson School of Applied Science may participate in approved study abroad programs appropriate for two-year degree candidates. TSAS students must meet the following eligibility criteria:

1. must have earned 32 credits, at least 12 of which must have been earned at the University of New Hampshire at the associate degree level;
2. must have a minimum 2.5 cumulative grade point average at the time of application to and at the time of departure for the study abroad program. Study abroad programs provided by UNH or other approved institutions may have higher minimum GPA requirements.

Belize

The UNH Archaeological Field School in Belize

Offered in the summer, the UNH Archaeological Field School in Belize is a four-week program where students excavate ancient Maya sites and are trained in archaeological field and lab techniques. Students register for ANTH 675 and earn 8 credit hours. Assisted by program staff, each student chooses a topic of original field research to focus on (e.g., analyses of a particular artifact class, architecture, excavation, or survey results from the project). The program is directed by Eleanor Harrison-Buck, assistant professor of anthropology, who has worked on archaeological projects in Belize and Guatemala since 1992. The program is administered by the COLA Center for Study Abroad. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/belize-field.
Archaeological Survey and Mapping in Belize

A January-term course, Archaeological Survey and Mapping in Belize (ANTH 674, 4 credits), offers students hands-on training in survey and mapping techniques, as well as digital cartography using ArcGIS mapping software. This program is also administered by the COLA Center for Study Abroad and directed by Eleanor Harrison-Buck. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/belize-mapping.

Brazil

University of São Paulo Ribeirão Exchange Program

Focused studies in all aspects of music with immersion in Portuguese language and Brazilian culture. This exchange with University of São Paulo Ribeirão Preto grew out of collaborations between UNH’s and USP-RP’s Departments of Music, and offers small group interaction with professors and Brazilian students, and participation in extra-curricular activities, including Filarmônica, Jazz Band, Grupuri (percussion group), and several choirs. This is an ideal exchange for independent students wanting to travel abroad and continue work on their music major. Ribeirão Preto is a city in the northeastern region of the state of São Paulo, Brazil, nicknamed Brazilian California because of its wealth, agribusiness, and high-tech economy, and year-round sunny weather. Ribeirão Preto is a city of immigrants (in large part Italian) known for its coffee and sugar cane farms, basketball, outstanding theater venues, and, of course, its university. The University of São Paulo Ribeirão Preto (USP-RP) is a modern campus of 10,000 students located two miles from the city center. Contact the Center for International Education, Hood House, (603) 862-2398, email international.exchange@unh.edu or visit www.unh.edu/cie.

Canada

National Student Exchange

Students may spend one or two semesters at one of ten campuses in Canada, through the National Student Exchange (NSE) program. While having the opportunity to learn in a Canadian environment, participants maintain their status as UNH students, pay UNH tuition, and will be able to graduate from UNH on schedule. The exchange is open to students from all UNH majors. Participants must provide proof of proficiency in French for Francophile campuses in Quebec. Interested students should contact Paula DiNardo, National Student Exchange Office, 106 Hood House, (603) 862-3485, or visit www.unh.edu/nse.

China

Chengdu Spring Program

Semester study of Chinese language and culture at Chengdu University. Upper-level students in the Chinese language program as well students in other colleges will spend a full semester in China learning Chinese language and culture first-hand. Chengdu has a population of 14
It is one of the most advanced metropolises in China's southwest. Students immersed in such a city for a semester will not only improve their language skills but will also gain insights beyond what they could learn in classrooms in the U.S. They will have a chance to see the challenges and opportunities facing Chengdu and to compare and contrast China policies and practices with those in U.S. The program is administered through the COLA Center for Study Abroad, and the faculty director is Yige Wang. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/china.

Chengdu Summer Program
This summer short-study program (just under three weeks long) includes travel and intensive Chinese language study at both the beginner and advanced levels at Chengdu University in China. The city of Chengdu is the economic hub for China's southwest. It is also the hometown for the giant Pandas. Forbes Magazine recently ranked the city of Chengdu as the No.1 city with the greatest potential. Students also visit the cities of Beijing and Xian. The program typically runs in late May and early June. It is open to all students; however, space is limited. The program is administered through the COLA Center for Study Abroad, and the faculty director is Yige Wang. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/china-summer.

Chengdu University Exchange Program
Chengdu University in Chengdu, Sichuan Province, China, is UNH’s partner in the Confucius Institute, a non-profit educational institution housed in the College of Liberal Arts that offers a full curriculum in Chinese language and culture. Out of this partnership grew an undergraduate exchange program in which UNH students have the opportunity to study Chinese language and culture in an immersive setting by directly enrolling at Chengdu University. Located in the Shiling Historical and Cultural Scenic Area, the large, gated campus is beautifully landscaped with gardens, ponds, and tree-lined passages with easy access to downtown Chengdu. For more information, contact the Center for International Education, Hood House, (603) 862-2398, e-mail international.exchange@unh.edu, or visit www.unh.edu/cie.

City University Hong Kong Exchange Program
Study abroad in Hong Kong, a vibrant former British colony in southeastern China, famous for its bustling port, tower-studded skyline, and lively food scene. CityU Hong Kong offers professional education that prepares its students for the challenges and exciting opportunities opening up in Hong Kong, the Asia-Pacific region, and throughout the world in business, science and engineering, energy and environment, law, creative media and social sciences. Through its extensive links with relevant industries, CityU provides real-life opportunities for students to work with and learn from professionals in the workplace. CityU is AACSB approved and thus attractive to business majors. Other fields of excellence include political science, engineering, applied social sciences, public policy, and media and communications. Summer
study is available. Interested students should contact the Center for International Education, Hood House, (603) 862-2398, or international.exchange@unh.edu.

Costa Rica

Costa Rica Summer Program (San Joaquin de Flores)

This six-week summer immersion program offers a variety of courses in language and culture taught by professors from the University of Costa Rica and the National University. The program combines two Spanish courses, cultural field trips, and weekend trips. Classes meet daily Monday through Friday. Students live with Costa Rican families. Upon the completion of the program, students earn the equivalent of up to 8 credit hours. The program is administered by the COLA Center for Study Abroad, and the faculty director is Lina Lee. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/costa-rica.

Agriculture and Development in the Neotropics (SAFS 510)

This course is designed as a three-week immersion into tropical agriculture and Costa Rican ecology and culture. Agriculture plays a pivotal role in Costa Rica's history and in shaping current events. Production of horticultural and agronomic crops occurs on a variety of scales ranging from large export-based systems, to mid-sized operations for domestic sales, and sustenance-based home gardens. Examples of all systems will be visited and discussions will focus on their overall sustainability. Sustainability is a broad concept and requires consideration of socio-cultural, environmental, and economic factors. Agriculture and agricultural products infuse the culture as seen by large participation in farmers markets and appreciation for a wide variety of fruits and vegetables prepared in myriad ways. An appreciation for nature also infuses the culture and is embodied by the country's extensive system of national parks and protected reserves along with the national philosophy of "Pura Vida." At the same time, there exists a delicate balance between agricultural development and preservation of biodiversity. Through visits to Costa Rica's major bioregions, the course explores their major agricultural activities and how those activities interface with local ecological systems, cultures, and economies.

Dominican Republic

Perspectives on the Business Environment in the Dominican Republic (MKTG 598/MKTG 798)

Offered in January term, MKTG 598/MKTG 798, Perspectives on the Business Environment in the Dominican Republic, is a 4-credit course open to all UNH students. Students will participate in a 13-day visit to Santo Domingo in the Dominican Republic, one of the commercial hubs of the Caribbean. The course will include two pretrip classes held in the fall, in which the students will learn about the business culture of the country, as well as a brief introduction to its history and current demographics. The group will travel to Santo Domingo where four hours of each weekday (32 contact hours) will be devoted to meeting with business owners and managers
from a variety of industries who will discuss business practices. Upon return to Durham, a final three-hour class will be held in the spring semester to wrap up, assess the learning outcomes, and conclude the experience. Contact Audrey Ashton-Savage, the instructor for this course, at aeu65@unh.edu.

Social Action in the Dominican Republic: Exploring Culture, Poverty, Human Rights, and Social Justice in a Developing Caribbean Nation (SW 697/897)
This course examines issues of culture, poverty, social development, and social justice in the Dominican Republic through direct service learning work and preparatory and reflective class sessions and discussions. Students will have the opportunity to examine development issues that have plagued the island nation for years and current efforts to address these concerns. During spring break, students and a UNH faculty member embark on a service learning adventure to work in the bateyes of the Dominican Republic. Past projects have included the building of schools, clinics, community centers, and residential houses. Additionally, students will be working in local schools, orphanages, and child welfare centers. Afternoons and evenings will be spent learning about social services in the DR from community leaders and activists, participating in cross-cultural activities with community members, learning about Dominican life and history, and reflecting upon the days’ activities. Students will visit other local Haitian immigrant communities (bateyes), spend an evening in Santo Domingo, spend a night with a local family, and much more.

England
Cambridge Program
For six weeks each summer, students from across the United States have the opportunity to participate in the UNH Cambridge Summer Program held at Cambridge University in England. Program participants choose from courses in literature, writing, history, and humanities, taught by faculty from Cambridge University and UNH. Students live and study at Gonville and Caius College, one of the oldest colleges at Cambridge University, and travel on excursions throughout the UK. The program is open to students who have successfully completed at least one year of college. Participation fulfills UNH’s Discovery Program requirement in World Cultures. Select courses also satisfy Humanities and Historical Perspectives Discovery Program Requirements. The program is administered by the COLA Center for Study Abroad, and the faculty director is Dennis Britton. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/cambridge.

Lancaster University Exchange Program
Lancaster University is a comprehensive university similar to UNH in size, setting, and program offerings. The program allows students to spend a semester or a year in Lancaster while still making normal progress toward their UNH degree. Lancaster enjoys a diverse campus and is
centrally located for travel to Scotland, Wales, Ireland, and London. Contact the Center for International Education, Hood House, (603) 862-2398, e-mail international.exchange@unh.edu, or visit www.unh.edu/cie.

London Program
The London Program offers students the chance to spend either the fall or spring semester at Regent’s University in the heart of London, choosing from courses in British studies, the arts, humanities, social sciences, business, and a wide range of other basic subjects. Taught by British and American faculty members, many of the courses are specifically concerned with British studies or have a special British emphasis. The program allows students to spend a semester or year in London while still making normal progress toward their U.S. degrees. The program is administered by the COLA Center for Study Abroad, and the faculty director is Doug Lanier. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/london.

The London Experience
This course provides a wonderful opportunity to learn about one of the greatest cities in the world. Travel to the United Kingdom for nine nights/ten days during the January term. See the many amazing historical and cultural sights and take in some of the best theatre in the English-speaking world. A side trip to either Stratford upon Avon or Bath is also part of the itinerary. The course offers insight into the politics, society, and culture of London and the United Kingdom as students walk, tube, and double-decker bus their way through 2000 years of history. The course can be taken for either 2 or 4 credits. The 4-credit option fulfills the Fine and Performing Arts Discovery requirement. This program is administered by the COLA Center for Study Abroad, and the faculty director is David Kaye. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/london-experience.

London Travel Writing
Travel writing is for the adventurous. In three weeks, students will learn to navigate London, one of the world’s greatest cities, and craft compelling, vivid essays about what they’ve discovered. Through curiosity, research, and writing they will transcend from tourist to traveler, gaining a confidence in their ability to master the unfamiliar as well as pen publishable stories about place. Prerequisite of ENGL 501 or permission of instructor. This program is administered by the COLA Center for Study Abroad, and the faculty director is Susan Hertz. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/london-writing.

Europe
Study Abroad: Comparative Social Welfare Systems, SW 775/885
Students studying abroad on SW 775/885, Study Abroad: Comparative Social Welfare Systems, examine the historical development of social welfare in another country, including an analysis of the underlying values and attitudes that direct practice and policy decisions. This 4-credit class includes agency site visits, lectures, themed readings, and visits to important cultural sites. Prerequisites are SW 424 and SW 525. Previous programs have visited Ireland, England, Scotland, and Latvia.

France

Dijon Program

The Dijon Program offers students the chance to spend their junior year or a spring semester in Dijon, France. Students enroll directly in the Université de Bourgogne (University of Burgundy), where they will take courses alongside French students, or at the CIEF (Centre International d'Etudes Françaises), which hosts students from around the world. Students generally live with French families in the heart of this historic city. Credit for all work completed successfully, up to 16 credits, will be automatically transferred to UNH. The program is open to those French majors who have completed FREN 631-632 and FREN 651-652 or equivalent, and to French minors who have completed FREN 631-632 and FREN 651 or 652 or equivalent. The program is administered by the COLA Center for Study Abroad, and the faculty director is Claire Malarte-Feldman. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/dijon.

Dijon Summer Program

The Dijon Summer Program provides the opportunity to spend four or eight weeks in Dijon, France, taking the equivalent of one or two of the following courses at the Centre International d'Etudes Françaises (CIEF): FREN 503, 504, 631, or 632. An eight-week summer option is also available in the form of FREN 691 to French double majors who cannot spend a semester abroad for documented reasons. The pre-requisites for FREN 691 are FREN 631,632, 651, and 652. This course is worth 8 credits and consists of eight weeks of intensive French literature, culture, and civilization courses at the CIEF at the Université de Bourgogne in Dijon, France. The program is administered by the COLA Center for Study Abroad, and the faculty director is Claire Malarte-Feldman. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/dijon.

EcoGastronomy International Experience, Spring Semester in Dijon, France

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. The table is set spring semester in Dijon, where students will study the links between food cultures, sustainably-focused agriculture, and the policies and issues impacting the food system. Courses include: French Art of Living, Wine Product and Tasting, Food and Wine Tourism, Entrepreneurship, and French as a Foreign Language. EcoGastronomy study abroad programs are open to all UNH students.
German-Speaking Countries

Students may study for a semester or a full year through any approved American study abroad program or, in special cases, by applying directly to universities in Germany, Austria, or Switzerland. Many programs require a minimum grade-point average of 3.0 and a B average in the major. Programs vary greatly in academic focus, size, language of instruction, living arrangements, services, and extra-curricular programming provided, and cost. Study abroad goals and requirements should be discussed with a German adviser as early as freshman year. Program and application materials may be obtained through the Center for International Education in Hood House. For credit in the German major or minor, the program must be conducted in German. After consultation with the major adviser and the study abroad adviser to establish possible UNH course equivalents and fulfillment of major and/or Discovery Program requirements, students submit a planning form indicating the planned course of study abroad. To ensure proper credit transfer, especially if seeking to transfer credits directly from a university abroad without benefit of an American program, students should keep syllabi, course descriptions, and all written work. Students planning study at a university in Germany, Austria, or Switzerland should note major differences in academic calendar (winter semester October-February, summer session April-July), which may be shortened by the American-sponsor university to accommodate U.S. academic calendars.

Berlin Program

The Berlin Summer Program offers students the chance to spend five weeks in Berlin, Germany. Students earn 4 or 8 credits through German 586, designed to give students an immersion experience in the German language and culture. Students will receive eighty hours of intensive language instruction at the appropriate level (elementary, intermediate, or advanced) at the BSI Private Language School in central Berlin. No prior German language study is required. On designated weekday afternoons, students will gather for cultural excursions and discussions with the on-site UNH faculty member. Students enrolling for 4 credits can receive the UNH German Program language course equivalent of one semester of language study. Students enrolling for 8 credits will receive the UNH German Program language course equivalent of one semester of language study as well as engage in additional UNH faculty-guided cultural study, fulfilling German 525 (Discovery World Cultures) or other pre-approved courses. Students may fulfill the bachelor of arts language requirement by taking the equivalent of Intermediate German at the BSI Language School or by taking the equivalent of the first semester of Elementary German with the program and then independently continuing language instruction at the BSI for one month beyond the program study period, for a total of 8 weeks. Required pretravel meetings at UNH will prepare students for the Berlin experience. In line with UNH’s goals to educate students to become global citizens, this immersion experience will give students insight into what it means to experience a different culture and language. The program is administered by the COLA Center for Study Abroad, and
the faculty director is Mary Rhiel. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/berlin.

**Intensive Language Courses through the Goethe Institut**

Students needing to advance rapidly in proficiency beginning at any level and at any time of year may enroll at a Goethe Institut center in Germany for courses ranging from eight to 16 weeks and receive UNH equivalent credit depending on level of exam passed upon completion of course. UNH’s faculty contact is Mary Rhiel, (603) 862-0063, or the Center for International Education, (603) 862-2398, or study.abroad@unh.edu.

**German Internship**

Students who have completed GERM 504 or equivalent may apply for a 4-8 credit internship placement in a German-speaking firm or organization. The internship does not alone fulfill the study abroad requirement for the major, but may count toward the minor and may be coupled with academic course work through UNH or any study abroad program to fulfill the major study abroad requirement. The faculty contact person is Mary Rhiel, (603) 862-0063.

**Ghana**

**Ghana Program**

The Ghana Program is a spring semester program at the University of Ghana, one of West Africa’s most prestigious universities. With more than 30,000 students at its campus in Legon, a suburb of Accra, Ghana’s capital city, the University of Ghana offers students a broad range of exciting educational and cultural opportunities. Politically stable, safe, and with English as its official language, Ghana provides an excellent vantage point for experiencing sub-Saharan Africa and for a rich and deep study-abroad experience. All courses are taught by University of Ghana faculty in English, and courses are available in a very wide range of fields. The program is administered by the COLA Center for Study Abroad, and the faculty director is Burt Feintuch. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/ghana.

**Global Health in Ghana (N794)**

Offered during January term, N794, Special Topics: Global Health in Ghana, is a 2-credit course that provides for an immersive, active learning experience in the Ghanaian health care system focusing on the challenges of rural care in the context of a rapidly developing country. This short-term study abroad course aims to immerse students in the culture and health care system of Ghana, offering an experiential learning opportunity to meet the course objectives. Contact Gene Harkless, chair of Nursing, at gene.harkless@unh.edu.

**Global E3 Engineering Exchange Program**

Global E3 allows engineering students to enjoy a fulfilling study abroad experience at one of 31 international member institutions. Through participation in the program, Global E3 graduates
Grenada

**Tropical Coastal Plant Ecology in Grenada, West Indies (MEFB 616)**

Offered during January term, this 4-credit course is for students with an interest and background in botany, coastal ecology and restoration, and conservation. Prerequisites include BIO 411/412. This field-based course taught in Grenada, West Indies, will provide an introduction to the physical, chemical, and biological processes that form and sustain tropical coastal plant communities with an emphasis on mangroves and seagrasses. Plant adaptations to various environmental stresses will be examined over a range of habitats. As a dynamic ecosystem affected by both natural and anthropogenic disturbances from hurricanes to large-scale development, major environmental impacts and pressures will be examined first hand, and conservation and management actions will be discussed. A variety of on-going, community-based coastal habitat restoration and ecological monitoring sites will be visited throughout the island. Student participation in management actions will be encouraged through interaction with local students, volunteers, and representatives from governmental environmental agencies and several non-governmental organizations. Contact Gregg Moore in the Department of Biological Sciences at gregg.moore@unh.edu for more information.

Hungary

**Justice Studies Budapest Program**

The Justice Studies Budapest Program, offered in the fall, is designed to introduce students to a broader appreciation of the cross-cultural perspective in justice studies. Each fall, twelve UNH students spend the semester in residence at the Corvinus University of Budapest in Hungary. Hungary offers students an opportunity to witness first-hand the evolution of a criminal justice system within a context of significant cultural, political, economic, and social change with a member of the justice studies faculty. Situated along the Danube in one of central Europe’s oldest cities, Corvinus offers a unique educational experience to students interested in the study of criminology, law and society, and the administration of justice. Under the supervision of a UNH faculty member also in residence, students carry a four-course load,
two of which are taught by the UNH faculty member. The program satisfies Humanities, Historical Perspectives, and World Cultures Discovery Program Requirements. All courses are taught in English.

Eligible students must hold sophomore standing, have completed either SOC 515 or POLT 507, and one other course in the justice studies curriculum. Participating students will meet several times during the spring semester prior to the study abroad semester to prepare for the program. The program is administered by the COLA Center for Study Abroad, and the faculty director is Charles Putnam. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/budapest-justice.

**Humanities Spring Budapest Program**

The Humanities Budapest Program, offered in the spring, is available to any undergraduate at UNH interested in living and studying in the historically rich city of Budapest. The program is designed to provide undergraduates with an intensive study abroad experience focusing on the humanities, and modern Hungarian and Central European history and culture. Students will earn 16 credits in courses taught by Hungarian and University of New Hampshire faculty, and through field trips to cultural sites in and around Budapest as well as other Central European cities. The program satisfies Humanities, Historical Perspectives, Fine and Performing Arts, and World Cultures Discovery Program Requirements. Students will be introduced to Hungary’s rich history and culture and to some of the most significant developments of the 20th and early 21st centuries, including the rise and fall of Soviet domination of Central Europe, revolution and democratizing in Hungary, and the significance of Hungary’s membership in the European Union. All courses are taught in English. The program is administered by the COLA Center for Study Abroad, and the faculty director is Stephen Trzaskoma. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/budapest-humanities.

**PAUL in Budapest**

The Peter T. Paul College of Business and Economics (PAUL) has partnered with the Corvinus University of Budapest to offer students a unique opportunity to live and study in Budapest. This partnership allows PAUL students to take courses at Corvinus in the fall semester that directly transfer into the core of the business administration or economics degrees and into most business options. This ensures that students can study abroad and graduate on time. Moreover, Budapest is developing into a commercial and financial center for many U.S. companies; its importance for the U.S. economy is growing rapidly.

Students travel to Budapest in the third week of August. A PAUL faculty member meets students in Budapest and sets them up in apartments in the city that are close to the University. The school works to make the transition to life in a foreign culture as simple and easy as
possible. Additionally, the program offers three major excursions to differing parts of Hungary and to Krakow, Poland, and the Auschwitz concentration camps. For more information about this program, please contact Professor Bruce Elmslie at bruce.elmslie@unh.edu.

**Ireland**

*Integration of Culture and Agriculture in Ireland: Past, Present, and Future (ANSC 510)*

What was the worst natural disaster in 19th century Europe? What characterizes Ireland's agriculture in the 21st century? In this interdisciplinary course, students examine the cultural, historical, political, economic, and religious influences on Ireland's agriculture. The crowning experience of the course, a 10-day study abroad in late May, provides students with a window to the world as they experience the culture, agriculture, and topography of Ireland. Students will immerse themselves in local Irish history and culture as they tour working agricultural farms and significant landmarks. For more information, contact Patty Bedker at patty.bedker@unh.edu.

**Study Abroad in Athletic Training**

This UNH study abroad program is open to athletic training majors who are interested in expanding and enhancing their athletic training education while also gaining an appreciation of a different culture. Students will be taking courses in the bachelor of science (honours) in sports rehabilitation and athletic therapy program at the Institute of Technology at Carlow. The increased emphasis on manual therapy application and skill by therapists in Ireland will provide the visiting UNH student with a unique opportunity to develop abilities far-beyond what they may learn in the U.S. Students may earn up to 16 credits applicable to their UNH graduation requirements. Students pay their normal UNH tuition (in-state or out-of-state as appropriate) as the tuition to study in Ireland.

The Institute of Technology at Carlow has a student body of approximately 4,000 and an academic staff of 200. The mission of the Institute is to combine a stress-free location with top-level instructors and facilities that are a leading edge in a number of key disciplines both nationally and internationally. The Institute is just five-minutes' walk from the center of town. Located on the banks of the River Barrow, Carlow town is a bustling market center serving a large rural area. Multiple trains and buses travel between Carlow and Dublin daily.

Interested students should contact Daniel Sedory, Dan.Sedory@unh.edu, (603) 862-1831.

**Italy**

*UNH-in-Italy Program*

Students may participate in the UNH-in-Italy Program in the medieval city of Ascoli Piceno, for a semester, a year, or a summer session (see ITAL 685-686).

*Academic Year Program.* Students live in apartments in the heart of the city and take UNH
courses, taught in English, by UNH faculty. Students with advanced language skills may take courses taught in Italian. Internships are possible. There is no language prerequisite. The program is administered by the COLA Center for Study Abroad, and the faculty director is Amy Boylan. For further information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/unhitaly.

**Summer Program.** UNH-in-Italy offers five different summer options. Art and Art History in Italy (4 credits), Music and Language in Italy (7 credits), Intensive Italian (8 credits), Explorations in Nutrition and Culture (8 credits), and EcoGastronomy (9 credits—students participate in the Explorations in Nutrition and Culture Program then spend an extra week earning 1 extra credit in EcoGastronomy). Students live in apartments in the historic center of the city. The program is administered by the COLA Center for Study Abroad, and the faculty director is Amy Boylan. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/llc/program/italy-ascoli.

**EcoGastronomy International Experience, Fall Semester in Ascoli Piceno, Italy**
All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. The table is set fall semester in Ascoli Piceno, Italy, where students will study the links between food cultures, sustainably-focused agriculture, and the policies and issues impacting the food system. Courses include: Food Aesthetics in Italy, Food Technology Processes in Italy, Italian Language, Italian Cinema, The Making of Modern Italy, and Modern and Contemporary Italy. EcoGastronomy study abroad programs are open to all UNH students.

**Rome J-Term Program**
The Rome Program provides the opportunity to take a January term course in Rome, Italy. Students earn 4 credits through Classics 510, Building Rome. Experience the history, architecture, and art history of the ancient Romans the way they did—in Rome itself! Six days of study in the eternal city followed by two days in Pompeii and other sites will give students a sense of the majesty and miracle that was the ancient Roman Empire. A five-day online component prepares students for the on-site portion so that they will be ready to soak in the monuments of the past. This course fulfills the Discovery category for Fine and Performing Arts. The program is administered by the COLA Center for Study Abroad, and the faculty director is Scott Smith. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/rome.

**The UNH Manchester Florence Summer Program**
The UNH Manchester Florence Summer Program enables UNH students to earn 8 credits while living for six weeks in Florence, Italy, the birthplace of the Renaissance. The program is located in the beautiful and historic Rucellai Palace in central Florence, and is offered in
collaboration with the Institute at Palazzo Rucellai. Students are housed in fully-furnished, centrally-located apartments, close to all of Florence’s most famous landmarks, such as the Duomo, the Ponte Vecchio, the Uffizi Gallery, and Piazza della Signoria. Students take two courses, one of which is the UNH course, POLT 557: Politics in Italy. Students choose their second course from the offerings of the Institute at Palazzo Rucellai’s distinguished faculty. All courses except Italian language and literature are taught in English. Contact Melinda Negron-Gonzales for more information at melinda.negron@unh.edu, (603) 862-4364.

Japan

Saitama University Exchange Program

Accelerated Japanese language learning on Saitama University’s park-like campus, just outside Tokyo. With its moderate size (9,000 students), generous scholarship opportunities, dynamic student life and recreation facilities, Saitama is an ideal fit for UNH students interested in Japanese language and culture. The university also has a wide variety of courses taught in English, which draws students from around the world. Saitama is known as the "Oasis of Tokyo”—a historic city whose forests were planted centuries ago by peace-loving Samurais who nurtured the land instead of living by the sword. Saitama is the famous backdrop for Japanese animated films. Located in the Okubo neighborhood of Saitama City, the university’s tree-lined campus is an enjoyable place to study. From campus, you can view the skyscrapers of Saitama’s city center, the majestic peak of Mt. Fuji and the Chichubu Mountains, and you can easily take the train to Tokyo to enjoy the amazing cultural offerings of this world-class city, less than an hour away. Contact the Center for International Education, Hood House, (603) 862-2398, email international.exchange@unh.edu or visit www.unh.edu/cie.

Waseda University Exchange Program

Study abroad at one of Japan’s "Ivy League" universities while paying UNH tuition. Spend a semester or academic year studying in central Tokyo, with over 50,000 students, including 5,000 international students from more than 100 countries. UNH students can enroll in a wide range of courses in English in the liberal arts, business, social sciences, political science and economics, and of course, Japanese language and culture. Waseda has a unique volunteer center, which combines lectures with hands-on activities in the field. They offer a wide range of projects in which students take a leading role. Interested students should contact the Center for International Education, Hood House, (603) 862-2398, or international.exchange@unh.edu.

Nepal

Special Topics: Global Health in Nepal (N794)
Independent Study: Global Health in Nepal (N894)

This 2-credit course provides for an immersive, active learning experience in the Nepali health care system. The course will examine the health status of individuals, families, and communities through the lens of culture and the social determinants of health, in addition to the
Western medical model. The course objectives include: understanding the major causes of morbidity and mortality in Nepal; critically examining the health care system in Nepal for its strengths and weaknesses in addressing the major causes of morbidity and mortality; analyzing the influence that culture and the social determinants of health have on the health status of individuals, families, and communities in Nepal; interacting with health care workers in Nepal to understand their clinical challenges and successes. This short-term study away course aims to immerse students in the culture and health care system of Nepal, offering an experiential learning opportunity to meet the course objectives.

The Netherlands

Utrecht University Exchange Program

The Center for International Education administers an exchange program with Utrecht University, open to undergraduate and graduate students in all fields. Utrecht University is one of the top research universities in Europe, with the largest undergraduate population and the largest research budget in the Netherlands. The size, status, and international population of the university ensure that courses in all areas of study are offered in English; these include the humanities, social and behavioral studies, law, economics, governance, and geosciences. Contact the Center for International Education, Hood House, (603) 862-2398, e-mail international.exchange@unh.edu, or visit www.unh.edu/cie.

University College Utrecht Exchange Program

An honors exchange is available at the University College Utrecht (UCU), which is an international Liberal Arts and Sciences Honors College of Utrecht University. UCU's mission is to offer ambitious students an academic environment aimed at transforming their broad academic and social interests and their international orientation into academic excellence, intellectual independence, and world citizenship. Students have access to all academic, social, and recreational facilities that Utrecht University has to offer.

UCU specializes in undergraduate education. Students choose from courses in humanities, science, and social sciences, and they are educated in the spirit of liberal arts. Among the special characteristics are the college's small classes and individual attention.

Located in an especially lovely section of central Holland, Utrecht is the fourth largest city in the Netherlands. It has a classically old-Dutch city center with 17th century buildings, a medieval church, several high-quality museums, and terraced canals that encircle the old city. A university town since the medieval period, Utrecht has long enjoyed a vibrant student culture. Utrecht is easily navigable by foot, bicycle, and bus; the center of the Dutch rail system, it enjoys easy access to other cities in the Netherlands and Europe (Amsterdam is 35 minutes away; Paris three hours; London a day trip by plane). Interested students should contact the Center for International Education, Hood House, (603) 862-2398, or
New Zealand

UNH-EcoQuest, New Zealand

In partnership with the UNH Department of Natural Resources and the Environment, the EcoQuest Education Foundation offers an intensive program of applied field studies in ecology, resource management, and environmental policy. New Zealand offers an ideal context for multidisciplinary, field-oriented studies, with its rich cultural traditions, diverse ecosystems, expansive natural areas, and history of innovative approaches to resource management. EcoQuest students engage hands-on in New Zealand’s restoration ecology and sustainable resource management initiatives. Semester participants have the opportunity to carry out directed research projects while working closely with a faculty mentor and in association with New Zealand research partners. The rural seaside campus is located about an hour’s drive southeast of Auckland. Students travel throughout New Zealand’s North and South Islands to learn more about the unique ecosystems and local culture.

Students may choose either a four-course, 15-week fall or spring term for 16 credit hours, or a two-course, five-week summer session for eight credit hours. The UNH-EcoQuest Academic Program Coordinator is Kimberly Babbitt. Contact Donna Dowal, EcoQuest Director of Admissions, at (603) 862-2036 or ecoquest@unh.edu for more information.

Portugal

Classical Dressage Experience in Portugal (ANSC 520)

A faculty-led short-term program, students take ANSC 520: Classical Dressage Experience in Portugal, a 2-credit class with a weekly seminar preparing students for one week in Portugal where they receive classical dressage training at L’Escola de Equitação de Alcainça during spring break or at the end of spring semester after exams. For more information go to http://www.equine.unh.edu/ANSC520.

Russia

Russia Program

This is a four-week summer program in Russian language, culture, mythology, and propaganda in Moscow, St. Petersburg, and on the Trans-Siberian Railway. Studying in the current and former capitals of Russia and the largest city in Europe gives students a profound image of the country, its language, and culture, as well as an overview of recent and ancient history. It is an opportunity for an intensive dose of authentic Russian culture. Prior to departure, students will work on Blackboard with readings and films. In Moscow and St. Petersburg, there will be field trip classes and special lectures. Upon return, students will complete their work on Blackboard and on a project. Students will earn 8 credits through Russian 425 (Discovery World Cultures) and Russian 525 (Discovery Historical Perspectives). The program is administered by the
COLA Center for Study Abroad, and the faculty director is Arna Bronstein. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/russia.

Scotland
Heriot-Watt University Exchange Program
College of Engineering and Physical Sciences students are eligible to participate in a spring semester exchange with Heriot-Watt University in Edinburgh, Scotland. Heriot-Watt is one of the UK’s leading universities for business and industry and has a reputation for innovative education, enterprise, and leading-edge research in science, business, engineering, and design. Often referred to as Scotland’s international University, a third of on-campus students in Scotland come from outside the UK, there are campuses in Dubai and Malaysia, and 50 international academic learning partners in 30 countries. The current program is designed for civil and environmental engineering majors. For more information, contact Ray Cook at (603) 862-1411, or e-mail ray.cook@unh.edu.

South Korea
Pusan National University Hong Kong Exchange Program
Study abroad in Busan, South Korea’s beautiful second city, known for its beaches, mountains, and temples. Pusan National University is one of Korea’s leading research universities and provides a full curriculum of 600 courses offered in English for UNH students of most majors. Pusan is particularly well known for business, STEM fields, and global studies, as well as its campus life and extra-curricular opportunities. Summer study is available. Interested students should contact the Center for International Education, Hood House, (603) 862-2398, or international.exchange@unh.edu.

Spain
Granada Program
The Granada Program is a spring semester program in Granada, Spain. The program is designed for those who have completed SPAN 631 or its equivalent and have a B average in Spanish, but may be open to intermediate-level students by petition. Many of the courses taught by professors from the University of Granada fulfill requirements for the Spanish major and minor and UNH Discovery Program requirements. Students generally live with host families and take courses at the Centro de Lenguas Modernas at the Universidad de Granada. The program is administered by the COLA Center for Study Abroad, and the faculty director is Lina Lee. For further information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/granada.

Universidad Carlos III de Madrid Exchange Program
Study abroad in Madrid, Spain’s historic and artistic capital that never sleeps. Universidad Carlos III de Madrid, named after a former king of Spain, offers a dynamic campus of 18,000
students and the largest offering of courses taught in English in Spain. Courses are available in the areas of engineering, business (AACSB accreditation in process), finance, accounting, economics, and political science. Interested students should contact the Center for International Education, Hood House, (603) 862-2398, or international.exchange@unh.edu.

**U.S. Territories (Puerto Rico, U.S. Virgin Islands, and Guam)**

Students may spend one or two semesters at one of 12 campuses in the U.S. Territories of Puerto Rico, U.S. Virgin Islands, and Guam through the National Student Exchange (NSE) program. Participants maintain their status as UNH students, pay UNH tuition, and will be able to graduate from UNH on schedule. The exchange is open to students from all UNH majors. Participants must provide proof of proficiency in Spanish for all campuses in Puerto Rico. For more information contact, Paula DiNardo, National Student Exchange Office, 106 Hood House, (603) 862-3485, or visit www.unh.edu/nse.

**Cruise Ship Management (HMGT 698)**

Offered in January term, this 4-credit course explores through text and on-board experience key areas of cruise ship management: food and beverage, HR, finance, yield management, front office, housekeeping, safety, security, sanitation, and interporting. Students will participate in a 12-day cruise that sails round trip from New York City, after brief class time in Durham during the fall semester. HMGT 698 counts as an elective for majors and minors in hospitality management. For more information, contact Carl E. Lindblade, affiliate professor, Department of Hospitality Management at Carl.Lindblade@unh.edu.

**Wales**

**Cardiff University Exchange Program**

Study abroad at one of the UK’s "Ivy League" universities while paying UNH tuition. Founded in 1883, Cardiff University is recognized as one of the leading research and teaching universities in the UK and a member of the Russell Group, the UK’s "Ivy League" of world-class universities. Spend a semester or academic year studying at Cardiff and benefit from learning with professors who are pioneers in their fields. Over 27,000 students have been drawn to Cardiff University, coming from Wales, the rest of the UK and more than 100 countries. UNH students can enroll in a wide range of courses and are guaranteed housing in student halls of residence, living among British and other international students. The University boasts over one hundred clubs, sporting teams, and societies. Cardiff University is located in the center of the capital of Wales, an exciting and diverse city and the heart of Welsh history, culture, street life, and politics. There is something for everyone in the Welsh capital, with the excitement of the small city campus located just minutes from the beautiful coastlines, hills, walking trails, and green countryside for which Wales is famous. Interested students should contact the Center for International Education, Hood House, (603) 862-2398, or international.exchange@unh.edu.
Other Programs

Aerospace Studies (AERO)

» Click to view course offerings

Please refer to Reserve Officer Training Corps Programs for more information.

» Click to view course offerings

Military Science (MILT)

» Click to view course offerings

Please refer to Reserve Officer Training Corps Programs for more information.

» Click to view course offerings

Reserve Officer Training Corps Programs (ROTC)

Students attending the University of New Hampshire may enroll in the Air Force Reserve Officer Training Corps (AFROTC) or in the Army Reserve Officer Training Corps (AROTC) at the University.

The Army ROTC and Air Force ROTC offer programs leading to a commission as a second lieutenant in their respective services. Students in either ROTC program may pursue any University curriculum that leads to a baccalaureate or higher degree.

Two- and four-year programs are available. The four-year program is open to freshmen, sophomores, and transfer students. The two-year program is open to students who have at least two academic years remaining in their college/university degree program. In addition to on-campus course requirements, students must attend an officer-preparatory training session for a part of one summer.

ROTC scholarships are offered on a competitive basis by both the Army ROTC and Air Force ROTC. Entering freshmen may compete for four-year scholarships during their last year of high school. Additionally, incoming students may compete for scholarships while already in college if
they meet specific ROTC requirements. Scholarships may pay up to full tuition, mandatory fees, and required textbooks for college courses. Incoming students with either a four-year or three-year ROTC scholarship may receive a full or partial room and board grant for the entire time they are on an ROTC scholarship. In addition, all scholarship recipients receive a tax-free monthly subsistence allowance. Non-scholarship students in the last two years of the ROTC program also receive the tax-free monthly subsistence allowance.

Both ROTC programs have administrative and medical requirements, which must be met to qualify for a scholarship and a commission.

More specific information about ROTC programs may be obtained by contacting Army ROTC at (603) 862-1078 or Air Force ROTC at (603) 862-1480.
Undergraduate Course Catalog 2016-2017
2016-2017 Online Undergraduate Course Descriptions

Use the Real Time Course Information or select the course subject below

Quick-find tip: Select course subject. Type Ctrl-F (PC) or Apple-F (Mac) and enter search term. Make sure pop-ups are enabled.

For specific course details, please consult the individual course instructor for your section.

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ADA Acknowledgement | Contact Us
ACFI 501 - Survey of Accounting  
**Credits:** 4.00  
Survey of basic accounting concepts, including exposure to financial statements, accounting processes, decision making, and budgeting. This course is designed for students pursuing a Business Administration minor or exploring basic accounting. No credit for students who have had ADMN 502. Not for Paul College students.

ACFI 620 - Topics in Accounting  
**Credits:** 4.00  
Special topics; may be repeated. Prereq: ACFI 621 or ACFI 723 depending on topics and junior standing.

ACFI 621 - Intermediate Financial Accounting I  
**Credits:** 4.00  
Examination of the nature and applicability of accounting theory and the conceptual framework of accounting. Development of the capacity to address and resolve issues and problems in financial reporting. Topics include valuation and reporting of current and operating assets, and revenue recognition. Prereq: ADMN 502. Students wishing to repeat ACFI 621 must request and obtain departmental approval.

ACFI 622 - Intermediate Financial Accounting II  
**Credits:** 4.00  
Selected topics within financial reporting such as accounting for investments, leases, pensions, and income taxes. Focus on how and why these issues are accounted for in the manner prescribed by current GAAP. Prereq: ACFI 621.

ACFI 640 - Topics in Finance I  
**Credits:** 2.00 to 4.00  
Special topics; may be repeated for a maximum of 8 credits.

ACFI 640W - Topics in Finance I  
**Credits:** 2.00 to 4.00  
Special topics approved as Writing intensive may be repeated for a maximum of 8 credits. Topics include: A) Financial Scandals, Upheavals, and Crises..

ACFI 650 - Wildcat Investment Fund  
**Credits:** 2.00  
Students actively manage the Wildcat Fund, a donor-created fund which consists of cash and stocks. During weekly meetings, students present their stock selections to the group and debate the merits of the presented stocks. Trades are then made accordingly. An officer corps is responsible for structuring and coordinating the group. Students in good standing may retake course up to a maximum of 12 credits. Prereq: permission.

ACFI 701 - Financial Policy  
**Credits:** 4.00  
Development of analytical tools and practical skills for recognizing and solving complex problems of business finance. Working-capital management, capital budgeting, cost of capital, capital structure, and dividend policy. Prereq: ADMN 570.

ACFI 702 - Investments Analysis
Credits: 4.00  

ACFI 703 - International Financial Management  
Credits: 4.00  
Financial management problems facing multinational firms. Primary focus on effects of currency denominations on financial decisions. Prereq: ADMN 570.

ACFI 704 - Derivative Securities and Markets  
Credits: 4.00  
Derivative assets and markets, and their role in business decision-making and portfolio management. Emphasis on practical and theoretical aspects of hedging and speculating using futures and options for both commodities and financial assets, including their market mechanics. Prereq: ADMN 570.

ACFI 705 - Financial Institutions  
Credits: 4.00  
Examination of financial institutions and markets. Emphasis on how institutions create value, the regulatory environment under which they operate, and the role of risk management. Prereq: ADMN 570. Only open to BusAdm: Finance majors. Writing intensive.

ACFI 720 - Topics in Finance II  
Credits: 4.00  
Special topics. Prereq: ADMN 570. May be repeated for a maximum of 16 credits.

ACFI 720W - Topics in Finance II  
Credits: 4.00  
Special topics. Prereq: ADMN 570. May be repeated for a maximum of 16 credits. Writing intensive. Topics include: A) Financial Scandals, Upheavals, and Crises.

ACFI 723 - Advanced Managerial Accounting Concepts and Applications  
Credits: 4.00  
Builds on the basic managerial accounting course by continuing the theme of accounting as a management tool. Emphasis is on cost accounting as a source of data for measuring and improving the economic condition of the enterprise. Newly evolving management themes are integrated into the traditional topics of planning and control, cost analysis, overhead allocation, transfer pricing, and decision modeling. Prereq: ADMN 503.

ACFI 724 - Auditing  
Credits: 4.00  
Philosophy and environment of auditing, with attention to an understanding of the major auditing concepts and objectives and its judgment process. Emphasis on the nature and economic purpose of audits, standards, professional ethics, auditors’ legal liability, internal control, and audit evidence. Includes audit procedures, reports, and computer software. Prereq: ACFI 621. Writing intensive.

ACFI 725 - Financial Statement Analysis  
Credits: 4.00  
Methods and tools of analysis and interpretation of financial statement data. Use of financial information in a variety of decision making situations including a prediction of corporate earnings, debt ratings, and financial distress; lending decisions; risk analysis; and equity valuations. Prereq: ACFI 621 and senior standing.
ACFI 726 - Introduction to Federal Income Tax  
Credits: 4.00  
Federal income tax concepts and law applicable to individuals. Coverage includes taxable income and deductions, passive activities, alternative minimum tax, property transactions and compensation. Prereq: ADMN 502.

ACFI 740 - Topics in Accounting II  
Credits: 4.00  
Special topics. Prereq: ACFI 621 or 723, depending on topics, and senior standing.

ACFI 750 - Internships in Accounting  
Credits: 1.00 to 4.00  
Accounting fieldwork in a business or other type of organization. Supervision provided by the organization, and consultation provided by the faculty sponsor. Written report required. Course credits vary according to the nature of the fieldwork, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits. Cr/F.

ACFI 751 - Internships in Finance  
Credits: 1.00 to 4.00  
Finance fieldwork in a business or other type of organization. Supervision provided by the organization, and consultation provided by the faculty sponsor. Written report required. Course credits vary according to the nature of the fieldwork, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits. Cr/F.

ACFI 752 - Independent Studies in Accounting  
Credits: 1.00 to 4.00  
Student-designed individual research projects, approved by a faculty sponsor. Paper required. Course credits vary according to the nature of the project, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits.

ACFI 753 - Independent Studies in Finance  
Credits: 1.00 to 4.00  
Student-designed individual research projects, approved by a faculty sponsor. Paper required. Course credits vary according to the nature of the project, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits.

ACFI 754 - Honors Seminar in Accounting and Finance  
Credits: 4.00  
Seminar discussions of advanced readings in accounting and finance. For seniors with standing in the honors program.

ACFI 799 - Honors Thesis/Project in Accounting  
Credits: 4.00 to 8.00  
Supervised research leading to the completion of an honors thesis or project in accounting; required for graduation from the honors program in administration for students in the accounting option. Prereq: permission of director of undergraduate programs and Accounting and Finance department chair.
Aerospace Studies

AERO 301 - Leadership Laboratory
Credits:
Taken by all AFROTC cadets throughout enrollment in AFROTC. Command and staff leadership experiences in cadet corps. Air Force customs and courtesies, drill and ceremonies, career opportunities, and life and work of the junior officer. Student leadership potential developed in a practical, supervised laboratory. Cr/F.

AERO 415 - Foundations of the United States Air Force I
Credits: 1.00
Mission and organization of today's Air Force as an instrument of the U.S. national defense policy. Customs and courtesies, officer-ship, and communication foundations are discussed.

AERO 416 - Foundations of the United States Air Force II
Credits: 1.00
Air Force installations, fundamentals of Air Force written and verbal communication, and current events of interest to Air Force Officers are discussed.

AERO 541 - Evolution of United States Air Force Air and Space Power I
Credits: 1.00
The nature of warfare; development of air power from balloons and dirigibles through World War II.

AERO 542 - Evolution of United States Air Force Air and Space Power II
Credits: 1.00
Development of air power from post-World War II through the peaceful use of air power humanitarian efforts; and research and development of present and future aerospace vehicles.

AERO 671 - Air Force Leadership Studies I
Credits: 4.00
An integrated management course emphasizing the individual as an officer/leader in the Air Force. Motivation and behavior, leadership, communication, group dynamics, and decision making in a changing environment. Air Force cases studied.

AERO 672 - Air Force Leadership Studies II
Credits: 4.00
Organizational and personal values; management of forces in change; organizational power, politics, managerial strategy, quality, and tactics; Air Force cases studied.

AERO 681 - National Security Affairs I
Credits: 4.00
Focus on the armed forces as part of American society, emphasizing civil-military relations in context of U.S. policy formulation and implementation. Requirements for adequate national security forces; political, economic, and social constraints on the national defense structure; impact of technological and international developments on strategic preparedness; the variables involved in the formulation and implementation of national security policy.

AERO 682 - National Security Affairs II
Credits: 4.00
Focus on attitudes toward the military, socialization processes, role of the professional military leader-
manager, and military justice and administrative law.

**AERO 695 - Officer Internship (Air Force)**

**Credits:** 4.00

Experiential learning through class and field work in a military environment. Written analysis required. Prereq: AERO 671 (maybe taken concurrently). Permission of department chair required. For AFROTC cadets only. Cr/F.

**AERO 796 - AFROTC Internship**

**Credits:** 1.00 to 4.00

This internship is an Air and Space Studies program which prepares students for careers as Air Force Officers by providing experiential learning in an AFROTC detachment. History or Political Science majors are preferred. The internship is supervised by an Air Force Officer. By permission only. Prereq: AERO 415/416, AERO 541/542, and AERO 671/672.
AFAM 000 - Special Message Placeholder
Credits:

AFAM 690 - Study Abroad in Ghana
Credits: 16.00
Spring semester at the University of Ghana (Legon, Ghana) for juniors and seniors, with coursework available in a wide range of disciplines. Students must be matriculated in a four-year degree program, have a GPA of at least 3.0 have a declared major, and have completed at least 32 hours of credit. Students must attend fall orientation sessions. Consult the Ghana Program Advisor in the Center for the Humanities, Huddleston Hall. Course fee required. Cr/F.
Co-requisites: INCO 588

AFAM 695 - Independent Study in Ghana
Credits: 1.00 to 4.00
Independent study for students in the UNH program in Ghana.

AFAM 795 - Independent Study
Credits: 1.00 to 8.00
Open to qualified sophomores, juniors, and seniors. May include research project, fieldwork or a relevant internship. To be elected only with permission of the coordinator and with qualified supervision. May be repeated up to a maximum of 8 credits.

AFAM XXX - Special message place holder
Credits:
O
Agricultural Mechanization

AM 451 - Welding/Fabrication Technology
Credits: 4.00
Processes and procedures of welding including: Shielded Metal Arc Welding (SMAW), Shielded Metal Arc Cutting (SMAC), Oxyacetylene Welding (OAW), Oxy-Fuel Gas Cutting (OFC-A), Gas Metal Arc Welding (GMAW), Plasma Arc Cutting (PAC), and Gas Tungsten Arc Welding (GTAW). Welding metallurgy and control of distortion. Special fee. Prereq: permission. 2 lec/2-hr rec.

AM 461 - Internal Combustion Engines I
Credits: 4.00
Internal combustion engines (spark-ignited and diesel) and their subsystems with emphasis on their design, how they function, preventive maintenance, and troubleshooting. 2 lec/2-hr rec.

AM 462 - Internal Combustion Engines II
Credits: 4.00
Advanced engine principles and theory. Detailed major failure analysis and overhaul techniques. Prereq: permission, AM 461 or EDUC 461. 2 lec/2-hr rec.

AM 470 - Residential Electricity
Credits: 2.00
Electrical principles, laws, and installation with emphasis on the "National Electrical Code." While modeled at the residential level, concepts and terminology will be applicable to the commercial and light industrial sectors as well. Concepts and methodologies will be supported with design and when appropriate, hands on application to enhance the learning environment. 2 lec/2-hr rec. (half semester course.)

AM 576 - Building Science/Residential Construction
Credits: 4.00
The study of inter-relationship of physical principles that affect the functionality and life span of a building. The materials and methodologies of residential construction. 3 lec/2-hr lab. Special fee.

AM 591 - Studies in Agricultural Mechanization
Credits: 1.00 to 4.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member; credit varies depending on the proposed project/research. Areas may include welding, engines, building construction, electricity, or computers.

AM 592 - Studies in Agricultural Mechanization
Credits: 1.00 to 4.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member; credit varies depending on the proposed project/research. Areas may include welding, engines, building construction, electricity, or computers.
American Sign Language

ASL 435 - American Sign Language I
Credits: 4.00
Introduction to American Sign Language with emphasis on visual receptive and expressive use of
language, as well as providing opportunities for other forms for visual communication such as facial
expression, mime, and gesture. Participants develop their skills through videotapes, classroom
participation, and readings that cover issues important to the Deaf community. A weekly, one-hour
language laboratory is required as part of this course. Limited to 15 students. Special fee. No credit if credit
has been received for COMM 533.

ASL 436 - American Sign Language II
Credits: 4.00
Continuation of ASL 435 and expansion on concepts and principles. Focus on more advanced vocabulary
and patterns of grammar; use of space and modulation of signs to denote aspects of time and location; and
additional information on Deaf culture. A weekly one-hour language laboratory is required as part of this
course. Prereq: ASL 435 or program evaluation. Limited to 15 students. No credit if credit has been
received for COMM 733.

ASL 531 - American Sign Language III
Credits: 4.00
Continuation of ASL 436. Expands on groundwork and grammatical principles established in ASL I and II.
Introduces the sociolinguistics aspects of ASL as it functions within the deaf cultural context. Limited to 15
students. Prereq: ASL 436 or program evaluation. Lab.

ASL 532 - American Sign Language IV
Credits: 4.00
Continuation of ASL 531. Expands on the groundwork and grammatical principles established in ASL I, II,
and III. Introduces the sociolinguistic aspects of ASL as it functions within the deaf cultural context. Areas
of investigation include use of formal versus informal sign register; sign variation by region, age, and
gender; social factors that give rise to code switching; and political and cultural evolution of the U.S. deaf
community. Taught in the target language using the direct experience method. Prereq: ASL 531 or program
evaluation. Limited to 15 students. Lab.

ASL 599 - Special Topics in American Sign Language/Deaf Studies
Credits: 1.00 to 4.00
Selected topics related to American Sign Language and deaf studies that vary by semester. Description
available in departmental office during preregistration. May be repeated for credit (maximum of 8 credits) if
topics differ.

ASL 621 - Advanced American Sign Language Discourse I
Credits: 4.00
Focuses on the use of ASL discourse in formal as well as informal settings. Students explore the genres of
public speaking, artistic expression, formal discussion, interview, and narrative. Development of ASL
vocabulary in specialized areas not covered in previous courses. Prereq: ASL 532. Lab.

ASL 622 - Advanced American Sign Language Discourse II
Credits: 4.00
In this advanced course, students give two PowerPoint presentations on their research on two selected
cutting-edge/current Deaf Studies topics, and are assessed on itemized public speaking skills, grammatical features (linguistics) studies that are a culmination of previous ASL courses, and pragmatic language functions. These presentations are to use high/academic register, appropriate for a large academic audience, demonstrating sensitive awareness of visual acuity and its impact on signing production. Prereq: ASL 621. Lab.
American Studies

AMST 000 - Special Message Placeholder
Credits:

AMST 444B - New Orleans: Place, Meaning, and Context
Credits: 4.00
Course uses literature, essays, film, music, debate, and discussion, to explore the topics of place, history, people, politics, art and literature, and music. Lectures, discussion, assignments, and group projects will touch on issues regarding race, poverty, power, social mobility, gender roles, crime, corruption, energy, and the environment. Special fee. Writing intensive.

AMST 444E - Fly Fishing and the American Experience
Credits: 4.00
The practice of fly fishing may seem like a rather specialized topic for a semester-long course, but it is truly an interdisciplinary pursuit that is based upon a rich literary heritage. The class will begin with readings, while using film, demonstrations, field trips, and service learning, to help define the extent to which fly fishing in America has become intertwined with literature, art, popular culture, biology, environmentalism, and business/technology. On one level, students will learn about fly fishing techniques, stream ecology, and local rivers. And on another level, they will see how the American landscape and ways of thinking have created something quite distinct from its European antecedents. Writing intensive.

AMST 501 - Introduction to American Studies
Credits: 4.00
An introduction to the basic methods used in the interdisciplinary study of history, literature, arts, and other aspects of the life and culture in the United States, with a special focus on a local New England sub-region: the Piscataqua river, Manchester, Boston, Portland, and the White Mountains, with an emphasis on the multiracial, multilingual, and multiethnic nature of New England culture. Disciplinary approaches drawn from literature, history, environmental studies, folklore, material culture, art history, architecture, film, anthropology, and sociology. May include guest lectures, field work, trips. Required for students minoring in American studies.

AMST 501W - Introduction to American Studies
Credits: 4.00
An introduction to the basic methods used in the interdisciplinary study of history, literature, arts, and other aspects of the life and culture in the United States, with a special focus on a local New England sub-region: the Piscataqua river, Manchester, Boston, Portland, and the White Mountains, with an emphasis on the multiracial, multilingual, and multiethnic nature of New England culture. Disciplinary approaches drawn from literature, history, environmental studies, folklore, material culture, art history, architecture, film, anthropology, and sociology. May include guest lectures, field work, trips. Required for students minoring in American studies. Writing intensive.

AMST 604 - Landscape and American Culture
Credits: 4.00
Interdisciplinary study of the perception, representation, and/or construction of nature. Topics vary from year to year and may include: landscapes in nineteenth-century literature and art, colonial mapping of the Americas (traditions of writing and cartography), Native American traditions of land perception, and the twentieth-century emergence of eco-criticism. Writing intensive.
AMST 614 - Native American Studies Topics
Credits: 4.00
The multidisciplinary study of the histories, cultures, and representations of indigenous peoples. Topics vary and may include Native American/Euro-American interactions under colonialism, the so-called "Era of Assimilation," and contemporary issues of sovereignty. May be repeated for a maximum of 8 credits if the subject matter is different.

AMST 615 - Asian American Studies Topics
Credits: 4.00
The multidisciplinary study of Asian American literature, culture, theory, and history. Perspectives may be drawn from gender studies, anthropology, cultural studies, film studies, and medicine. Topics vary and may include the study of contemporary fiction and film, representations of gender, of race and cultural pathologies, and of the ethnic body. May be repeated for a maximum of 8 credits if the subject matter is different.

AMST 620 - Internship
Credits: 1.00 to 8.00
Supervised internship with a governmental agency, private corporation, philanthropic institution, library, archives, museum, historical society, publishing company, or other institution seeking individuals interested in historical research, community development, or careers in education. Repeatable for a maximum of 8 credits. Permission required. Cr/F.

AMST 696 - Special Topics
Credits: 4.00
Focused study of an issue, problem, or theme in American Studies. Topics vary. For example: Black Protest in the 1960's, the rise of consumer culture, domestic art, architecture and suburban planning. Barring duplication of subject, course may be repeated for credit. For details see the coordinator. Prereq: AMST 501, and another AMST course, or permission. Writing intensive.

AMST 697 - Seminar in American Studies
Credits: 4.00
Open to qualified juniors and seniors, with permission of the coordinator and the instructor. Intensive study of a specialized topic that varies from year to year. Enrollment in the seminar is limited to 15 so that all students can take an active part in the discussion and work closely with the instructor on their papers. Barring duplication of subject, course may be repeated for credit. For details see the coordinator. Prereq: a grade of B or better in AMST 501, completion of at least two other courses in the minor, permission. Not offered every year.

AMST 795 - Independent Study
Credits: 1.00 to 8.00
Open to qualified juniors and seniors. May include fieldwork or an internship at a museum, library, historical society, etc. To be elected only with permission of the coordinator and with qualified supervision. May be repeated up to 8 cr.

AMST XXX - Special message place holder
Credits:
Analytics

DATA 557 - Introduction to Data Science and Analytics
Credits: 4.00
An introduction to data science and analytics. The landscape of analytics, including an overview of industries and sectors using analytics or expected to use analytics in the near future. Data generation, data management, data cleaning, and data preparation. Ethical use of data. Focus on visual and exploratory analysis. Project-based, with an emphasis on collaborative, experiential learning. Programming and statistical software will be used, but previous experience is not required.

DATA 674 - Predictive and Prescriptive Analytics I
Credits: 4.00
A first course in predictive and prescriptive analytics. Supervised learning models including linear models and CART models. Model assessment and scoring methods, including cross-validation. Regularization and model tuning. Unsupervised learning models including k-means clustering. Project-based, with an emphasis on collaborative, experiential learning. Statistical software will be used and programming required. Prereq: MATH 425, COMP 490, DATA 557, or permission of the instructor.

DATA 675 - Predictive and Prescriptive Analytics II
Credits: 4.00
A second course in predictive and prescriptive analytics. Time series analysis and model ensembles. Bootstrapping, simulation, optimization. Monte Carlo methods. Project-based, with an emphasis on collaborative experiential learning. Statistical software will be used and programming required. Prereq: DATA 674 or permission of the instructor.

DATA 690 - Internship Experience
Credits: 3.00
A field-based learning experience via placement in a business, non-profit, or government organization using analytics. Under the guidance of a faculty advisor and workplace supervisor, students gain practical experience solving problems and improving operational processes using analytics. Prereq: UMST 599: Internship and Career Planning Seminar.

DATA 751 - Neural Networks
Credits: 4.00
Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks and recurrent neural networks, convolutional neural networks for computer vision tasks, and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class. Prereq: MATH 425, MATH 545 or MATH 645, COMP 490, or permission of the instructor. Also listed as COMP 751.

DATA 757 - Big Data
Credits: 4.00
A first course in large-scale analytics and data science. Characteristics of big data and the emerging software stack for working with massive datasets, including Hadoop and MapReduce. Algorithms for extracting information from massive datasets. A first course in linear algebra is not a prerequisite, but is recommended. Prereq: MATH 425, DATA 557, or instructor permission.
DATA 790 - Capstone Project
Credits: 4.00
Under direction of a faculty mentor, students work in teams to find solutions to complex real-world problems using analytics. Projects may come from internal or external sources. Students define the problem, obtain the necessary data, develop suitable models and solutions, and present their results. Prereq: Senior standing in Analytics B.S. program.
Animal Sciences

ANSC 401 - Animals and Society
Credits: 4.00
Through an interdisciplinary and historical lens, students delve into the interaction and interdependence of animals and people, the changes and patterns over time, and the resulting implications for the animal industry and the quality of life for animals, people, and the planet. Topics covered include agricultural production, organic farming, sustainability, global agriculture, Community Supported Agriculture (CSAs), research, nutrition, food safety, genetics, animal health, aquaculture, animal welfare, breeding, recreation, companionship, and the reproduction of domestic animals. What are the major changes in meat consumption by humans? What is the effect of these changes on the environment and large and small farm operations? What are the effects of biotechnological research performed on animals for human benefits? What is the difference between animal welfare and animal rights? Why should we care? In what whys does this affect us?

ANSC 402 - Horsemanship
Credits: 3.00
For beginning, intermediate, and advanced riders. Lecture and lab (lesson) format. All levels will work on correct position for dressage and combined training with the integration of appropriate theory. All students are required to perform the following tasks independently: properly groom, tack and cool out their horses. Students should allow time before and after lab to do so. For the safety of horse and rider, there is a rider weight limit of 200 pounds for all mounted activities in the UNH Equine Program, including ANSC 402. There are other courses that provide students with opportunities for hands-on experience with horses. Students who exceed the weight limit for ANSC 402 are encouraged to contact Sarah Rigg at sarah.rigg@unh.edu to discuss other alternative courses. Special fee. May be repeated for a maximum of 15 credits. Lab. Prereq: permission.

ANSC 403 - Summer Horsemanship
Credits: 1.00
For beginning and intermediate riders. Basics of balance seat, specializing in basic dressage and combined training. There is no lecture with this summer course. Limited number of students may stable their horses at the University. Special fee. May be repeated for a maximum of 18 credits. Prereq: permission.

ANSC 405 - Theory of Horsemanship
Credits: 2.00
Principles and theory of horsemanship, dressage and jumping, including biomechanics of the horse and rider, rider position and aids, cross-country jumping and conditioning, and the horse’s instincts, senses, behavior and training as they relate to riding. Online only.

ANSC 406 - Careers in Animal Science
Credits: 1.00
Survey of various areas of animal and veterinary science and opportunities available. Cr/F.

ANSC 411 - Freshman Seminar in Equine Science
Credits: 1.00
Seminar format class. This introductory level class provides students with an overview of the equine industry, its economic impact and pressures and the job opportunities available. Class also includes investigation of the requirements and options within the UNH Equine Program and exploration of the
opportunities and resources available for students. Cr/F.

ANSC 419 - Horse Power  
**Credits:** 4.00  
Students explore the enduring bond between the horse and man and the effect of that bond on civilization by considering: How has the horse and man's use of the horse shaped civilization and contributed to societal change? How has the progress of civilization and societal change affected the horse and its role in society? What does our use of the horse say about us as individuals and as a society? Cannot receive credit if credit received for ANSC 444B.

ANSC 421 - Animal Agriculture Today  
**Credits:** 4.00  
This course provides an overview of the scope and diversity of animal agriculture at the global, national and local levels. It also provides an introduction to the animal sciences through which students 1) learn basic animal science terminology 2) acquire an appreciation of the objectives of various animal enterprises and 3) gain understanding of contemporary trends, challenges and opportunities within animal agriculture. Special fee.

ANSC 444A - Animal Ethics: Your Child or Your Pet  
**Credits:** 4.00  
Human attitudes toward other animals are generally divided into five categories: animal exploitation, animal use, animal welfare, animal rights, and animal liberation. While all five categories are examined, this course concentrates on the differences between animal welfare and animal rights. These two categories differ fundamentally on the basis of the ethical or moral status they give animals. Past human societies have justified both the worship of animals and the torture and sacrifice of animals to the gods. Animal rights believers rely on a rights-based philosophy, while animal welfare advocates concentrate on a utilitarian based set of values. Course concentrates on the application of these two ethical philosophies to current uses of animals such as the use of animals in research, the use of animals as food (factory farming), the production and use of transgenic animals, and the use of animals as organ donors for humans (xenotransplantation). Since animal rights is, in itself, not a discipline, students depend on information from other disciplines ranging from moral philosophy and ethics to history to genetics, production agriculture, and ethology. Writing intensive.

ANSC 444B - Horse Power: Transforming and Reflecting Civilization  
**Credits:** 4.00  
Students explore the enduring bond between the horse and man and the effect of that bond on civilization by considering: How has the horse and man's use of the horse shaped civilization and contributed to societal change? How has the progress of civilization and societal change affected the horse and how its role in society? What does our use of the horse say about us as individuals and as a society? Writing intensive. Special fee.

ANSC 500 - Equine Assisted Activities and Therapies  
**Credits:** 4.00  
Comprehensive examination of Equine Assisted Activities and Therapies including types of therapeutic riding and its physical, cognitive, and emotional benefits for clients with a variety of disabilities. Topics include hippotherapy, therapeutic riding, equine-facilitated mental health, youth at risk, therapeutic vaulting, carriage driving, equipment needs/modifications, special considerations for selecting and training the therapy horse, and the role of the volunteer therapist and instructor. Students have the opportunity to work with horses and riders in the UNH Therapeutic Riding Program during labs, as well as view other programs on mandatory field trips. Special fee.

ANSC 504 - Equine Science
Credits: 4.00
A fundamental equine science course including anatomy, sports medicine, nutrition and preventative care. Students present oral and written journal reviews on equine science topics pertinent to lecture. Prereq: BIOL 412.

ANSC 507 - Survey of Equine Training Techniques
Credits: 3.00
Physiological development, control, and education; biting, lunging, driving, and equine gymnastics. Special fee. Lab.

ANSC 510 - Integration of Culture and Agriculture in Ireland: Past, Present, and Future
Credits: 2.00 or 4.00
What was the worst natural disaster in 19th century Europe? What characterizes Ireland's agriculture in the 21st century? In this interdisciplinary course, students examine the cultural, historical, political, economical, and religious influences on Ireland's agriculture, fisheries, and forestry. The crowning experience of the course, a 10-day study abroad in late May, provides students with a window to the world as they experience the culture, agriculture, and topography of Ireland. Students will immerse themselves in local history and culture as they tour working agricultural farms, university research facilities, and cultural landmarks. Permission required. Not open to freshmen. Special fee. Writing intensive. 2 or 4 credits.
Co-requisites: INCO 589

ANSC 511 - Anatomy and Physiology
Credits: 4.00
Discussion/comparison of the principles of mammalian form and function. Includes molecular and cellular mechanisms of major processes (such as muscle contraction, neural transmission, and signal transduction) and systematic aspects of the nervous, endocrine, cardiovascular, respiratory, gastrointestinal, and renal systems. Prereq: BIOL 411-412. Special fee. Lab. No credit if credit earned for BMS 507-508; ZOOL 518. Not open to freshmen.

ANSC 512 - Anatomy and Physiology
Credits: 4.00
Discussion/comparison of the principles of mammalian form and function. Includes molecular and cellular mechanisms of major processes (such as muscle contraction, neural transmission, and signal transduction) and systematic aspects of the nervous, endocrine, cardiovascular, respiratory, gastrointestinal, and renal systems. Prereq: BIOL 411-412 and ANSC 511. Special fee. Lab. No credit if credit earned for BMS 507-508. Not open to freshmen.

ANSC 520 - Classical Dressage Experience in Portugal
Credits: 2.00
Concentrated study of the Portuguese method of classical dressage at L'Escola De Equitaco De Alcainca 'N Alcainca, Portugal. Affords students the opportunity to ride at a premiere center for equestrian art with a master of classical dressage and to experience the culture of Portugal. Offers full immersion in dressage riding, teaching, and training. Trip takes place over Spring Break. Weekly seminar held prior to departure. Special fee. Prereq: ANSC 402: Horsemanship at I-2 level or above. Permission required. May be repeated up to a maximum of 6 credits.
Co-requisites: INCO 589

ANSC 543 - Technical Writing in Animal Sciences
Credits: 2.00
Emphasis on writing scientific articles and articles for the end user on subjects pertaining to the animal science industry. Students are expected to make several oral presentations. Resume preparation is also included. Prereq: ENGL 401 or equivalent; permission. Writing intensive.
**ANSC 600 - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Permission of supervising faculty member required. Cr/F.

**ANSC 600W - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Permission of supervising faculty member required. Cr/F. Writing intensive.

**ANSC 602 - Animal Rights and Societal Issues**  
**Credits:** 4.00  
To explore all aspects of human-animal interaction and welfare, emphasizing social, ethical, biological, historical and economic aspects of animal care and use. (Juniors and seniors only.) Special fee. Writing intensive.

**ANSC 609 - Principles of Animal Nutrition**  
**Credits:** 4.00  
Applied animal nutrition and nutrient metabolism. Prereq: one year of chemistry; one semester of physiology.

**ANSC 612 - Genetics of Domestic Animals**  
**Credits:** 4.00  
Application of basic and molecular genetics to the diagnosis and control of inherited diseases of domestic animals and application of quantitative genetics for the improvement of economically important traits of farm animals. Prereq: BIOL 411 or permission.

**ANSC 615 - Dairy Farm Internship**  
**Credits:** 14.00  
An internship on a commercial dairy farm allowing the student day-to-day management of a herd of Holstein cows health and management (animal and financial) are studied. Homework and monthly exams. Dairy Management majors only. Permission required.

**ANSC 620 - Equine Diseases**  
**Credits:** 4.00  
Provides an understanding of the normal versus the abnormal equine including recognition of clinical signs of the abnormal equine., diagnosis and treatment options. Knowledge of when to call a veterinarian and how to administer follow up care. Emphasis on preventative health care. Prereq: ANSC 504. Special fee. (Juniors and seniors only.)

**Co-requisites:**

**ANSC 625 - Diseases of Small Ruminants, Swine, Poultry, and Camelids**  
**Credits:** 4.00  
This course focuses on concepts of health and disease as they relate to domestic small ruminants (goats and sheep), swine, poultry, and camelids (llamas and alpacas). Basic principles of disease diagnosis, transmission, treatment, and prevention are introduced and applied to specific disease conditions in these species. The course is divided into sections that focus on each group of animals and specific diseases are
classified and taught based on the primary body system that is affected. Prereq: AAS 439, ANSC 511, ANSC 512.

**ANSC 640 - Principles of Riding Instruction**  
**Credits:** 4.00  
Introduction to the principles, theory and practice of Riding Instruction. Includes discussion of styles of learning and instruction as applied to a riding environment, student assessment, skill acquisition, lesson planning, horse selection and principles of group and private riding instruction. Students will use lab time to observe, assist and practice teaching in sections of ANSC 402, which will be matched according to their abilities and interests. Students will prepare for ARIA licensing examinations as part of class. Fall semester only. Lab. Prereq: ANSC 402 at Intermediate 1 or above, or permission.

**ANSC 641 - Principles of Dressage Instruction**  
**Credits:** 2.00  
Advanced principles and theory of dressage and advanced concepts in teaching and coaching dressage. Students will use lab time to observe, assist and practice teaching in dressage-only sections of ANSC 402. Students will prepare for ARIA licensing examinations as part of class. Spring semester only. Lab. Prereq: ANSC 640.

**ANSC 642 - Principles of Jumping Instruction**  
**Credits:** 2.00  
Advanced principles and theory of jumping and advanced concepts in teaching and coaching over fences in the arena and cross-country. Students use lab time to observe, assist and practice teaching in intermediate I and II level sections of ANSC 402. Lab. Prereq: ANSC 640. Offered spring semester of every odd numbered year.

**ANSC 643 - Principles of Therapeutic Riding Instruction**  
**Credits:** 4.00  
Principles and theory of teaching therapeutic riding, including special considerations of teaching in a therapeutic environment and methods of instruction for individuals with a variety of disabilities. Lab consists of observing, assisting and practice-teaching in UNH Therapeutic Riding Program as preparation for PATH International instructor certification process which is done as part of this course. Spring semester only, biannually, odd numbered years. Prereq: ANSC 640 and ANSC 500.

**ANSC 650 - Dairy Industry Travel Course**  
**Credits:** 1.00  
Extended field trip to a variety of dairy farms and dairy related businesses in the Northeast with students and faculty from other New England land grants. Includes discussion sessions, case study, problem solving, and journal report. Prereq: permission. May be repeated to a maximum of 2 credits. Special fee.

**ANSC 665 - Principles of Horse Trials Management**  
**Credits:** 2.00  
Theory and hands-on involvement in the organizational process of managing an event competition. Topics will include budgeting, logistical needs, working with entries, sponsorship, awards, publicity, facilities management, course design and committee management. Students will actively participate in the management and preparation of the UNH Horse Trials, overseeing the committees working in the phases of the event and also performing other responsibilities. 1-credit, half semester course. (During the fall semester, the class will meet for the first half of the semester; during the spring semester, the class will meet for the second half of the semester)

**ANSC 694 - Summer Cooperative for Real Education in Agricultural Management**  
**Credits:** 4.00
SCREAM (Summer Cooperative for Real Education in Agricultural Management) is a course in which students perform the work and make financial and management decisions associated with the CREAM dairy herd. Students assume complete responsibility for the management and care of the 25-cow herd for the entire summer. SCREAM provides students with a unique experiential learning model that will help them understand how to work together to manage and operate a small business, the decision-making skills required in production agriculture, and the application of science to the management of a dairy herd. Prereq: upper-class standing, permission.

ANSC 695 - Supervised Teaching Experience
Credits: 1.00 to 2.00
Participants are expected to perform such functions as leading discussion sections, directing and assisting in laboratories, and assisting students with their problems in courses that participants have completed successfully. Enrollment is limited to juniors and seniors who have a minimum 3.00 cumulative average. Prereq: permission of instructor and department chairperson. May be repeated up to a maximum of 4 credits. Cr/F.

ANSC 698 - Cooperative for Real Education in Agricultural Management (CREAM)
Credits: 4.00
CREAM (Cooperative for Real Education in Agricultural Management) is a 2-semester course in which students perform the work and make the financial management decisions associated with the CREAM dairy herd. Students assume complete responsibility for the management and care of the 25-cow herd for the entire academic year. CREAM provides students with a unique experiential learning model that will help them understand how to work together to manage and operate a small business, the decision-making skills required in production agriculture and the application of science to the management of a dairy herd. Two semesters of 4 cr. each are required. Prereq: permission

ANSC 701 - Physiology of Reproduction
Credits: 4.00
Comparative aspects of embryology, anatomy, endocrinology, and physiology of reproduction. Lab.

ANSC 708 - Ruminant Nutritional Physiology
Credits: 3.00
Anatomy of the ruminant gastrointestinal tract, physiological factors related to rumen function, and microbial and whole-body metabolism of carbohydrates, protein, and lipids. Prereq: BMS 503 or equivalent.

ANSC 710 - Dairy Nutrition
Credits: 4.00
Feeding management of dairy cattle. Emphasis on feedstuffs, nutritional requirements, and diet formulation for efficient production and optimum health. Prereq: ANSC 609 or NUTR 750; permission.

ANSC 715 - Physiology of Lactation
Credits: 4.00
Examines the biological and biochemical influences of the lactation process. Emphasis on the physiological effects of environments, hormones, and nutrition on milk synthesis and secretion, mammary physiology, and maternal response. Prereq: ANSC 701, permission.

ANSC 724 - Reproductive Management and Artificial Insemination
Credits: 4.00
Focus on goals and fundamentals of reproductive management of horses, dairy and livestock animals, and through actual experience, development of competency in performing modern breeding techniques for
equine and bovine reproduction. Permission required. Special fee. Lab.

**ANSC 725 - Equine Sports Medicine**
Credits: 4.00
Course focuses on equine anatomy and physiology in relation to athletic performance and injury. Students write an independent paper assessing the use of an equine heart rate monitor on either a UNH or private horse during the semester. (Juniors and seniors only.) Prereq: ANSC 504, 512, 620. Special fee.

**ANSC 727 - Advanced Dairy Management I**
Credits: 4.00
Advanced management evaluation of milking procedures, reproduction, genetics, herd health, feeding, housing, and milking systems. Prereq: junior or senior standing; permission.
Co-requisites:

**ANSC 728 - Advanced Dairy Management II**
Credits: 4.00
Advanced management evaluation of record keeping, financial and business management, personnel management, waste management, and marketing. Prereq: junior or senior standing; permission. Special fee. Writing intensive.
Co-requisites:

**ANSC 795 - Investigations**
Credits: 1.00 to 4.00
Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agribusiness, physiology, cell biology, microbiology, dairy management, or teaching experience. May be repeated up to a maximum of 4 credits. Prereq: permission.

**ANSC 795W - Investigations**
Credits: 1.00 to 4.00
Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agribusiness, physiology, cell biology, microbiology, dairy management, or teaching experience. May be repeated up to a maximum of 4 credits. Prereq: permission. Writing intensive.

**ANSC 796 - Equine Senior Seminar**
Credits: 2.00
This course is geared to prepare graduating seniors for professional work experience, including skills related to job seeking, resume preparation and interviewing for work in the equine field. In addition, students will engage in dialogue regarding current and relevant controversial topics within the equine industry. Through guided group discussion, selected readings and guest speakers, student are exposed to subjects which equine professionals must confront and address within the equine industry. This course serves as a preparation for and pre-requisite to the Equine Capstone Experience, ANSC 797.

**ANSC 797 - Equine Capstone Experience**
Credits: 4.00
This course allows students to review critical professional skills, concepts and theories necessary for success within the equine industry and then to demonstrate competence in these areas, to a panel of equine program faculty. Students also coordinate logistics and content of an outreach Equine Education Day. Successful completion allows students to showcase professional skills and abilities to the non-academic equestrian community. Prereq: ANSC 796.

**ANSC 799 - Honors Senior Thesis**
Credits: 1.00 to 4.00
Independent research culminating with a written honors thesis in A) Genetics; B) Nutrition; C) Management; D) Diseases; E) Histology; F) Light Horsemanship; G) Physiology; H) Cell Biology; I) Microbiology; J) Dairy Management. May be repeated up to a maximum of 8 credits. Prereq: permission. IA. Writing intensive.
Anthropology

ANTH 411 - Global Perspectives on the Human Condition: An Introduction to Anthropology
Credits: 4.00
By providing a global perspective on the human experience, this course helps us think about the issues that confront students as citizens of the world. Gleaning lessons from cultures past and present this course examines what it means to be human. Whether humans are violent or peace-loving, egalitarian or hierarchical is linked to specific ways of life, rather than reflecting a fixed human nature. The course examines the economic, political, and social forces that shape human behavior and the global forces that people around the world currently confront. From an anthropological perspective it addresses pressing social issues such as sustainable development, hunger and poverty, population growth, religion and changing world views, racism, urbanization, co modification, and movements for social modification, and movements for social justice.

ANTH 411H - Honors/Global Perspectives on the Human Condition: An Introduction to Anthropology
Credits: 4.00
By providing a global perspective on the human experience, this course helps us think about the issues that confront students as citizens of the world. Gleaning lessons from cultures past and present this course examines what it means to be human. Whether humans are violent or peace-loving, egalitarian or hierarchical is linked to specific ways of life, rather than reflecting a fixed human nature. The course examines the economic, political, and social forces that shape human behavior and the global forces that people around the world currently confront. From an anthropological perspective it addresses pressing social issues such as sustainable development, hunger and poverty, population growth, religion and changing world views, racism, urbanization, co modification, and movements for social modification, and movements for social justice. Writing intensive.

ANTH 411W - Global Perspectives on the Human Condition: An Introduction to Anthropology
Credits: 4.00
By providing a global perspective on the human experience, this course helps us think about the issues that confront students as citizens of the world. Gleaning lessons from cultures past and present this course examines what it means to be human. Whether humans are violent or peace-loving, egalitarian or hierarchical is linked to specific ways of life, rather than reflecting a fixed human nature. The course examines the economic, political, and social forces that shape human behavior and the global forces that people around the world currently confront. From an anthropological perspective it addresses pressing social issues such as sustainable development, hunger and poverty, population growth, religion and changing world views, racism, urbanization, co modification, and movements for social modification, and movements for social justice. Writing intensive.

ANTH 412 - Broken Pots and Buried Cities: Adventures in Archaeology
Credits: 4.00
Traces the history of archaeology's most spectacular finds and how those moments of adventure and glory developed into a scientific discipline. Provides an introduction to the methods used by archaeologists to recover, analyze, and interpret data in their ongoing effort to understand humanity through the analysis of those small things left behind.

ANTH 415 - The Human Story: Evolution, Fossils and DNA
Credits: 4.00
This course uses an evolutionary approach to investigate human biological and bio-cultural variation in time.
and space. Through a study of the basics of population genetics, an evaluation of our closest living relatives, nonhuman primates, and an exploration of the biological and cultural pathways traversed by our ancestors to become modern Homo sapiens, students learn the depth and complexity of the human story. Laboratory exercises dealing with human genetics, hominin fossils, and evolution are integrated with lectures to give students hands-on learning experience. No credit earned if credit received for ANTH 413

ANTH 440A - Honors/Medicine and Culture: Science, Technology and the Body
Credits: 4.00
This course takes a comparative, cross-cultural approach to global medicine. Through critical readings, multimedia presentations, class discussions, and expository writing, we consider how techno-scientific developments, transnational flows, environmental transformations, and historical inequities shape how we know and experience our bodies. Key course topics include controversies surrounding new medical technologies, the intersections between Western and non-Western medical systems, and innovative responses to chronic global diseases.

Co-requisites:

ANTH 444 - The Lost Campus: The Archaeology of UNH
Credits: 4.00
In this course, students are active participants in the systematic documentation and examination of the University of New Hampshire's cultural heritage resources. Students are introduced to the practice and process of archaeology through lectures, readings, assignments and hands-on archival research and archaeological fieldwork. Students learn the foundational methods of archaeology including survey, mapping, documentation, excavation, artifact identification, artifact interpretation, and presenting results to the public.

ANTH 450 - Introduction to Race, Culture, and Power
Credits: 4.00
Race, culture, and power intersect at a social space where those in that space experience differing opportunities and access to social and economic privileges, resources, and power. This course explains the way race functions today as a social and cultural category to justify systematic inequality and differences in power and to obscure the functioning of the global economy. The course draws on emerging literature on Blackness, Whiteness, and Minorities and on analyses of the differential implementation of social welfare policies in the United States. (Also listed as INCO 450.)

ANTH 500 - Peoples and Cultures of the World
Credits: 4.00
A) North America; B) South America; C) Middle East and North Africa; D) Sub-Saharan Africa; E) Asia; F) Oceania; G) Caribbean; Z) Other. Characteristic ecological, historical, and socio-cultural factors in the major ethnographic regions of the globe. Analysis of selected societies and institutions. Offered in the following sections as staff is available and student needs dictate. North America: Study of the economy, society, religion, art, and ideas of North American Indians from pre-colonial times to the present. South America: A survey of the indigenous cultures and selected studies of the relationship between environment and culture. Changes in culture and social organizations since the 16th century will be considered where historical data permit. Middle East and North Africa: The role of ecological, social, cultural, and historical factors in shaping Middle Eastern and North African culture today. Special attention will be paid to family, values, and religion; to nomadic, village, and urban ways of life; and to issues of unity, diversity, colonialism, and culture change. Sub-Saharan Africa: Study of Sub-Saharan economy, society, and culture from pre-colonial times to the present. South Asia: Emphasis on India, Sri Lanka, and Nepal. Traditional and changing South Asian cultures, including caste, family, economy, and religious traditions of Hinduism and Buddhism. Southeast Asia: Geographical, historical, ethnic, and socio-cultural factors characteristic of the region. Impact of Indian, Chinese, Islamic, and European civilizations. Analysis of selected indigenous
social, political, economic, and religious institutions. Oceania: Study of the economy, society, religion, art, and ideology of Pacific Island cultures from pre-colonial times to the present. Caribbean: The history and contemporary situation of diverse cultures of the Caribbean are examined using ethnography, music, and film. The mixture of cultural roots from Africa, Europe, and Asia are investigated and the dynamic and fluid nature of these cultures is stressed. Race as an experience of oppression and resistance is discussed.

ANTH 500W - Peoples and Cultures of the World
Credits: 4.00
A) North America; B) South America; C) Middle East and North Africa; D) Sub-Saharan Africa; E) South Asia; F) Southeast Asia; G) Oceania; I) Caribbean; Z) Other. Characteristic ecological, historical, and socio-cultural factors in the major ethnographic regions of the globe. Analysis of selected societies and institutions. Offered in the following sections as staff is available and student needs dictate. North America: Study of the economy, society, religion, art, and ideas of North American Indians from pre-colonial times to the present. South America: A survey of the indigenous cultures and selected studies of the relationship between environment and culture. Changes in culture and social organizations since the 16th century will be considered where historical data permit. Middle East and North Africa: The role of ecological, social, cultural, and historical factors in shaping Middle Eastern and North African culture today. Special attention will be paid to family, values, and religion; to nomadic, village, and urban ways of life; and to issues of unity, diversity, colonialism, and culture change. Sub-Saharan Africa: Study of Sub-Saharan economy, society, and culture from pre-colonial times to the present. South Asia: Emphasis on India, Sri Lanka, and Nepal. Traditional and changing South Asian cultures, including caste, family, economy, and religious traditions of Hinduism and Buddhism. Southeast Asia: Geographical, historical, ethnic, and socio-cultural factors characteristic of the region. Impact of Indian, Chinese, Islamic, and European civilizations. Analysis of selected indigenous social, political, economic, and religious institutions. Oceania: Study of the economy, society, religion, art, and ideology of Pacific Island cultures from pre-colonial times to the present. Caribbean: The history and contemporary situation of diverse cultures of the Caribbean are examined using ethnography, music, and film. The mixture of cultural roots from Africa, Europe, and Asia are investigated and the dynamic and fluid nature of these cultures is stressed. Race as an experience of oppression and resistance is discussed. Writing intensive.

ANTH 501 - World Archaeological Cultures
Credits: 4.00
The development of prehistoric cultures worldwide offered in the following sections: A) North America; B) Mesoamerica; C) South America; D) Near East; E) Europe; F) Asia. North America: from earliest settlement to European contact, includes Eastern Woodlands, The Plains, and the Southwest. Mesoamerica: from earliest cultures through Spanish conquest, includes the Olmec, Maya, and Aztec civilizations. South America: Cultural development from earliest migrations to the Inca Empire. Near East: from earliest agricultural villages to the world's first civilizations.

ANTH 508 - Anthropology of Internet
Credits: 4.00
While adopting an anthropological lens in this course we explore how and in what ways digital environment, cyberspace in particular, affects an individual, community, and the state, and how, in turn individuals affect the digital landscape. Focusing on the dynamic interaction between digital environment and humans we will (1) tease out what is "new" about our contemporary moment, (2) clarify changes and continuity that characterize this digital age and its effects on our daily lives, (3) explore vitality as part of our daily experiences, and (4) learn how in what ways cyberspace becomes a place of personal achievement, dwelling of community-like formations, social control, and politics.

ANTH 510 - Animals, Identity, and Culture
Credits: 4.00
This course explores the roles of identity and culture in shaping the relationships humans form with other animals. A range of relationships are investigated, including those that figure animals as beings sharing in personhood, as prey, as technologies, as workers, as food, and as family. Inspired by the explosion of new research in multiple disciplines, this course emphasizes cross-cultural and transhistorical variations, while also exploring some of the biosocial features humans share with other animals.

ANTH 511 - Core Concepts in Anthropology
Credits: 4.00
This course introduces students to the core concepts and paradigms of contemporary anthropology. Students will learn how anthropology approaches the study of family, kinship, community, gender, economic relationships, political systems, religion, social change and globalization. Ethnographic material from a variety of cultures will illustrate the concepts of social structure and the cultural construction of categories such as race and ethnicity. Writing intensive.

ANTH 513 - Ethnographic Methods
Credits: 4.00
The course introduces students to social science research and differences between quantitative and qualitative research methods, and provides a hands-on experience to develop skills in interviewing, participant-observation, life-history, surveying, socio-linguistics, fieldnotes, and ethics of the research.

ANTH 514 - Method and Theory in Archaeology
Credits: 4.00
Basic method and theory; techniques in recovering and interpreting data; laboratory exercises in ceramic and lithic analysis. Critical evaluation of archaeological literature.

ANTH 515 - Anthropology and Contemporary Issues
Credits: 4.00
Anthropological approaches to current world issues such as racism, poverty, religious movements, revolution, and environmental stress. Selected topics examined in the context of both western and nonwestern societies.

ANTH 550 - Introduction to Forensic Anthropology
Credits: 4.00
This course provides an overview of forensic anthropology, a sub-field of biological anthropology that applies knowledge of skeletal anatomy to problems of medico-legal significance (i.e., identification of human skeletal remains and interpretation of the circumstances surrounding death). This course outlines concepts underlying the recovery and analysis of human remains, the determination of the biological profile (including age, sex, ancestry, and stature), and the interpretation of skeletal trauma and pathology.

ANTH 597 - Special Topics
Credits: 4.00
Occasional and experimental offerings on an entry level. May be repeated for different topics.

ANTH 601 - Topics in Popular Culture
Credits: 4.00
This course explores the anthropology of popular culture using film, novels, and other media as well as widely disseminated texts. The course focuses on myths about culture and human behavior which become part of the global cultural mainstream, and counterposes popular stereotypes with data from cultural anthropology and archaeology. A) Native Americans and Popular Culture B) Archaeology and Popular Culture C) Popular Culture and Physical Anthropology D) Poverty and Popular Culture E) Gender and Popular Culture F) Other. May be repeated but not in duplicate areas.
**ANTH 610 - Medical Anthropology: Illness and Healing**  
**Credits:** 4.00  
How we as humans define sickness and health, our theories of who or what made us ill, our approach to biological processes from birth to death and our search for cures have varied through history and from culture to culture. This course provides and overview of illness and healing beliefs and practices in different cultures both around the world and in the United States. The course examines the practices and belief systems of healers, voodoo priestesses, midwives, Taoist priests, psychiatrists and medical doctors through the same analytical lens. Operates on a seminar format.

**ANTH 610W - Medical Anthropology: Illness and Healing**  
**Credits:** 4.00  
How we as humans define sickness and health, our theories of who or what made us ill, our approach to biological processes from birth to death and our search for cures have varied through history and from culture to culture. This course provides and overview of illness and healing beliefs and practices in different cultures both around the world and in the United States. The course examines the practices and belief systems of healers, voodoo priestesses, midwives, Taoist priests, psychiatrists and medical doctors through the same analytical lens. Operates on a seminar format. Writing intensive.

**ANTH 611 - History of Anthropological Theory**  
**Credits:** 4.00  
Provides a grounding in the history of social thought in cultural anthropology and sister disciplines from 19th century evolutionism to the present. Course reading is based on primary sources - original essays written by theorists central to the discipline. Assessment is partly based on students' ability to apply theoretical concepts to novel contexts, as well as the ability to evaluate and compare theories on the basis of logic and evidence.

**ANTH 612 - Applied Anthropology**  
**Credits:** 4.00  
Introduces students to the ways anthropological questions, concepts, and methods are applied to real world problems. Students learn how anthropological knowledge and methods can be used in a wide range of disciplines and careers. The course includes experiential learning where students engage with professionals doing work within applied anthropology. Students gain perspective on the practical possibilities in their major and acquire skills to position themselves for future careers.

**ANTH 616 - Religion, Culture, and Society**  
**Credits:** 4.00  
Major anthropological theories of religion; analysis of religious beliefs as symbolic systems and their interrelations with ritual and other social institutions. Detailed study of specific religions. Operates on a seminar format. Writing intensive.

**ANTH 620 - Ritual and Religion of Ancient Mesoamerica**  
**Credits:** 4.00  
This course examines the religious beliefs and ritual practices of ancient Mesoamerican cultures, such as the Olmec, Maya, and Aztecs. Students learn about the meaning of ritual practices (like human sacrifice and burial rites) and the myths that underlie this mysterious ritual behavior from an archaeological perspective. This class is writing intensive and involves primarily in-class discussion. Students are evaluated based on their participation, oral presentations, and a number of writing assignments. Writing intensive.

**ANTH 625 - Sexuality in Cross-Cultural Perspectives**  
**Credits:** 4.00  
This course examines the ideologies and practices associated with sexuality from a broad perspective that
incorporates diverse case studies from the ethnographic record. Working from the argument that much of human sexual behavior is culturally constructed rather than biologically determined, the course invites students to expand their notion of the "normal" and to consider the human condition from a cross-cultural perspective. Topics discussed include cross-cultural varieties of transexual experience, same-sex sexualities, and heteronormative identities.

ANTH #627 - Urbanization in Africa
Credits: 4.00
Explores the process of urbanization and describes the creation of urban culture in sub-Saharan Africa by investigating the effects of urbanization on socio-economic and cultural conditions. An attempt is made throughout the course to study urbanization and urban life within the context of broader societal, economic, cultural, and political relations in order to understand the dynamics inherent in these processes. Urbanization is discussed in the context of colonialism, post-colonialism, and other social relations of dependency that continue to shape urban life and urban-rural relations.

ANTH #640 - Anthropology of Islam: Muslims' everyday lives in contemporary communities
Credits: 4.00
This course introduces students to different ways of being Muslim in contemporary world, focusing on Muslim communities residing in Central Asia (post-Soviet independent countries, China, and Afghanistan); the United States and some parts of Europe; and the Middle East and North Africa (MENA).

ANTH 670 - Language and Culture
Credits: 4.00
Investigates the relationship between language and culture and how their interpenetration produces meaning. Special attention to the issues of class, gender, and ethnicity and the ways in which inequality is maintained through culturally patterned speech styles and associated prejudices. Speech communities in the United States are emphasized.

ANTH 674 - Archaeological Survey and Mapping in Belize
Credits: 4.00
Involves hands-on training in field reconnaissance, survey and mapping of archaeological sites, and the use of ARCGIS mapping software. This field course takes place in Belize (Central America) and will be of interest to students studying anthropology, geography and geospatial technologies, among others. Special fee.

Co-requisites: INCO 589

ANTH 675 - Archaeol Field School Belize
Credits: 8.00
The Archaeological Field School in Belize is an intensive, four-week summer program focused on the ancient Maya civilization in the eastern Belize River valley in Central America. Project participants will map and excavate archaeological sites and receive hands-on training in field and lab methods. Students will be graded on their participation, their submission of a field notebook, an exam based on readings and nightly lectures, and a final written report based on original field research. Special fee. Majors only.

Co-requisites: INCO 589

ANTH 680 - Globalization, Development, and Poverty
Credits: 4.00
This course considers the phenomenon of globalization, a term that has come into use since the 1980s to describe the ever-intensifying networks of cross-border human interaction which increasingly tie the world together. Tracing the relationship between the increasing interconnectedness of the world, the processes of economic development and change, and world poverty, the course demonstrates that the consequences of globalization are neither the same nor positive in every country. Through the use of case studies of
different development processes, students gain an understanding of why and how globalization is creating differential effects in different parts of the world. This course is the first course of a suggested two course sequence, ANTH 680 and ANTH 780. Writing intensive.

**ANTH 685 - Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa**  
**Credits:** 4.00  
AIDS is spreading rapidly in sub-Saharan Africa. Course explores the factors that are behind this rapid transmission, including poverty, gender inequality, culture and sexuality. Operates on a seminar format. Writing intensive.

**ANTH 690 - Ethnographic Field Research**  
**Credits:** 4.00  
Explores history, theory, and practice of ethnographic research. Students read and practice such techniques as mapping, taking life histories, compiling genealogies, and analyzing use of space, language, and rituals. Each student also carries out, writes up, and presents an independent research project. Prereq: ANTH 411 or SOC 400; one 500-level or higher anthropology or sociology course; or permission. No credit for students who have completed ANTH 630. Operates on a seminar format. Writing intensive.

**ANTH 695 - Globalization and Global Population Health**  
**Credits:** 4.00  
This course considers the phenomenon of globalization and its impact on health of populations across cultures and nations. The term globalization has come into use since the late 1980's to describe the over-intensifying network of cross border human interaction that increasingly ties the world together. At most abstract level, globalization is characterized by vast constant movement of capital goods and jobs across borders usually under decisions made by multinational corporations and global financial lending institutions. Studies show that this process of social change tends to increase economic opportunities but without distributing them equally with deleterious consequences on people's health. Writing intensive.

**ANTH 697 - Special Topics**  
**Credits:** 4.00  
Occasional or experimental offerings. May be repeated for different topics. Prereq: ANTH 411 or permission. Operates on a seminar format. Writing intensive.

**ANTH #698 - Folklore and Folklife**  
**Credits:** 4.00  
Examines the materials and methods used to study folklore and folklife, emphasizing the historical context and development of folklore studies in North America and Europe, field research, performance theory, and other topics. (Also offered as ENGL 732.) Operates on a seminar format. Writing intensive.

**ANTH 699 - Senior Thesis**  
**Credits:** 4.00 or 8.00  
Independent work in the library or field; recommended for, but not confined to, majors intending to pursue graduate studies. Contact staff to obtain approval and arrange supervision prior to senior year. 4 or 8 credit 2 semesters; an IA grade (continuous course) given at end of first semester. Writing intensive.

**ANTH 699H - Honors Senior Thesis**  
**Credits:** 4.00 or 8.00  
Independent work in the library or field; recommended for, but not confined to, majors intending to pursue graduate studies; required for honors candidates. Contact staff to obtain approval and arrange supervision prior to senior year. 4 or 8 credit 2 semesters, 8 credits required for honors; an IA grade (continuous course) given at end of first semester. Writing intensive.
ANTH 700 - Internship  
**Credits:** 1.00 to 4.00  
Provides student with supervised practical experience in anthropology in one of the following areas: A) professional or community support work within an academic or applied anthropology setting; B) teaching; C) museum work; D) archaeological laboratory or fieldwork; E) research on a faculty research project; F) editorial work on a journal or faculty book project. May be repeated up to 8 credits. Prereq: permission.

ANTH 705 - Topics in Mesoamerican Anthropology  
**Credits:** 4.00  
Examines the very origins of civilization in the New World by first focusing on the domestication of staple food crops and the development of inequality and carefully tracing the ever increasing socio-political complexity displayed by early Mesoamerican peoples. Includes the successive rises of the Olmec, the Zapotec, the Preclassic Maya and Teotihuacan in an effort to understand the mechanisms driving the development of agricultural intensification, economic specialization, long-distance trade networks, and the institution of divine kingship. Operates on a seminar format, open only to juniors and seniors.

ANTH 730 - Anthropological Thinking on Education  
**Credits:** 4.00  
Course introduces the students to key anthropological concepts that, taken together, underpin anthropological thinking on education. The concepts are Culture (Geertz, White), Evolution (Morgan Steward), Function (Malinowski, Radcliffe-Brown), Interpretation (Geertz, Turner), Feminism and Postmodernism (Leacock, Rosaldo) and Process (Bailey, Vincent). The course analyzes and synthesizes them into a conceptual framework by which to understand human behavior, activity, production and reproduction in formal education.

ANTH 740 - Teaching Race  
**Credits:** 4.00  
How do we teach about race? What are schools and universities communicating about the meanings of racial ascription, of color and whiteness? How can we best use the power of educational institutions to further the struggles for equality and racial justice? And how can we do this in ways that constructively educate all our students? This course brings together prospective teachers and other students interested in human relations to discuss ways of combining the insights of new scholarship on race with personal experiences and challenges in the classroom to address these questions.

ANTH 750 - Islam and Gender: Gendered Lives of Women and Men in Muslim Communities  
**Credits:** 4.00  
This seminar focuses on the lives of Muslim women and men as gendered subjects. The seminar introduces students to several practical and historical aspects of gender politics in different Muslim communities, and critically questioning and challenging established representation of Muslim men and women. Prereq: ENGL 401. Writing intensive.

ANTH 785 - The Anthropology of Dreams and Dreaming  
**Credits:** 4.00  
This course emphasizes the "dream theories" of indigenous societies and how beliefs and practices associated with dreaming are integrated into cultural, ontological, political, economic, and religious systems. Western theories are also examined from within a comparative perspective--from basic Freudian models to contemporary scientific debates about the neurological origin and significance of dreaming. Writing intensive.

ANTH 795 - Reading and Research  
**Credits:** 1.00 to 8.00  
A) Cultural/Social Anthropology; B) Anthropological Linguistics; C) Archaeology; D) Physical Anthropology.
Prereq: 12 credits of anthropology; permission.

**ANTH 796 - Reading and Research**

**Credits:** 1.00 to 8.00

A) Cultural/Social Anthropology; B) Anthropological Linguistics; C) Archaeology; D) Physical Anthropology.

Prereq: 12 credits of anthropology; permission.

**ANTH 797 - Advanced Topics**

**Credits:** 4.00

Advanced or specialized courses presenting material not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Course descriptions on file in the department office during registration. A) Social Organization; B) Economic Anthropology; C) Anthropology of Religion; D) Political Anthropology; E) Social Impact Analysis; F) Cultural Ecology; G) Prehistoric Archaeology; H) Historic Archaeology; I) Cultural Resources Conservation; J) Lithic Analysis; K) Ceramic Analysis; L) Faunal Analysis; M) Human Evolution; N) Human Variations; O) Anthropological Theory. Prereq: ANTH 411 or 412 (as appropriate) or permission. Operates on a seminar format, open only to juniors and seniors. Writing intensive.
Applied Animal Science

**AAS 400 - Logging with Oxen and Draft Horses**
**Credits:** 2.00
This hybrid course combines on-line readings and lectures with an off-campus intensive experience at a NH working farm. It provides training for students in small woodlot harvesting for firewood and lumber. Forestry skills are combined with a unique hands-on logging experience with oxen and draft horses. Students study the history of logging, harvesting techniques and also learn to harness, feed and care for draft animals during the intense farm-forest experience. Special fee.

**AAS 402 - Introduction to Livestock and Poultry Management**
**Credits:** 2.00
Students are introduced to the management of livestock and poultry in small-to-medium sized operations. Students learn basic animal feeding, selection, handling, housing, management and health practices necessary to manage livestock and poultry. Through readings, multi-media presentations, writing and field assignments, students gain insight into the work, commitment and skills necessary to raise domestic farm animals for food and profit.

**AAS 418 - Formulating Career Paths in Small Animal Care**
**Credits:** 1.00
Students develop, explore, and plan a variable career path in a specific small animal care career obtainable with their applied animal science degree.

**AAS 419 - Animal Cruelty/Inv & Prosectn**
**Credits:** 1.00
An Internet class delivered through Blackboard Course Management System. Explains and discusses all aspects of animal cruelty, NH cruelty laws, and presents the importance and implications of recognizing animal cruelty and its link to human violence. Cruelty investigation procedures, prosecution protocol and officer field safety will also be presented. Designed as a 14-week class with a "presentation" of one hour per week accessed by the student at their convenience within a specific 3-day time frame during the week. Permission required.

**AAS 421 - Large Animal Behavior and Handling Techniques**
**Credits:** 2.00
Introduction to domestic large animal behavior and handling techniques. Cattle, horses, swine, and sheep are used in this course. Students perform routine health-related procedures and gain valuable hands-on skills and safe animal handling techniques which can be applied to the fields of veterinary medicine, animal research, commercial agriculture, and animal control. 1 lec/1 lab.

**AAS 422 - Small Animal Grooming I**
**Credits:** 2.00
Introduction to pet grooming. Course covers the techniques and styles of brushing, grooming, clipping, trimming, and bathing common breeds of dogs and cats. Students perform basic grooming in lab period. Special fee for non-TSAS students. May be repeated to a maximum of 4 credits. 1 lec/1 lab.

**AAS 423 - Dairy Selection**
**Credits:** 2.00
Selection techniques used in cattle for purchase, breeding, and genetic improvement through the use of visual evaluation, pedigrees, production, and progeny information. 1 lec/1 lab.
AAS 424 - Animal Law and Regulations  
**Credits:** 3.00  
This course covers the practical application and understanding of animal law and regulations. Designed for applied animal science majors the material is relevant for any learner interested in animal protection and welfare. Select current bills, court rulings or animal-related legal movements are reviewed. Practical application topics include: due process, contract law, evidence collection, and courtroom procedures. Focus is on domestic species with limited review of regulations and liability regarding exotic pet keeping.

AAS 425 - Introduction to Dairy Herd Management  
**Credits:** 4.00  
The course explores economic, scientific and practical aspects of dairy herd management. The topics covered include history, cattle selection, nutrition, housing, milking, and disease prevention strategies. There are a number of field trips and weekly labs emphasizing management and hands-on experience.

AAS 426 - Equine Conformation and Lameness  
**Credits:** 4.00  
The study of conformation as it relates to soundness and performance. Topics include basic unsoundness related to faulty conformation and type evaluation. Special fee.

AAS 428 - Anatomy and Physiology of Domestic Animals  
**Credits:** 3.00  
An overview lecture course describing the anatomy (structure) and physiology (function) of domestic animals, focusing on canine, feline, equine, and bovine species. Anatomic and physiologic topics are intertwined as the course progresses through each body system. Relevant species differences are stressed. Focus is on applied concepts appropriate for animal-related careers. Course is designed to be taken along with AAS 428A or AAS 428B for AAS and VTEC majors respectively.

AAS 428A - Anatomy and Physiology of Domestic Animals Lab for AAS majors  
**Credits:** 1.00  
Reinforces material presented in AAS 428 lecture and introduces students to the animal body by hands-on study of anatomy. Anatomical relationships and concepts that are important for the care of animals are presented. Comparative anatomy of bovine, equine, feline, and canine species is covered. Some dissection of specimens is required. Course is required of Applied Animal Science majors and is designed to be taken along with AAS 428 lecture.

**Co-requisites:** AAS 428

AAS 428B - Anatomy and Physiology of Domestic Animals Lab for VTEC majors  
**Credits:** 1.00  
Reinforces material presented in AAS 428 lecture and introduces students to the animal body by hands-on study of anatomy. Anatomical relationships and concepts that are important for the medical care of animals are presented. The feline species will be the primary anatomical model used. Comparative anatomy of bovine, equine, and avian species will also be covered. Course is required of Veterinary Technology majors and is designed to be taken along with AAS 428 lecture.

**Co-requisites:** AAS 428

AAS 430 - Small Animal Breeds and Behavior  
**Credits:** 4.00  
Overview of the development, selection, genetics, and function of specific breeds of companion animals. General dog and cat, as well as breed-specific, behavior is included. 2 lec/1 lab.

AAS 431 - Introduction to Animal Science  
**Credits:** 4.00
Survey of the dairy, equine, livestock, and small animal industries; current issues and related occupational opportunities are presented. Included is assistance in gaining or improving the skills needed to be successful in college. Lecture/Lab or Recitation.

**AAS 432 - Introduction to Forage and Grassland Management**  
**Credits:** 3.00  
Introduction to grasslands of the world and their management. Special emphasis on the identification, production, and utilization of New England forage crops for feeding domestic farm animals. The course includes the selection of local plant species and varieties, including their management and recommended harvesting practices. The course also includes a basic introduction to soils, as well as nutrient and fertility management.

**AAS 433 - Small Animal Grooming II**  
**Credits:** 2.00  
Continuation of AAS 422 Small Animal Grooming I with the addition of on-line canine dermatology and topical therapy basics. Student is assigned more complex breeds to groom and develops more proficiency in scissoring, hand stripping and clipping. Must have taken AAS 422. Special fee for non-TSAS students. 2 lab.

**AAS 434 - Equipment and Facilities Management**  
**Credits:** 3.00  
Operation of agricultural equipment and maintenance of agricultural facilities as found in New England. Development of the essential skills and technical information needed to manage and supervise agricultural facilities and equipment. 2 lec/1 lab.

**AAS 436 - Equine Show Preparation and Competition**  
**Credits:** 1.00  
Course addresses the safe handling and appropriate grooming and clipping of horses as they are prepared for competition. Students will demonstrate horse-handling proficiency while showing their assigned horse in hand. May be repeated to a maximum of 4 credits. Lec/Lab.

**AAS 437 - Equine Handling and Care Techniques**  
**Credits:** 4.00  
Course familiarizes students with different aspects of equine management through a practical and hands-on approach. Topics include selection, fit and care of English tack, bits, grooming, clipping, wound care, safe bandaging techniques, equine behavior, farm layout, basic health care and monitoring, parasite control, and equine transportation. Students will have hands-on experience in the UNH stable. Responsibilities include feeding, cleaning, turnout, and basic care of the University herd.

**AAS 439 - Fundamentals of Animal Health**  
**Credits:** 2.00  
Covers the principles of maintaining animal health by preventing and managing disease via husbandry, immunization, diagnostic testing and treatment. Focus is on domestic species; primarily dogs, cats, horses and cows. Topics include external and internal parasitology, microbiology, immunology including vaccination, and disease treatment. Course is designed to be taken along with the appropriate lab section: AAS 439A for Applied Animal Science majors or AAS 439B for VTEC majors, respectively. No credit earned if credit was received for VTEC 439.

**AAS 439A - Fundamentals of Animal Health Lab for Applied Animal Science Majors**  
**Credits:** 1.00  
Laboratory course to complement lecture course AAS 439. Topics include: 1) laboratory diagnostic testing: internal parasites, external parasites, urine and fecal testing, immunologic testing; 2) preventive care;
integrated pest control, vaccinations (including syringe and vaccine handling and administration), and husbandry; 3) safety: zoonotic disease and control of disease transmissions. This lab course is required of Applied Animal Science majors along with AAS 439 lecture.

### AAS 439B - Fundamentals of Animal Health Lab for Veterinary Technology Majors
**Credits: 2.00**
Laboratory course to complement lecture course AAS 439. Common veterinary diagnostic laboratory tests are covered, such as fecal flotation, urinalysis, complete blood count and blood chemistry, bacterial culture and sensitivity testing, gram staining, and immunologic testing such as ELISAs. Topics include laboratory safety, identification of internal and external parasites, and blood cells, examination of urine sediment, and principles of sample collection. This lab course is required of Veterinary Technology majors along with AAS 439 lecture.

### AAS 442 - Introduction to Business: Applied Animal Science
**Credits: 2.00**
Basic course covering business structure, philosophy, and terminology. Foundation for AAS 546, Animal Business Applications. 2 lec.

### AAS 445 - Veterinary Assisting Techniques
**Credits: 4.00**
Course is designed to prepare students to enter veterinary practice as a veterinary assistant. Topics include veterinary pharmaceuticals; animal nursing including record keeping, patient observation, husbandry, and disease control; surgical preparation and assisting including surgical instrumentation, sterilization and patient management; laboratory sample collection and handling; and diagnostic imaging including radiography safety, patient positioning, radiographic film processing and filing, and ultrasound. Required for completion of the veterinary assisting certificate.

### AAS 449 - Clinical Animal Nursing Techniques I
**Credits: 3.00**
Essential skills and basic background knowledge for the care of small animals, focusing on dogs and cats. Animal handling and restraint, basic nursing skills including physical examination, medicating, bandaging and wellness protocols. 1 lec/1 lab.

### AAS 451 - Human/Animal Bond
**Credits: 4.00**
Students explore various aspects and perceptions of the human-animal bond through multidisciplinary approaches over time and across cultures. They will critically evaluate the meanings humans ascribe to companion animals. Through movies, video clips, readings, and discussions, students are exposed to historical and contemporary utilization and exploitation of companion animals they may encounter in their professional lives. Class concentrates on "pet" animals (dogs, cat, and to a much lesser extent the horse.)

### AAS 525 - Canine Learning Theory and Application
**Credits: 4.00**
Canine behavior problems are a major cause of abandonment and euthanasia in dogs. Effective application of canine learning theory can prevent and solve behavior problems and save lives. Student gain a working knowledge of animal learning theory with a focus on training basic obedience commands, prevention and modification of common canine behaviors, effective human communication within a practical canine training session, canine ethology, the business and ethics of dog training, and more. Prereq: AAS 430 or equivalent.

### AAS 527 - Companion Animal Diseases
**Credits: 2.00**
Common diseases in companion animals discussed system by system; emphasis on canine, feline, equine, and ruminant species. Other species covered based on class interest. Disease pathogenesis, diagnosis, and treatment are covered. Care-based learning includes developing differential diagnosis lists and technician evaluations and interventions. AAS 428 or another Anatomy and Physiology course is strongly suggested as a pre-requisite.

**AAS 535 - Animal Nutrition**  
**Credits:** 3.00  
The food nutrients, their digestion and absorption, factors affecting value of feeds, feed additives, and nutrient requirements for maintenance and productive functions.

**AAS 538 - Equine Handling/Longeing**  
**Credits:** 1.00  
This seven-week intensive course provides students with the opportunity to learn to longe a variety of University horses in an enclosed arena under private instruction. The emphasis is on safety and welfare of the horse and handler. Proper equipment and fit are addressed along with different training techniques used to improve the horse's quality of movement. Prereq: AAS 436. Applied Animal Science majors given first priority.

**AAS 540 - Animal Breeding**  
**Credits:** 3.00  
Principles and practices, including the physiology of reproduction, fertility and sterility, artificial insemination, breeding systems, and selection.

**AAS 546 - Animal Business Applications**  
**Credits:** 4.00  
Survey of the various elements of managing an animal and/or agricultural operation regardless of commodity. Topics include: financial statements, credit and interest, insurance considerations, labor management, marketing, promotions, advertising, and sales. 4 lec. Prereq: AAS 242 or ECON 401.

**AAS 547 - Applied Equine Management**  
**Credits:** 3.00  
The application of farm and horse management techniques, including stable routine, planning, and design; nutrition; business considerations; and legal responsibilities. Pre- or Coreq: AAS 546.

**Credits:** 4.00  
Course provides students an opportunity to focus on animal industry relative to specific operational concepts: small business start-up, creating a business plan, enterprise development including opportunity analysis and marketing of ideas, branding and advertising, employee hiring and management, payroll management, inventory management and industry-specific software review for maintaining and analyzing financial statements. Course involves lecture and field study allowing students to examine similar animal business operations in order to enhance practical understanding of topics covered. Prereq: AAS 546.

**AAS 550 - Clinical Animal Nursing Techniques II**  
**Credits:** 4.00  
Builds on materials presented in AAS 249, Clinical Animal Nursing Techniques I. Covers veterinary imaging modalities including radiographic and ultrasonographic techniques and safety, nursing care of hospitalized patients including fluid therapy, laboratory and exotic animal medicine. Prereq: AAS 449.

**AAS 552 - Equine Health Management**  
**Credits:** 4.00
Systems of the horse as they relate to common diseases and lameness. Applied approach to conditioning, care of the sick or lame horse, and preventive care. Prereq: AAS 426 or AAS 437.

**AAS 553 - Equine Competition Management**  
**Credits:** 2.00  
Students organize and run a combined test competition to be held in April. The class is responsible for mailing entries, handling publicity and ad sales, compiling the program, setting the course and dressage ring, and dealing with the public. Proceeds fund seminars available to students and class field trips. May be repeated once. Prereq: AAS 426 or AAS 546.

**AAS 558 - Animal Population Medicine and Management**  
**Credits:** 2.00  
This course applies material from animal health and disease classes to populations of animals rather than individual animals. Topics include stress and disease management, behavior and ethical problems in animal populations, evaluation of scientific research, and decision analysis. Concepts in epidemiology and statistics are covered. Students design and carry out a statistical analysis on data from a chosen animal population. Prereq: AAS 428, AAS 439, MTH 202.

**AAS 563 - Small Animal Grooming III**  
**Credits:** 1.00  
Individual supervised grooming experience for students who wish to obtain more technical grooming skills. Must have taken AAS 422 twice or AAS 422 and 433. Cr/F.

**AAS 572 - Comparative Equine Operations**  
**Credits:** 2.00  
Exploration of national and regional equine farms and related businesses. Using field trips and journals, students will experience and study different farm and business operations. Prereq: AAS 426. 1 lab. May be repeated to a maximum of 2 credits. Cr/F.

**AAS 574 - Dairy Cattle Disease Seminar**  
**Credits:** 2.00  
Covers principles of the immune response, immunological basis for disease control, and emphasizes management practices to prevent disease and maintain optimal animal health in dairy cattle. Numerous guest lecturers, field and case studies, and emphasis on current topics of interest to the industry.

**AAS 575 - Cooperative for Real Education in Agriculture Management (CREAM)**  
**Credits:** 4.00  
CREAM (Cooperative for Real Education in Agricultural Management) is a 2-semester course in which students perform the work and make the financial and management decisions associated with the CREAM dairy herd. Assumption of complete responsibility for the management and care of this 25-cow herd for the entire academic year. CREAM provides students with a unique experiential learning model that will help them understand how to work together to manage and operate a small business, the decision making skills required in production agriculture, and the application of science to the management of a dairy herd. Two semesters of 4 credits each are required. Prereq: AAS 425 or ANSC 409 and ANSC 410 or permission.

**AAS 577 - Functional Canine Analysis Practicum**  
**Credits:** 4.00  
The majority of this course takes place at the Cocheco Valley Humane Society in Dover, New Hampshire. Students facilitate the rehoming of shelter dogs with manageable behavioral issues by assessing, developing and implementing individual plans. A limited amount of time is spent on assisting with incoming temperament assessments and adopter behavioral consultations. Cases commonly involve: social hyper-arousal, obedience, confidence building, enrichment, reactivity, possessive, and barrier counterconditioning.
and desensitization. Includes one feline functional assessment plan. Prereq: AAS 430, AAS 525.

**AAS 579 - Small Animal Care Practicum**

**Credits:** 2.00  
Provides supervised, hands-on experience at the N.H.S.P.C.A. 4 hours/week. Responsibilities include cleaning, feeding, treatment, grooming, socializing and training of shelter animals. Student must receive or show proof of pre-exposure rabies prophylaxis to take the class. Prereq: AAS 422, AAS 428, AAS 430, AAS 439, AAS 449. Special fee required only for first time the course is taken. Lab coat and/or scrubs required.

**AAS 591 - Studies**

**Credits:** 1.00 to 3.00  
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include dairy, light horses, livestock, poultry, meats, forages, management, small animals, or general animal science. Permission required. Course may be repeated up to a maximum of 6 credits.

**AAS 592 - Studies**

**Credits:** 1.00 to 3.00  
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include dairy, light horses, livestock, poultry, meats, forages, management, small animals, or general animal science. Permission required. Course may be repeated up to a maximum of 6 credits.

**AAS 593 - Equine Field Operations**

**Credits:** 1.00 to 3.00  
Field experience in selected areas of equine care and handling, under supervision of appropriate faculty/staff and outside facilities supervisor. A) Veterinary Clinic; B) Breeding and Foaling; C) areas of student interest. All field operations done on an individual basis. Four or more hours per week. Students must provide their own transportation. Prereq: AAS 426, 437, 547, and/or permission of instructor and adviser.

**AAS 597 - Applied Animal Science Work Experience**

**Credits:**  
Employment (12 weeks, generally in the summer following the first year) in an approved animal-related position. Cr/F.
Applied Business Management

**ABM 404A - Introduction to Business I**

**Credits:** 2.00
This 1/2 semester course introduces students to the nature of the firm, market competition, and management principles. Topics include entrepreneurship, starting a firm, selecting, training and retaining human resources, choosing an appropriate legal structure, and the role of ethics in business. Students will learn basic concepts of economics, study market structures, and engage in competitive analysis of specific firms. Lectures, guest speakers, and case studies used to promote discussion and real-world situations.

**ABM 404B - Introduction to Business II**

**Credits:** 2.00
This course is the second half on Introduction to Business. It introduces basic marketing concepts, including product, pricing, promotional and distribution strategies; applies management principles to operations, information technology, and finance; and examines uses of accounting data and financial statements to evaluate past financial performance and project future performance. A basic business plan is required in an area of the student's interest. Students must take ABM 404A before being eligible to take ABM 404B.

**ABM 405 - Small Business Accounting Principles**

**Credits:** 4.00
Learn the basics of sound bookkeeping practices as they apply to any retail, service, or manufacturing entity. Topics include: debiting and crediting, trial balance, worksheets, ledgers and journals, and checkbook reconciliation. Students perform all of the necessary bookkeeping transactions for an actual business. 3-hr lec/2-hr lab.

**ABM 407 - Applied Marketing**

**Credits:** 4.00
Marketing processes presented through text readings, discussions, and semester-long projects. Topics include market research, target marketing, demographics and psychographics, promotion, advertising and publicity, distribution, and pricing. Focuses on the non-personal aspects of marketing and selling. Sust Agriculture&Food Systems and Applied Business Management majors only.

**ABM 426 - Business Computer Applications**

**Credits:** 4.00
Trains students to use common software as an effective tool to answer business questions and solve complicated problems. Microsoft Office programs including Excel, Access, and Powerpoint are used. Microsoft Office is the standard for almost all business operations and will be helpful in other TSAS courses like Managerial Accounting and Business Policy. Each student creates more than twenty business related spreadsheets, creates and manages multiple databases, and creates several presentations.

**ABM 506 - Human Resource Management**

**Credits:** 4.00
The biggest problem most managers face is getting their employees motivated to work at peak performance. This course is designed to teach managers how to motivate employees through proper hiring techniques, performance reviews, training, administering change, working with problem employees, working with unions, and administering pay and fringe benefits. 2 2-hr discussion. Sust Agriculture&Food Systems and Applied Business Management majors only.
ABM 508 - Managerial Accounting  
Credits: 4.00  
Students focus on the decision-making aspects of financial management, primarily for internal use by managers. Topics include: cost behavior and control, budgeting, inventory control, capital investments and depreciation, tax strategies, interpretation of financial statements, profitability analysis, cash flow management, standard cost accounting, manufacturing accounting and other cost accounting techniques.

ABM 514 - Applied Sales  
Credits: 4.00  
Focuses on the process of personal selling and persuasion skills. Students spend considerable time practicing their techniques and working with (and observing) professional sales associates in the workplace. Selling involves the pre-approach, approach, demonstration, handling of objections, and closing the sale and follow-up. Also presents and discusses the roles of the sales manager and related financial elements. 2 2-hr lec-discussion.

ABM 532 - Small Business Law  
Credits: 4.00  
Background and understanding of the legal aspects of management, including: contracts, liability and insurance, business law and regulation, employee laws and rights, forms of ownership, tax implications, and other legal matters relevant to successful management.

ABM 540 - Ethics in Business and Society  
Credits: 4.00  
A new look at the interface of managerial and ethical issues as they relate to workers, the workplace and the interface between business and society. Brings together concepts such as profit, values, community and, responsibility to consider a paradigm that meets the needs of an organization and the social environment in which it must exist. Helps students identify methodologies for sustaining business in its function as a responsible force for the betterment of wealth and well being in society.

ABM 550 - Business Policy  
Credits: 4.00  
Through use of case studies from existing businesses, the organization and execution of a student-run business, students now bring together and apply all they have learned throughout the program. This course also features an Executive Speaker Series and a community service component. This unique and experiential final-semester course allows the individual to see how all of the parts make up the whole and to achieve a higher level of self-confidence, self-esteem, and hands-on abilities. 2 2-hr lec-discussion.
ARBC 401 - Elementary Arabic I  
Credits: 4.00  
This course introduces students to the language of Arabic and the culture of the Middle East. It teaches writing and pronunciation of Arabic letters and words, as well as a number of common phrases, such as greetings and cordial interactions. Both modern standard Arabic and colloquial Egyptian are taught. It also introduces students to basic aspects of Arabic culture and history. Special fee.

ARBC 402 - Elementary Arabic II  
Credits: 4.00  
This course builds on skills of learning Arabic acquired in ARBC 401. It continues with the teaching of these skills, which are listening, reading, writing, and speaking. It expands the students’ acquisition of grammar, and widens their familiarity with the Middle East culture. It teaches both modern Standard Arabic and colloquial Egyptian. Prereq: ARBC 401 or permission from the instructor. Special fee.

ARBC 503 - Intermediate Arabic  
Credits: 4.00  
This intermediate level course builds on the skills of reading comprehension and the writing and speaking of Modern Standard Arabic that were acquired in first-year Arabic. It takes students to the next level of familiarity with, and the practice of, Arabic. It also puts a heavier weight on using the Egyptian dialect of Arabic in conversation. Prereq: ARBC 402 or permission from the instructor. Special fee.

ARBC 504 - Intermediate Arabic  
Credits: 4.00  
This intermediate level course builds on the skills of reading and reading comprehension and the writing and speaking of Modern Standard Arabic that were acquired in Arabic 503. Students begin to read Arabic newspapers, websites, and other simple reading materials. An emphasis on using the Egyptian dialect of Arabic in conversation continues. Prereq: ARBC 503 or permission of the instructor. Special fee.

ARBC 595 - Arabic Practicum  
Credits: 2.00  
Practical use of Arabic language and culture through special projects outside the classroom. May be repeated for a maximum of 4 credits. Prereq: Permission. Special fee.

ARBC 631 - Advanced Arabic I  
Credits: 4.00  
This advanced intermediate level course builds on the skills of reading and reading comprehension, and the writing and speaking, of Modern Standard Arabic that were acquired in ARBC 504. Students continue to read Arabic newspapers, websites and other materials, and bring their findings to share in class discussions. An even greater emphasis than in lower levels of Arabic, are placed on acquiring and practicing the Egyptian dialect of Arabic in class conversations. Prereq: ARBC 504 or permission from the instructor. Special fee.

ARBC 632 - Advanced Arabic II  
Credits: 4.00  
This advanced intermediate level course builds on the skills of reading and reading comprehension, and the writing and speaking, of Modern Standard Arabic. Students continue to read Arabic newspapers, websites and other materials, and bring their findings to share in class discussions. An even greater
emphasis than in lower levels of Arabic, are placed on acquiring and practicing the Egyptian dialect of Arabic in class conversations. Prereq: ARBC 631 or permission from the instructor. Special fee.
ARTS 444 - Mona Lisa to Romeo and Juliet: An Introduction to Renaissance Culture
Credits: 4.00
What made Renaissance culture tick: who were the pivotal personalities (writers and politicians as well as artists); which are the most typical and which the least typical works produced in Italy and elsewhere throughout Europe? How did viewers think about the art of their time, and in particular how did they respond to the new mass medium of printed images? How connected is our present artistic culture to that of five hundred years ago? When did the Renaissance acquire its fame? Students consider connections between the English and the Italian Renaissances, comparing, for instance, Michelangelo and Shakespeare. Readings include sixteenth-century historical and literary sources as well as art historical essays. Writing intensive.

ARTS 455 - Architectural Design Studio
Credits: 4.00
An entry level architectural design studio. Course assignments feature hand drafting, hand rendering, model building, and project presentations while developing skills in verbal, written, and graphic communication. Drafting, hand-rendering, and model making materials and tools are required for this course. Knowledge of CAD or 3-D computer modeling is not required.

ARTS 480 - Introduction to Art History
Credits: 4.00
Analysis of the central forms and meanings of art history through intensive study of selected artists and monuments. Includes works of architecture, sculpture, painting, and the graphic arts. Topics will vary but might include the Parthenon, Chartres Cathedral, Michelangelo's Sistine Chapel ceiling, Rembrandt's self-portraits, Monet's landscapes, Picasso's Guernica, Frank Lloyd Wright's Falling water, Georgia O'Keeffe's abstractions, ukiyo-e prints, and Benin sculpture.

ARTS 487 - Twentieth Century Europe
Credits: 4.00
This course examines the extraordinary transformations that have swept across Europe in the past century in relation to their impact on art, architecture, photography, film, theatre, and literature. The course structure reflects the interdisciplinary quality of the field of cultural studies in that we examine a range of issues that challenge traditional departmental boundaries. Readings, films viewings, and class discussions focus on specific historical events, such as World War I, World War II, the Holocaust, the Cold War, and Post colonialism, in relation to specific cultural movements, such as expressionism, futurism, surrealism, and existentialism, that have contributed to Europe's identity formation.

ARTS 487H - Honors/Twentieth Century Europe
Credits: 4.00
This course examines the extraordinary transformations that have swept across Europe in the past century in relation to their impact on art, architecture, photography, film, theatre, and literature. The course structure reflects the interdisciplinary quality of the field of cultural studies in that we examine a range of issues that challenge traditional departmental boundaries. Readings, films viewings, and class discussions focus on specific historical events, such as World War I, World War II, the Holocaust, the Cold War, and Post colonialism, in relation to specific cultural movements, such as expressionism, futurism, surrealism, and existentialism, that have contributed to Europe's identity formation. Writing intensive.

ARTS 500 - Topics in the History of Art
Credits: 4.00
Art History will be presented thematically. At least three distinct chronological periods will be treated; students will develop research skills and give oral presentations. Topics will vary: "Art Writers: Their Sources and Their Effects;" "Rome from Romulus to the Fascists," "Cults of the Original and Cultures of the Copy." Repeatable up to a maximum of 12 credits with different topics. May count toward the architectural minor if papers take the appropriate emphasis. Writing intensive.

ARTS 501 - Introductory Ceramics
Credits: 4.00
Theory and practice of basic ceramics; includes all methods of basic construction, decoration, glazing, and kiln firing. Emphasis on each individual's perceptual development. Special fee. Lab.

ARTS 525 - Introductory Woodworking
Credits: 4.00
Theory and application of basic woodworking principles; design concepts, primarily utilitarian, applied to shaping a mass, constructing volumetric and line/plane forms; use of a complete range of hand, portable powered, and stationary powered tools. Special fee. Lab.

ARTS 532 - Introductory Drawing
Credits: 4.00
This course is an introduction to the basic principles of studio drawing. Students work towards mastering the technical skills to produce drawings from observation, a working knowledge of the historical time line in drawing, and insight into the complexities of the creative process. A variety of materials are explored, pencil, charcoal, ink and collage. Art historical and contemporary drawing practices are shown in lectures and books to amplify the concepts introduced in the daily studio work. Special fee.

ARTS 532H - Honors/Introductory Drawing
Credits: 4.00
This course is an introduction to the basic principles of studio drawing. Students work towards mastering the technical skills to produce drawings from observation, a working knowledge of the historical time line in drawing, and insight into the complexities of the creative process. A variety of materials are explored, pencil, charcoal, ink and collage. Art historical and contemporary drawing practices are shown in lectures and books to amplify the concepts introduced in the daily studio work. Special fee.

ARTS 536 - Introduction Printmaking: Intaglio
Credits: 4.00
Study of intaglio printmaking techniques, including etching, dry point, and engraving. Prereq: ARTS 532 or permission. Special fee. Lab.

ARTS 537 - Introduction to Printmaking: Lithography
Credits: 4.00
Study of lithographic processes on stone and aluminum plate. Prereq: ARTS 532 or permission. Special fee. Lab.

ARTS 546 - Introductory Painting
Credits: 4.00
Applies and expands on concepts established from Arts 532 Introductory Drawing. Introduction to observational oil painting, a variety of oil painting techniques and masterworks access historical time line, and basic principles of Color and Design theory. Employs still life, landscape, interior spaces and the figure as painting subjects. Lectures on historical and contemporary painting practices combined with group and individual critiques enhance the classroom experience. Prereq: Arts 532 Introductory Drawing. Special fee.
ARTS 551 - Introduction to Darkroom Photography
Credits: 4.00
This studio course introduces the fundamentals of photographic practice. Students learn technical aspects of exposure, developing and printing in the darkroom as they explore and respond to the visual qualities of the medium. The format includes class demonstrations, lab work, field assignments and critiques. Manual 35mm film camera will be provided. Special fee.

ARTS 552 - Introductory Digital Photography
Credits: 4.00
Introduction to the basic principles and applications of digital photography. The philosophical and technical relationship between camera and computer is an integral part of today's digital literacy needs. Techniques learned correspond to traditional darkroom processes and include creative shooting, editing and image manipulation. The students uses new skills and techniques towards developing a unique artistic vision. Digital camera required (point and shoot or DSLR). Special fee.

ARTS 567 - Introductory Sculpture
Credits: 4.00
Introduces the beginning student to the theory and practice of designing three-dimensional compositions using a series of progressive assignments. The student develops a practical understanding of sculptural elements, including line, form, space, mass, and plane. Multiple materials are explored including clay, plaster, wire and wood. This course is a prerequisite to upper level sculpture workshop courses, which subsequently focus on in-depth investigations of a particular sculptural material. Special fee.

ARTS 574 - Introduction to Architectural History
Credits: 4.00
Survey of representative buildings from the entire history of architecture with analysis of structure, form, and symbolic content, concentrating on major works such as the pyramids, the Roman Pantheon, the Gothic cathedral, the Renaissance palace, the Baroque church, and the modern skyscraper. In addition to the overarching narrative of architectural history, further topics include materials and building technologies, design theories, aesthetic principles, and the role of the architect in society.

ARTS 592 - Photography's Brave New Worlds
Credits: 4.00
Today, we are bombarded by photographs on the Internet, Facebook, Twitter, and Instagram. Indeed, digital photographs seem to have created a "brave new world." However, throughout its history, photography's artistic innovations, technological developments, and creative new uses have transformed the ways in which we navigate the world. This course focuses on photography's game-changing impact on art, science, social reform, popular culture, globalization, and war propaganda from 1839 to the present.

ARTS 596 - Special Topics in Studio Art
Credits: 4.00
Introductory level topics to be announced before registration. Topics can be either a lecture or studio course. May be repeated for a maximum of 12 credits with different topics.

ARTS 598 - An Artist's Life
Credits: 4.00
This course looks at the visual arts from the standpoint of artists. Biographies of artists and their environments are emphasized. Studio methods, professional activities, and ideas of historical and contemporary artists are also studied. The semester includes readings, discussions, and field trips. The course encourages students to develop ideas about the relationship of the visual arts to other disciplines in fine arts, literature and the sciences.
ARTS 600 - Internship
Credits: 1.00 to 4.00
Election to take an internship in the following areas within the Department of Art and Art History: (600A) Painting, Drawing, Printmaking, Photography, Sculpture, Woodworking, Ceramics, and Graphic Design; (600B) Art History; (600C) Architecture; and (600D) Museum Work. Cannot be used to satisfy one of three electives in the Studio B.F.A. Program and one of the two electives in the Studio B.A. Program. In art history, it can be taken as an elective above the 11-course major requirement. May be repeated up to 8 credits. Prereq: permission.

ARTS 601 - Ceramics Workshop
Credits: 4.00
Application of new ceramic materials and techniques, with emphasis on ideas and their expression through form and content. Experimentation encouraged. Specific focus to be announced each semester. May be repeated for a maximum of 16 credits. Prereq: ARTS 501. Special fee. Lab.

ARTS 625 - Wood/Furniture Design Workshop
Credits: 4.00
Design and construction of the major furniture forms, using a broad range of techniques (including lamination, bending, and molding) to execute a series of concept areas relevant to furniture. May be repeated for a maximum of 12 credits. Prereq: ARTS 525. Special fee. Lab.

ARTS 632 - Intermediate Drawing
Credits: 4.00
Intermediate Drawing reinforces and builds upon skills developed in Introductory Drawing. Strong emphasis is given to resolving spatial relationships and composition (examination of 2D and 3D space). Line as abstraction, gesture, tonal development, perspective, and drawing from the human figure are important topics of this course. Materials such as graphite, charcoal, ink, and mixed media are covered, as well as the use of different papers. Outside assignments and class critiques play an expanded role. Prereq: ARTS 532 Introductory Drawing. Special fee.

ARTS 633 - Life Drawing
Credits: 4.00
A continuation of the more formal aesthetic issues introduced in introductory and intermediate drawing with an emphasis on drawing the human figure from life. Prereq: ARTS 532 Introductory Drawing. Lab. Special fee.

ARTS 636 - Printmaking Workshop
Credits: 4.00
Emphasis on development of the individual's imagery in lithography and/or intaglio, including an introduction to multicolor printmaking. May be repeated for a maximum of 12 credits. Prereq: ARTS 536 and/or ARTS 537. Lab.

ARTS 645 - Water Media
Credits: 4.00
This course is an introduction to water media; watercolor, gouache, egg tempera, and ink. The students explore the technical and expressive properties of each of these materials. Because water mediums are unique in their portability and adaptability to a variety of environments, the students travel outside of the studio classroom to paint in the UNH greenhouses, insect collection room and in the surrounding landscape. Students must have completed ARTS 546 Introductory Painting. Course may be taken a second time to explore the medium at a higher level. Special fee.

ARTS 646 - Intermediate Painting
Credits: 4.00
More complex issues of the visual language. Still life and the figure continue as dominant subject matter. Slide lectures. May be repeated for a maximum of 8 credits. Prereq: ARTS 546. Lab. Special fee.

ARTS 651 - Photography Workshop
Credits: 4.00
Individualized projects involving creative methods, including color, manipulative, and documentary techniques. Students provide their own cameras. Prereq: ARTS 551 Photography: Darkroom AND ARTS 552 Digital Photography. May be repeated for a maximum of 16 credits. Lab. Special fee.

ARTS #654 - 17th and 18th Century American Architecture
Credits: 4.00
Chief architectural styles and significant buildings from the European colonization to the birth of the American republic. A study of religious, public, and domestic architecture and of the settlement patterns of the Spanish, French, Dutch, and English colonies, culminating in the revolutionary classicism of the new republic. Typical works include the California mission church, the New Orleans raised cottage, the Dutch farm house of the Hudson Valley, the plantations of Virginia, and the Boston State House. Field trips. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 655 - Nineteenth-Century Architecture: The Architecture of Empire
Credits: 4.00
Architectural concepts and significant buildings in Europe and America from the Revolutions of the late eighteenth century to the First World War; this course covers religious, civic, commercial, and domestic theories of architecture as well as town planning and urban design during the rise of the modern nation-state and market capitalism. Connections between social and architectural history will be emphasized. Prereq: one 400- or 500-level art history course or permission of the instructor. Writing intensive.

ARTS 656 - Twentieth-Century Architecture: Modern and Contemporary
Credits: 4.00
From the turn of the century to recent commissions of living architects, this course provides a global view of twentieth-century architecture, covering the major movements along with more radical engagements with architecture. Important formal, technological, and theoretical debates surrounding Modernism will lead to consideration of Post-Modernity and contemporary values of architectural design. Connections between social and architectural history will be emphasized. Prereq: one 400- or 500-level art history course or permission of the instructor. Writing intensive.

ARTS 667 - Sculpture Workshop
Credits: 4.00
Design and production of sculpture focusing on various materials and techniques and how they relate to composition and content. Emphasis on understanding visual language while developing an individual style. May be repeated for a maximum of 12 credits. Prereq: ARTS 567. Special fee. Lab.

ARTS 674 - Greek Art and Architecture
Credits: 4.00
Ancient Greece has long been a source of emulation and inspiration. From the legendary Bronze Age palaces of Mycenae and Knossos, through the classical ideals of the city state and its ultimate diffusion through Alexander the Great, this course explores ancient Greek culture through the lens of its surviving art and architecture. We will visit the great temples, urban centers, monuments, buildings, statuary, luxury and everyday objects that Greek society produced as a reflection of its ideals. At the same time, we will consider the legacy of Greek material culture by looking at issues such as cultural heritage, the trade in antiquities, and the adoption of Greek forms in our modern world. Prereq: one 400- or 500-level art history course. Writing intensive.
ARTS 675 - Roman Art and Architecture  
**Credits:** 4.00  
Rome: what started as a handful of huts overlooking the Tiber River would grow into a vast empire spanning the Mediterranean Sea. Roman society would create vibrant and complex works of art and architecture that drew inspiration from the variety of ancient cultures it encompassed. Starting in the 9th century BCE and ending with Constantine, the first Christian emperor in the 4th century CE, this course will survey the artistic and architectural achievements of ancient Rome. We will examine public and domestic architecture, as well as funerary art, painting, portraiture and sculpture in their ancient and modern contexts. Our aim is to understand the development of Roman culture and consider its legacy in the modern world. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 677 - Early Medieval Art  
**Credits:** 4.00  
Development of Christian art from 300 to 1000 A.D. Study of the formulation of a new visual language via the intersection of Mediterranean and northern European traditions. Major focus on early Christian catacombs, Byzantine mosaics, insular manuscripts, and Carolingian imperial art. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 678 - Romanesque and Gothic Art  
**Credits:** 4.00  
From the fall of the Roman Empire to the fourteenth century, through plague and destruction, glory and honor, heaven and hell, this course tackles the culmination of medieval artistic development, focusing especially on major architectural monuments and their sculptural programs. Treating also the art of tombs, relics, manuscripts, and devotional painting. Connections between social, religious, and art history are emphasized. Prereq: 400- or 500-level art history course or permission of the instructor. Writing intensive.

ARTS 679 - Northern Renaissance Art I  
**Credits:** 4.00  
Painting, sculpture, graphic arts, and manuscript illumination in France, Germany, and the Netherlands in the 14th and 15th centuries. Emphasis on the development of the traditions of Northern naturalism and the emergence in 15th-century Flanders of a distinct Renaissance consciousness, which runs parallel to contemporary trends in Italy. Major figures include the Limbourg brothers, Claus Sluter, Jan van Eyck, and Hugo van der Goes. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 680 - Northern Renaissance Art II  
**Credits:** 4.00  
Painting, sculpture, and graphic arts in Germany and the Netherlands in the 16th century. Emphasis on the encounter of the Northern tradition with the classical and humanistic culture of the Italian Renaissance and on the impact of the Protestant Reformation. Major figures include Bosch, Durer, Holbein, and Bruegel. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 681 - Early Renaissance Art in Italy  
**Credits:** 4.00  
How did Europe recover from the Black Death in 1348? How was it possible for Florence to become the center of western creativity both before and after that catastrophe? How did Renaissance art develop elsewhere during the fourteenth and fifteenth centuries? What was "primitive" about Botticellii? Prereq: ARTS 480, 500, or 574; or instructor permission. Writing intensive.

ARTS #682 - Beginnings of Artistic Genius  
**Credits:** 4.00  
Examines the trajectory from Leonardo to the deaths of Michelangelo and Titan: painting, sculpture,
architecture, and works on paper. Prereq: ARTS 480, 500, or 574; or instructor permission. Writing intensive.

ARTS 683 - Baroque Art
Credits: 4.00
The last period of Italian world prominence in the visual arts, the Baroque witnessed a shift of artistic power toward Spain, France, and the Netherlands. The private collecting of pictures, controversies over the legitimacy of religious images, the exploration of etching, pastels, and monotypes, and the serious pursuit of less august subject matter for the visual arts all served to separate Baroque art from its esteemed predecessor, the Renaissance. Bernini, Borromini, Caravaggio, Velazquez, Rembrandt, Rubens, and Poussin are among the artists to be studied. One 400- or 500-level art history or permission of the instructor. Writing intensive.

ARTS 684 - Baroque Art in Northern Europe
Credits: 4.00
Dutch and Flemish painting in the 17th century. Examination of such major figures as Rubens, Rembrandt, Van Dyck, and Vermeer. Attention is also given to the development of the genres and to the many little masters who practiced them. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 685 - Graphic Art of the Renaissance and Baroque Periods
Credits: 4.00
The availability of paper and the invention of the printing press made it possible for drawings and prints to become fundamental elements in the western artistic tradition. Prints have been called major instigators of the production of secular art and of overtly experimental art. They were the first art made with an elite but relatively broad class of collectors in mind, and—in different examples—the first art that could be owned even by the poor. Examination of anonymous works, works by artists famous only as printmakers, and the printed work by or after Mantegna, Durer, Lucas van Leyden, Raphael, Michaelangelo, Bruegel, and Rembrandt, as well as drawings of the period. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 686 - Eighteenth-Century European Art
Credits: 4.00
European art of the "long" eighteenth century (1680-1815) experienced radical shifts in aesthetic, social, and political orientation: from the splendors of absolutism to the austere neoclassicism of revolutionary art. This course explores painting and sculpture (and works in other media) in relation to the development of a public sphere, the emergence of individualism, the invention of personal domestic comfort, the introduction of women to artistic power, the scientific revolution, and the birth of global consumer culture. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 687 - Nineteenth-Century European Art
Credits: 4.00
This course examines the history of European art and visual culture from the late 1780s to 1900. How did visual art respond to the massive social, political, and technological upheavals of the nineteenth century? Topics will include the romanticism of Goya Delacroix, and Gericault; forms of mass spectable including the panorama and diorama; the realism of Courbet; the invention of photography; Manet, the Impressionists, and Post-Impressionists; and the sculpture of Rodin and Claudel. Prereq: one 400- or 500-level art history course. Writing intensive.

ARTS 688 - Gauguin to Hitler: Tropical Paradise to Technological Utopia
Credits: 4.00
An examination of European and American art from Symbolism to Surrealism, from the 1890s to World War II. The course focuses on a series of topics related to the political, social, scientific, and artistic
upheavals of the era. Among the topics to be considered are Gauguin and "Primitivism"; Picasso, Cubism, and film; the Bauhaus and Utopian Architecture; Modernist Photography; Surrealism and Freud; and the fate of art under Hitler and Stalin. Writing intensive.

**ARTS 689 - Pollock and Pop to Digital Art**  
**Credits:** 4.00  
Examines the art and art criticism produced primarily in the United States and Europe in the aftermath of World War II, with some attention on contemporary art elsewhere. An ongoing theme is the construction of national and cultural identities in relation to various artistic movements, including Action and Color Field Painting, Pop Art, Minimalism and Conceptual Art, Earthworks and Sited Sculpture, Feminist Art, New Image Painting, and Digital Art. Writing intensive.

**ARTS #693 - American Art**  
**Credits:** 4.00  
A chronological survey of American painting and sculpture from the European colonization to the New York Armory Show of 1913, with emphasis on portraiture, narrative, still-life, and landscape painting. Examination of stylistic and thematic developments from the Puritan and Georgian New England portrait, the heroic narrative of the Revolutionary era, the romantic landscape to the realism of the post-Civil War era and the birth of modernism. Typical works include Copley's Portrait of Paul Revere, Cole's Course of Empire, Homer's Fog Warning, Cassatt's At the Opera, and Eakin's Max Schmitt in a Single Scull. Prereq: one 400- or 500-level art history course. Writing intensive.

**ARTS 695 - Special Topics in Art History**  
**Credits:** 4.00  
Topics and prerequisites to be announced before registration. May be repeated with permission of the instructor. Lab. Writing intensive.

**ARTS 695I - Problems in Visual Arts/Italy**  
**Credits:** 4.00  
Part of the ITAL 685/686 study abroad program held in Italy.  
**Co-requisites:**

**ARTS 696 - Special Topics in Studio Art**  
**Credits:** 4.00  
Topics and prerequisites to be announced before registration. May be repeated for a maximum of 12 credits with different topics.

**ARTS 697 - Topics in Asian Art**  
**Credits:** 4.00  
A thematic study of the major artistic achievements in India, China, and/or Japan from pre-history to the twentieth century. Works of art in various media, including painting, sculpture, ceramics, calligraphy, prints, architecture, and gardens, will be examined in relation to philosophical concepts and to their cultural/historical contexts. May be repeated up to a maximum of 8 credits. Prereq: one 400- or 500-level art history course or permission of the instructor. Writing intensive.

**ARTS 699 - Museum Studies**  
**Credits:** 4.00  
Introduction to the history and practices of American museums, including their purposes, organization, interpretation, policies and practices. Use of the Art Gallery, with occasional visits to other museums and art conservators. This course may not be used by studio art majors and B.F.A. candidates to fulfill the art history requirement. Prereq: two courses in art history or permission. Writing intensive.
ARTS 700H - Honors Seminar  
**Credits:** 4.00 or 8.00  
Requires successful completion of a written thesis supervised by two faculty advisers (one each from studio and art history faculty) to be reviewed by members of the department honors committee. The art history thesis will involve an original problem in art history and the studio art thesis will examine the student's own work. Honors students only.

ARTS 732 - Advanced Drawing  
**Credits:** 4.00  
Treatment of more complex compositional problems; application of a broader range of solutions to pictorial problems to reinforce and expand individual concepts of image and technique. May be repeated for a maximum of 12 credits. Prereq: ARTS 632 Intermediate Drawing and ARTS 633 Life Drawing. Lab. Special fee.

ARTS 746 - Advanced Painting  
**Credits:** 4.00  
Development of a higher degree of technical skill to handle more advanced conceptual problems. Class assignments may be more individually directed. May be repeated for a maximum of 12 credits. Prereq: ARTS 646 (8 credits). Special fee.

ARTS 791 - Art Education (Elementary)  
**Credits:** 4.00  
Children's creative growth as revealed through their visual expression. Development of elementary art education programs with emphasis on objectives, methods, materials and techniques to foster creativity. Suggested prereq: EDUC 500.

ARTS 792 - Art Education (Secondary)  
**Credits:** 4.00  
The creative process in the visual arts in relation to the development and skills of middle and high school students in the public schools; mechanics of beginning and maintaining a secondary art program; exploring resources for art education programs on the secondary level. Suggested prereq: EDUC 500.

ARTS 795 - Art Historians and Their Styles  
**Credits:** 4.00  
Intended for students who have had some prior experience of reading art history, this course asks how do art historians formulate their projects and evaluate the results, both of their own work and that of others past and present? What issues do art historians across various specialties currently debate? Not limited to art history majors; studio art and other majors are welcome. Prereq: at least one 600-level ot above art history course or equivalent experience. Writing intensive.

ARTS 796 - Independent Study in the Visual Arts  
**Credits:** 1.00 to 8.00  
A) Photography; B) Sculpture; C) Drawing; D) Painting; E) Printmaking; F) Water Media; G) Architectural Design; H) Curatorial Assistant; I) Painting in Italy; J) Ceramics; K) Wood Design; L) Art History. Open to highly qualified juniors and seniors who have completed the advanced level courses in the chosen medium. May be repeated to a total of 8 credits. Prereq: permission of department chairperson and supervising faculty member or members. Special fee on some sections.

ARTS 798 - Seminar/Senior Thesis  
**Credits:** 4.00 to 8.00  
Readings and discussions oriented toward the intellectual premises of art. Culminates in mounting an exhibition of the student's work. Required of all students in the B.F.A program. Other advanced students
may elect with instructor's permission. A year-long course; an IA grade (continuous course) will be given at the end of the first semester. Lab. Variable credit; may be repeated to a total of 8 credits. B.F.A. majors must take 8 credits total. Special fee for Photography students.

**ARTS 799 - Seminar in Art History**

**Credits:** 4.00

Topics and prerequisites to be announced before registration May be repeated with permission of instructor. Writing intensive.
Bchm, Molecular & Cellular Biol

BMCB 401 - Opportunities in Biochemistry and Molecular and Cellular Biology
Credits: 1.00
Views scope of biochemistry, molecular and cellular biology and explores professional opportunities for BMCB majors. Guest speakers from on and off campus present seminars and lead discussions on contemporary issues in subject area. Departmental and interdepartmental majors and options programs and strategies for achieving professional goals are discussed. Cr/F. Biochemistry, Molecular and Cellular Biology majors only.

BMCB 405 - Biotechnology Research Internship
Credits: 2.00
For this 4-week (minimum) experiential learning course, students conduct independent laboratory-based research in an area of shared interest with a faculty mentor in the College of Life Sciences and Agriculture (COLSA). Students will gain first-hand experience conducting original research and will implement direct observation, reflection, evaluation, and discussion. Students may complete readings and assignments complementary to the laboratory experience and may gain skills in effective communication through report writing and oral presentations. Prereq: permission. Open to high school students only.

BMCB 501 - Biological Chemistry
Credits: 5.00
Survey of the molecular basis of life with a focus on the mechanisms of biochemical reactions in metabolic pathways, beginning with an overview of functional groups and organic reactions relevant for living organisms. The bioenergetics of carbohydrate, lipid, and nitrogen metabolic pathways will be analyzed. Prereq: CHEM 411. No credit earned if credit received for BMCB 658, or BMCB 751 and BMCB 752. Only open to Nutr: Dietetics and Nutr: Nutrition & Wellness majors.

BMCB 600 - Field Experience
Credits: 1.00 to 4.00
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

BMCB 600W - Field Experience
Credits: 1.00 to 4.00
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F. Writing intensive.

BMCB 605 - Eukaryotic Cell and Developmental Biology
Credits: 4.00
Cell and developmental biology of eukaryotic animals and plants. General topics include the structure and function of major cellular compartments, an analysis of intracellular dynamics, mechanisms of intercellular communication, and mechanisms for elaborating and integrating multicellular animals and plants. Special topics include mitogenesis, cell motility, oncogenesis, control of gene expression, and pattern formation. Prereq: BIOL 411 and 412; CHEM 403 and 404.
BMCB 658 - General Biochemistry
Credits: 3.00
A comprehensive, introductory course emphasizing the cellular metabolism and the structure and function of proteins, nucleic acids, carbohydrates, and lipids. Prereq: BIOL 411, CHEM 545-546, CHEM 547-548, or CHEM 651-652. Coreq: BMCB 659 (except BMCB majors who are encouraged to take BMCB 755).
Co-requisites: BMCB 659

BMCB 659 - General Biochemistry Lab
Credits: 2.00
Structured laboratory experiments that provide training in analytical and preparative techniques fundamental to modern biochemistry and molecular biology. Coreq: BMCB 658 (except for BCHM majors who are encouraged to take BMCB 755 instead of BMCB 659). Special fee.
Co-requisites: BMCB 658

BMCB 659W - General Biochemistry Lab
Credits: 2.00
Structured laboratory experiments that provide training in analytical and preparative techniques fundamental to modern biochemistry and molecular biology. Coreq: BMCB 658 (except for BCHM majors who are encouraged to take BMCB 755 instead of BMCB 659). Special fee. UNHM only. Writing intensive.
Co-requisites: BMCB 658

BMCB 714 - Electron Microscopy
Credits: 5.00
Theory and principles involved in preparing plant and animal tissue for observation with the transmission (TEM) and scanning (SEM) electron microscopes; shadow casting; photographic techniques; stereology; and presentation of micrographs for publication. Prereq: permission. Special fee. Lab.

BMCB 715 - Electron Microscopy Lab
Credits: 3.00
Practical application of theoretical principles and practices used in preparing and observing plant and animal tissues with the transmission and electron microscopes. Student project assigned. Prereq: permission. Special fee.
Co-requisites: BMCB 714

BMCB 750 - Physical Biochemistry
Credits: 3.00
Structure, interactions, and physical-chemical properties of bio-molecules. Thermodynamic, kinetic, and spectroscopic methods for the study of proteins and nucleic acids. Prereq: 2 semesters organic chemistry, 1 semester of calculus; or permission.

BMCB 751 - Principles of Biochemistry
Credits: 4.00
In-depth survey of biochemistry: macromolecular structure; structure and function of proteins, nucleic acids, carbohydrates, and lipids. Prereq: CHEM 657-658 or CHEM 651-652 or CHEM 545 and 546 and BMCB 658-659; or permission

BMCB 752 - Principles of Biochemistry
Credits: 4.00
Continuation of in-depth survey of biochemistry: metabolism of amino acids, nucleotides, carbohydrates and lipids; macromolecules synthesis and regulation; molecular biology of the eukaryotic cell. Prereq: BMCB 751 or permission.
BMCB 753 - Cell Culture  
**Credits:** 5.00  
Principles and technical skills fundamental to the culture of animal and plant cells, tissues, and organs. Introduction to the techniques of sub-culturing, establishing primary cultures, karyotyping, serum testing, cloning, growth curves, cryopreservation, hybridoma formation and monoclonal antibody production, and organ cultures. An interdisciplinary course with emphasis on the application of cell culture to contemporary research in the biological sciences. Prereq: BMS 503; permission. Special fee. Lab.

BMCB 754 - Laboratory in Biochemistry and Molecular Biology of Nucleic Acids  
**Credits:** 5.00  
Application of modern techniques to the analysis of bio-molecules, with an emphasis on nucleic acids; includes DNA isolation and analysis, cloning, sequencing, and analysis of gene products. Prereq: BMCB 658/659; 751; and permission. Special fee. Writing intensive.

BMCB 755 - Laboratory in Biochemistry and Molecular Biology  
**Credits:** 5.00  
Application of modern techniques to the characterization and purification of biomolecules, with an emphasis on proteins and nucleic acids; analysis of enzyme kinetics; and basic techniques used in molecular biology. (Majors anticipating taking BMCB 799 should take this course in their junior year.) Prereq: BMCB 751-752; or permission. BMCB 752 may be taken concurrently with BMCB 755. Special fee. Writing intensive.

BMCB 760 - Pharmacology  
**Credits:** 4.00  
Introduction to the basic principles and fundamental concepts of pharmacology, with a focus on molecular mechanisms and pathological basis of therapeutics and the curative effects. Topics comprise foundations of pharmacology including pharmacogenomics; drugs affecting the nervous system (neuropharmacology); drugs affecting other systems; chemotherapeutic drugs. No credit earned if credit earned for BSCI 680. Prereq: BMCB 658 or BMCB 751, or permission.

BMCB 763 - Biochemistry of Cancer  
**Credits:** 4.00  
Evaluation of the hallmarks of cancer, including molecular mechanisms of carcinogenesis, roles of onogenes and dysregulated cell development, function and metabolism, tumor immunology, and the biological basis of cancer therapy. Prereq: BMCB 658 or BMCB 751, or permission.

BMCB 783 - Proteomics for Biological Discoveries  
**Credits:** 4.00  
Proteomics, the large-scale, high-throughput study of proteins, is an interdisciplinary domain in modern biological research. It undertakes a 'holistic' approach to characterise the entire set of proteins (proteome) and quantify changes in protein composition/interactions and posttranslational modifications. Topics to be covered include goals in proteomic analysis, major technology platforms, and pharmaceutical and biomedical applications. Lab sessions provide an opportunity to process samples from research projects and analyze mass spectrometric data. Prereq: BMCB 658/751, or by permission.

BMCB 790 - Undergraduate Teaching Experience  
**Credits:** 1.00 to 4.00  
Students assist Graduate Teaching Assistants in preparing, presenting, and executing BMCB laboratory. May be repeated up to a maximum of 4 credits.

BMCB 794 - Protein Structure and Function  
**Credits:** 4.00
Analysis of how the three-dimensional architecture of soluble and membrane proteins contributes to their biochemical function. Topics include methods for determining the structure of proteins, protein folding, protein targeting, and mechanisms of enzyme catalysis. Computer resources will be used for protein modeling and structural prediction. Prereq: BMCB 658 or 751.

**BMCB 795 - Investigations**  
**Credits:** 1.00 to 4.00  
Independent study in various areas including but not limited to: genetics, signal transduction, gene regulation, molecular evolution, biochemistry of cancer, biophysics of macromolecules, endocrinology, and glycobiology. May include readings, laboratory work, organized seminars and conferences. Prereq: permission. Not more than 4 total credit hours can be applied to BMCB or major electives.

**BMCB 795W - Investigations**  
**Credits:** 1.00 to 4.00  
Independent study in various areas including but not limited to: genetics, signal transduction, gene regulation, molecular evolution, biochemistry of cancer, biophysics of macromolecules, endocrinology, and glycobiology. May include readings, laboratory work, organized seminars and conferences. Prereq: permission. Not more than 4 total credit hours can be applied to BMCB or major electives. Writing intensive.

**BMCB 799 - Senior Thesis**  
**Credits:** 1.00 to 4.00  
Research in biochemistry and molecular biology for senior majors. Topics may include: developmental genetics; signal transduction; gene regulation; molecular evolution; biochemistry of cancer; biophysics of macromolecules; endocrinology; glycobiology. May be repeated to a maximum of 4 credits. Prereq: BMCB 659 or BCHM 755; permission. Writing intensive.

**BMCB 799H - Honors Senior Thesis**  
**Credits:** 1.00 to 4.00  
Research in biochemistry and molecular biology for senior majors. Topics may include: developmental genetics; signal transduction; gene regulation; molecular evolution; biochemistry of cancer; biophysics of macromolecules; endocrinology; glycobiology. May be repeated to a maximum of 4 credits. Prereq: BMCB 659 or BCHM 755; permission. Writing intensive.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>BENG 620</td>
<td>Tissue Engineering Cell Culture Laboratory</td>
<td>4.00</td>
<td>Introduction to culture of mammalian cell lines with applications to bioengineering and biomedical sciences. Techniques and skills include those most relevant to bioengineering and biomedical sciences; basic cell culture, sterile technique, growth and maintenance of cell lines, growth curves, transfection, cryopreservation, and cytotoxicity assays. Inquiry-based final project. Preference given to Bioengineering majors. Also listed as BMS 620.</td>
</tr>
<tr>
<td>BENG 762</td>
<td>Biomedical Engineering</td>
<td>4.00</td>
<td>Overview of the biomedical engineering through topical studies such as drug delivery and sensors. Discussion of modern engineering methods through primary research sources. Prereq: differential equations and statistics. Writing intensive.</td>
</tr>
<tr>
<td>BENG 763</td>
<td>Bioengineering Design I</td>
<td>1.00</td>
<td>One credit design course covering safety, regulations and ethics for development of bioengineering devices and processes. Topics include product design, benchmarks, design team functioning, marketing and finances. Students produce the following documents during the course: preliminary design, materials and supplies list, project schedule and budget.</td>
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<tr>
<td>BENG 764</td>
<td>Bioengineering Design II</td>
<td>4.00</td>
<td>Team based laboratory course focuses on developing the project planned in BENG 763. Major report is due at mid-semester after first prototype is completed. A second report is due at the end of the semester to indicate improvements on initial design. Writing intensive.</td>
</tr>
<tr>
<td>BENG 766</td>
<td>Biomaterials</td>
<td>4.00</td>
<td>Fundamental principles of biology and material science, along with latest topics in biomaterials research. Topics include cell biology, wound healing, host response to foreign materials, polymers, hydrogels, diffusion and methods of material characterization. Specific medical applications of biomaterials such as orthopedic and dental implants, heart valves, artificial blood vessels, cochlear and ophthalmic implants and tissue engineering. Laboratory. Students are expected to have some background in chemistry, mathematics, and high school biology. Also listed as CHE 766</td>
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Biological Science

**BSCI #405 - Diversity of Life**  
**Credits:** 4.00  
Survey of ecology, evolution, genetics, and the diversity of life. Emphasis on basic biological principles. For non-biological science majors. Lecture and lab. Cannot be taken for credit after completion of BIOL 411, 413, or equivalent. No credit for students who have completed BIOL 405. Special fee. Lab.

**BSCI 406 - Human Organism**  
**Credits:** 4.00  
Survey of biological chemistry, molecular and cell biology, and major plant and animal systems. Emphasis on basic biological principles. For non-biological science majors. Lecture and Lab. Cannot be taken for credit after completion of BIOL 412, 414, or equivalent. No credit for students who have completed BIOL 406. Special fee. Lab.

**BSCI 410 - Contemporary Health Issues**  
**Credits:** 4.00  
This course exposes students to the three major dimensions of health - physical, emotional, and social. Nutrition, infectious diseases, substance abuse and addiction, mental health, sexual health, aging and stress management are among the issues that will be discussed. Students will learn to intelligently relate health knowledge to the social issues of the day.

**BSCI 421 - Diseases of the 21st Century**  
**Credits:** 4.00  
Provides a basic understanding of several different diseases that may be prevalent over the next century. Treatment and prevention of the disease are also discussed. Students will acquire a basic understanding of the research methodologies underlying several fields within the biological sciences, such as microbiology, immunology, and molecular biology. Agents of biological warfare are also discussed. Prereq: ENGL 401.

**BSCI 422 - Biotechnology and Society**  
**Credits:** 4.00  
Provides a basic understanding of genetic engineering. Techniques discussed include cloning, gene transfer, the Polymerase chain reaction (PCR), in vitro fertilization, organ transplants, and paternity testing. Ethical issues involved with each technological advance are examined.

**BSCI 432 - Medical Terminology**  
**Credits:** 2.00  
This course is an introduction to medical terminology. The origin, roots, prefixes and suffixes of common scientific and medical terms are examined. Course is totally online and includes assigned online interactive material. Appropriate for biology majors, prePA, premed, and other interested majors.

**BSCI 501 - Ethical Issues in Biology**  
**Credits:** 4.00  
This course is an introduction to the ethical issues associated with current and future use of biotechnology. Students will think critically about different ethical problems that emerge from scientific research and its applications to medical technology. The focus will be on personal and public policy decision making. Prereq: BIOL 413 and 414 or BIOL 411 and 412. Writing intensive.

**BSCI 502 - The Business of Biotechnology**
Credits: 4.00
Introduction to the terminology and practices of the biotechnology industry, with an emphasis on the business, regulatory, legal, and basic scientific underpinnings of modern biotechnology in the commercial and government sectors.

BSCI 599 - Special Topics in Biology
Credits: 1.00 to 4.00
This course explores and investigates topics in biology that would not normally be covered in other courses in the curriculum. May repeat up to 12 credits.

BSCI 620 - Global Science Exploration
Credits: 4.00
This course includes a spring break trip abroad investigating living organisms in their natural habitat. Students will participate in pre-trip seminars on the country, local flora, fauna and habitats they will visit. Students will design a project to integrate their personal interests and objections with in-country investigation. Post-trip seminar will focus on preparation of project and its presentation. Prereq: BIOL 413 and 414, or BIOL 411 and 412. Permission required.

BSCI 670 - Clinical Pathophysiology
Credits: 4.00
This course covers the principles and mechanisms of disease at the cellular, tissue, organ, and system levels, including responses to cell injury, death and adaptation, and inflammation. Acute and chronic disease processes as well as trauma are used to both understand the impact of these processes on body function as well as a means to gain a better understanding of integrative body systems. No credit if credit earned for BMS 794 or UMST 599 Clinical Pathophysiology. Prereq: BIOL 413/414 or BMS 507/508.

BSCI 680 - Pharmacology
Credits: 4.00
This course is designed to cover the concepts of basic pharmacology and drug therapy. It includes examination of the body systems and the related drugs therapy within each system. It explores the basic drug groups, key similarities and differences among drugs in each group. Emphasis is placed on the mechanism of action for each group and how these medications act in relation to normative and pathophysiology. The therapeutic use and adverse effects of drugs as well as understanding recreational drug use will be included. No credit if credit received for UMST 599 Pharmacology. Prereq: BIL 413/414 or BMS 507/508.

BSCI 692 - Evolutionary Medicine
Credits: 4.00
This course introduces the theory of evolution by natural selection and the influence of evolutionary theory on our understanding of the cause and treatment of human disease. Topics covered include evolutionary theory, natural selection, human evolution, pathogen evolution, evolutionary mismatch, and the evolution of aging, cancer, and reproduction. Prereq: GEN 604 or permission of the instructor. Writing intensive.

BSCI 695 - Exploring Biology Teaching
Credits: 1.00 to 4.00
Students assist in teaching labs in undergraduate courses supervised by the lab coordinator/instructor. Responsibilities include facilitating lab endeavors, giving a presentation, and writing a report. Prereq: permission. May be repeated to 4 credits maximum.

BSCI 701 - Senior Seminar I
Credits: 1.00
To be taken during the last two semesters of the senior year as students complete their Capstone project.
Course emphasizes written and oral communication, discussion of current topics in biology, and career guidance. Fall and spring semester. Cr/F.

**BSCI 702 - Senior Seminar II**  
**Credits:** 1.00  
To be taken during the last two semesters of the senior year as students complete their Capstone project. Course emphasizes written and oral communication, discussion of current topics in biology, and career guidance. Fall and spring semester. Cr/F.

**BSCI 735 - Cell Biology**  
**Credits:** 4.00  
This course is an upper level biology class that expands on the basic knowledge of cellular structure and function. The focus is on molecular biology and cell signaling. Experiments by preeminent scientists are explored and analyzed. Prereq: BIOL 413-414, CHEM 403-404, or equivalent.

**BSCI 737 - Microbial Genomics**  
**Credits:** 4.00  
Microbial genomics (primarily bacteria and bacteriophages) and genome-scale approaches to addressing questions in microbial physiology and pathogenesis are the focus of the course. Large-scale sequencing projects, genome structure and evolution, metagenomics, and other challenges in comparative genomics are discussed. Hands-on wet laboratory and bioinformatics projects are included in this laboratory-lecture course. Prereq: GEN 604, BMS 503. Special fee.

**BSCI 740 - Aquatic Microbiology**  
**Credits:** 4.00  
Lectures and labs focus on Lake Massabesic and its use as the source of supply as th drinking water for approximately 160,000 New Hampshire residents. The course covers a basic history of the Lake, the importance of watershed protection, EPA regulations, and standards and the various techniques and methods available to analyze water for basic quality. No credit for students who have earned credit for UMST 599 Aquatic Microbiology. Prereq: BMS 503. Permission. Special fee. Writing intensive.

**BSCI 765 - Nucleic Acid Techniques**  
**Credits:** 4.00  
Laboratory course focused on application of molecular biology techniques for the extraction, detection, and use of nucleic acids. Emphasis is on recombinant DNA cloning and bioengineering techniques in biotechnology. Special fee. Prereq: GEN 604, BMCB 658/659. No credit for students who have received credit for BMCB 754, BMCB 755, BMS 650, or BMS 714.

**BSCI 766 - Protein and Immunologic Techniques**  
**Credits:** 4.00  
Laboratory course focused on application of molecular biology techniques for the isolation, quantitation, detection, analysis, and use of proteins. Substantial emphasis on the use of immunoassays and antibodies in protein work. Modern proteomics techniques are also discussed. Emphasis on recombinant protein expression in the field of biotechnology. Prereq: GEN 604, BMCB 658. Credit cannot be received if credit received for BMS 650, BMS 714, BMS 715. Special fee.

**BSCI 777 - Molecular Biology and Biotechnology**  
**Credits:** 4.00  
The organization, expression, and control of RNA and protein-coding genes in prokaryotic and eukaryotic cells. The focus of the course is on mechanisms of genetics at the molecular level and the application of modern techniques to laboratory biotechnology projects. Prereq: GEN 604, BMCB 658. No credit for students who have received credit for GEN 771. Special fee.
BSCI 792 - Research
Credits: 1.00 to 4.00
Advanced independent research under the direction of a faculty mentor. Content area to be determined in consultation with faculty member. Prereq: permission. May be repeated for up to 8 credits. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Prereq: Permission of Faculty mentor. Cr/F.

BSCI 793 - Internship
Credits: 1.00 to 4.00
Field-based learning opportunities in the biological sciences through placement in the appropriate outside agency, under the direction of a faculty mentor and representative of outside agency. Content area to be determined in consultation with faculty mentor. Prereq: Permission. May be repeated for up to 8 credits. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Cr/F.

BSCI 794 - Clinical Microbiology Internship
Credits: 4.00
Advanced instruction in clinical bacteriology, mycology, parasitology, and/or virology at a local hospital or reference laboratory. Isolation, identification, determination of antibiotic sensitivities, and modern advanced testing for common pathogens are emphasized. Prereq: BMS 602 and permission of instructor.

BSCI 795 - Independent Study
Credits: 1.00 to 4.00
Advanced individual study under the direction of a faculty mentor. Content area to be determined in consultation with faculty mentor. Prereq: permission. May be repeated for up to 8 credits. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Cr/F.
Biology

BIOL 400 - Professional Perspectives on Biology
Credits: 1.00
Views scope of biology and explores professional opportunities for biological sciences majors. Guest speakers from on and off campus present seminars and lead discussions on contemporary issues in biology. Departmental and interdepartmental major and option programs and strategies for achieving professional goals are discussed. Required for all first-semester biology majors. Cr/F.

BIOL 409 - Discontinued Reusing # 201710
Credits: 4.00

BIOL 410 - Principles of Molecular and Cellular Biology
Credits: 3.00
Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. No Laboratory. All COLSA and pre-professional health students should take BIOL 411 (with lab). Prereq: permission required.

BIOL 411 - Introductory Biology: Molecular and Cellular
Credits: 4.00
Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for majors in the biological sciences. Special fee. Lab. Students not permitted to enroll in BIOL 411 and BIOL 412 in the same semester.

BIOL 411H - Honors/Principles of Biology I
Credits: 4.00
Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for majors in the biological sciences. Special fee. Lab.

BIOL 412 - Introductory Biology: Evolution, Biodiversity and Ecology
Credits: 4.00
The biology of organisms, including survey of kingdoms, behavior, evolution, and ecology. Required for majors in the biological sciences. Students are not permitted to enroll in BIOL 411 and BIOL 412 in the same semester. Special fee. Lab.

BIOL 412H - Honors/Principles of Biology II
Credits: 4.00

BIOL 413 - Principles of Biology I
Credits: 4.00
Lecture and Laboratory introduction to biological principles; cell structure, function, replication, energetics and transport mechanisms; physiological processes; Mendelian, molecular genetics and gene technology. Required for students majoring in the life sciences. Cannot be taken for credit after BIOL 411 or equivalent. Special fee. Lab.

BIOL 414 - Principles of Biology II
Credits: 4.00
Lecture and laboratory survey of the five kingdoms of life; physiology of cells, tissues, organs, and organ
BIOL 416 - Watershed Watch - Research Experience  
**Credits:** 2.00  
This course builds upon the experiences gained while conducting the field and laboratory research from BIOL 415 (Watershed Watch Summer Institute). Students will be expected to integrate the conceptual and hands-on components learned in BIOL 415 into their own independent scientific research projects conducted under the mentoring of a faculty advisor from their college or university campus. Using a seminar format, students will receive additional lecture and reading materials (via distance-learning tools), compare their research progress (e.g., problems and accomplishments) with the progress of other students on other campuses, and will integrate their findings into the larger studies of the Merrimack and Pasquotank River watersheds. Ultimately, students will present their results at the UNH Undergraduate Research Conference at the end of April. (IA grading). Prereq: BIOL 415 and instructor approval. May be repeated.

BIOL 420 - Introduction to Forensic Sciences  
**Credits:** 4.00  
This course is an introductory survey course in Forensic Sciences. The focus will be on the recognition, collection, preservation, and analysis of physical evidence related to crime scene investigations. Students will be presented with various state-of-the-art techniques utilized in the analysis of physical evidence, with the presumption that students do not necessarily have in-depth scientific or technical backgrounds (e.g., chemistry, biology and/or physics). The goal of this class will be to provide students with an understanding of what criminalistics entails and to prepare them for additional, more in-depth classes in criminalistics or forensic science. Special fee.

BIOL 430 - Biology of the City  
**Credits:** 4.00  
This course explores biological systems, functions, and interaction of organisms in an urban environment. Using the campus as our laboratory, the course will progress from exploring the effects of urbanization on biodiversity, biological responses to urbanization, urban forestry, urban agriculture, and conclude with topics in sustainable urban development and conservation. Students in the course will develop an understanding of ecological concepts, problems, and solutions to improving ecological systems of urban areas.

BIOL 444A - Biotechnology and Society  
**Credits:** 4.00  
The history and science of biotechnology and genetic engineering of bacteria, plants, and animals including humans. Applications of DNA technology, cloning and genetic engineering to agriculture, biomedicine, industrial products, and environmental problems. Discussion of economic, social, environmental, legal, and ethical issues related to the applications of biotechnology and genetic engineering. No credit for students who have completed BSCI 422 (UNHM).

BIOL 444B - Current Controversial Issues in Biology  
**Credits:** 4.00  
An inquiry into current controversial issues in biology and their scientific and technical bases, but with an emphasis on exploring the various perspectives or beliefs related to each topic and their social and environmental implications.

BIOL 495 - Research Experience in Biological Sciences  
**Credits:** 1.00 to 2.00  
Hands-on research experience for high school students and UNH freshmen under the supervision of a
Biological Sciences faculty member. This independent-study course introduces students to the research process and requires them to undertake a research project that involves laboratory and/or field work. Before a student can register for the course, he/she must meet with a Biological Sciences faculty member who will serve as mentor and supervisor, and the two of them must have a formal agreement on the specific research activities that the student must carry out. Prereq: permission. May be repeated up to a maximum of 4 credits.

**BIOL 510 - Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom**  
**Credits:** 4.00  
Fungi represent a diversity of both form and function and occupy nearly every habitat and niche on the planet. The fungi have been crucial in early and current scientific discovery as many species are used as model systems in biological sciences for the study of ecology, epidemiology, evolution, genetics, genomics, and physiology. Fungi occupy a number of important niches in natural and man made environments including: human, animal, insect, and plant pathogens, plant symbionts, organic matter decomposers, food source, antibiotic production, and are a crucial component of global nutrient cycling. The most recent use of fungi has been the identification of specific enzymes produced by fungi to degrade lignin substrates for the production of biofuels. This course will introduce students to the wonderful world of fungi in all their diversity and complexity.

**BIOL 520 - Our Changing Planet**  
**Credits:** 4.00  
Ecosystem interrelations and factors critical to maintain sustainability will be addressed in this course. Environmental issues such as water usage, pollution, and treatment; air and soil quality; fossil fuels and alternative energy sources will be presented. Not for credit if credit earned for ENE 520.

**BIOL #525 - Marine Estuarine Freshwater Botany**  
**Credits:** 4.00  
This team-taught course introduces students to microalgae, seaweeds, and vascular aquatic plants with an emphasis on unique habitats and plant adaptations to the aquatic environment. Students survey the diversity of algae and aquatic plants spanning fresh, estuarine, and marine habitats through a combination of lecture, field, and laboratory exercises. Special fee.

**BIOL 528 - Applied Biostatistics I**  
**Credits:** 4.00  
Development of elementary statistical techniques through the analysis of prepared biological data. Continuous and discrete probability distributions, distributions of sample statistics, small-sample theory, regression, correlation, and analysis of variance. No credit for students who have completed ADM 430; ADMN 420; BIOL 555; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

**BIOL 541 - General Ecology**  
**Credits:** 4.00  

**BIOL 544 - Your Genes, Your Life**  
**Credits:** 4.00  
This course explores societal, ethical, and legal issues surrounding the human genomics revolution, with a particular focus on biomedical questions. What will it mean to know your complete DNA sequence? If everyone’s genome were included in a public database, how should that information be controlled and used? What, ultimately, do our genes encode? We will examine the basis of genetic inheritance, the interaction between genes and environment, and the types of genetic variation that occur between
individuals and populations. In the medical realm, we will look at genetic and evolutionary processes underlying diseases such as cancer, and at the role of genomic technology in the drive toward personalized medicine. No credit for students who have completed Biology 404 or 444A. Writing intensive.

**BIOL 555 - Experimental Design and Analysis Laboratory (EDAL)**  
**Credits:** 4.00  
Using hands-on laboratory based inquiry, the course explores the concepts that form the basis of statistical analysis and experimental design. Working in small teams, students examine variability in different types of measurement data and empirically derive probability distributions including Poisson, Chi-square, Normal, Student's t, and F distributions. An intuitive approach to data analysis and hypothesis testing provides students with a conceptual understanding of the basic and advanced statistical analyses including ANOVA, Linear, and Non-Linear Regression, Correlation, Goodness-of-fit, ANCOVA, and MANOVA. Students have an opportunity to become familiar with how these tests are implemented in several popular statistical software packages. The approach used in the course emphasizes development of analytical thinking skills and the application of conceptual understanding to solve new problems. Grading is based on participation in team projects, presentations, mastery of concepts and skills, and written reports. No credit for students who have completed ADM 430; ADMN 420; BIOL 528; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

**BIOL 600 - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

**BIOL 600W - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F. Writing intensive.

**BIOL #601 - Biology of Plants**  
**Credits:** 4.00  

**BIOL 695 - Biology Teaching Practices**  
**Credits:** 1.00 to 4.00  
Students assist in teaching labs in undergraduate biology courses supervised by the lab coordinator/instructor. Responsibilities include facilitating lab endeavors, giving a presentation, and writing a report. Prereq: permission. May be repeated to 4 credits maximum.

**BIOL 700 - Current and Controversial Issues in Biology**  
**Credits:** 4.00  
This course explores current issues in the biological sciences that are controversial and have a significant impact on individuals and society. Issues related to human population growth, evolution, cloning, synthetic biology, genetically modified organisms, free will, etc. Biology capstone. Only open to Animal Science, Plant Biology, Zoology, Neuroscience, Biology, Marine & Freshwater Biology, and Sust Agriculture& Food Systems majors.
BIOL #702 - Techniques in Plant Physiology and Biochemistry  
**Credits:** 4.00  
The course provides hands-on experience with instrumentation and experimental procedures for analysis of plant growth and metabolism. Experiments demonstrate the regulation of plant growth and development in response to environmental and chemical factors, analysis of cellular contents and processes, and use of modern instrumentation for physiological and biochemical studies. The experiments deal with plant water relations, photosynthesis, plant hormones, enzyme kinetics, use of spectrophotometry, aseptic procedures, and liquid and thin-layer chromatography. Prereq: BIOL 411, 412 or permission of instructor. Special fee. Lab.

BIOL 704 - Plant-Microbe Interactions  
**Credits:** 3.00  
This course provides an overview of the molecular, cellular and biochemical factors underlying the interactions of plants with various microbes, including bacterial fungal, oomycete and viral pathogens, and mutualistic symbionts, such as mycorrhizal fungi and Rhizobium. Unifying themes underlying disease, resistance, and symbiosis are emphasized. Prereq: BIOL 411 & 412, BMS 503 or GEN 604.

BIOL 711 - Applied Biostatistics II  
**Credits:** 4.00  
Design and analysis of biological and ecological research experiments. "Real world" studies used to discuss the identification of hypotheses, appropriate experimental design, and the application of statistical analyses including ANOVA, ANCOVA, correlation and regression, cluster analysis, classification and ordination techniques. Theoretical statistical concepts tailored to consider student's own thesis and dissertation research, allowing statistical problems to be addressed at various stages of the research process. Common computer packages used for analyses. Prereq: BIOL 528; permission.

BIOL 720 - Plant-Animal Interactions  
**Credits:** 4.00  
This course will explore interactions between plants and animals and their evolutionary consequences on individual organisms as well as on ecological communities. Readings from the primary literature will serve as case studies to discuss hypotheses related to plant-animal interactions, the methods employed to test these hypotheses, and the conclusions drawn from these experiments. A weekly discussion session will be used as a grant-writing workshop, with activities designed to help students prepare an NSF-style grant as the culminating course project. Prereq: BIOL 411-412.

BIOL 795 - Independent Investigations  
**Credits:** 1.00 to 4.00  
Topics may include teaching practicum in a biological science supervised by a biology faculty member (permission required); research practicum in a biological science supervised by a biology faculty member (permission required); or special topics of current interest in biology. Lecture-discussion format. Prereq: 12 credits of biology or permission. May be repeated to 4 credits.

BIOL 795W - Independent Investigations  
**Credits:** 1.00 to 4.00  
Topics may include teaching practicum in a biological science supervised by a biology faculty member (permission required); research practicum in a biological science supervised by a biology faculty member (permission required); or special topics of current interest in biology. Lecture-discussion format. Prereq: 12 credits of biology or permission. May be repeated to 4 credits. Writing intensive.

BIOL 799 - Honors Senior Thesis  
**Credits:** 2.00 to 8.00
Independent research requiring a written proposal, a thesis, and a presentation of research results to an audience of faculty and/or students. Intended for biology majors completing biology honors-in-major requirements. Contact biology program coordinator prior to senior year to arrange supervision and obtain permission. 2 consecutive semesters. (4 credit minimum total; 8 credits maximum.) Writing intensive.

BIOL SAFS - Agricultural Waste Management
Credits: 4.00
Biomedical Science

BMS 401 - Professional Perspectives in Biomedical Sciences
Credits: 1.00
Designed for freshmen students interested in the Biomedical Science (BMS) major. Strategies for successfully achieving academic and professional goals in the biomedical sciences are discussed. Major options and professional opportunities for BMS majors are presented by BMS faculty, as well as by guest speakers from on and off campus. Cr/F.

BMS 402 - Special Topics
Credits: 1.00
Introduction to specific areas of study within biological sciences. Provides an avenue to explore recent excitements in biological sciences, and fundamental questions about how living organisms function and adapt to different environments; introduction to contemporary research in various biological sciences. Several concurrent sections organized around themes; lecture/discussion. Cr/F.

BMS 407 - Germs 101
Credits: 4.00
Expands on the increasing public awareness of the societal and technological impact of the invisible microbial world on our lives and on the planet. Students participate in weekly extra-class activities, acting as life scientists by using the scientific method of inquiry. One experience focuses on bacteria that use sunlight to make a living, another on using bacteria in genetic engineering. Students come to view germs in diverse lights: microbes as organisms, microbes as enemies, microbes as friends, and microbes in the press. Especially useful for people with microphobia. Not for BMS or Biology major credit. Special fee.

BMS 408 - Germs 101
Credits: 4.00
Expands on the increasing public awareness of the societal and technological impact of the invisible microbial world on our lives and on the planet. Students participate in weekly extra-class activities, acting as life scientists by using the scientific method of inquiry. One experience focuses on bacteria that use sunlight to make a living, another on using bacteria in genetic engineering. Students come to view germs in diverse lights: microbes as organisms, microbes as enemies, microbes as friends, and microbes in the press. Especially useful for people with microphobia. Not for BMS or Biology major credit. This is the online version of BMS 407 - Germs 101, and does not fulfill GenEd 3B requirements.

BMS 501 - Microbes in Human Disease
Credits: 4.00
Microorganisms have a profound effect on our everyday lives. This effect can often be dramatic enough to capture many of today's news headlines. Did you ever wonder why people died from eating hamburgers contaminated with E. coli? How do "flesh-eating bacteria" function? Will there be an AIDS vaccine? Explores the answers to these and many other fascinating questions by examining the role of microorganisms in human disease. The fundamental structure, metabolism, genetics, and ecology of clinically relevant bacteria, viruses, fungi, and parasites and presented in relationship to the human host and its immune system. The foundation, incidence, and control of microbial diseases are presented through case studies. Emphasizes active learning in which students participate in classroom discussions, experiments, and demonstrations. Laboratory exercises designed to introduce techniques for the identification of important pathogenic microorganisms and disease diagnosis. Special fee. Lab.

BMS 501H - Honors/Microbes in Human Disease
Microorganisms have a profound effect on our everyday lives. This effect can often be dramatic enough to capture many of today's news headlines. Did you ever wonder why people died from eating hamburgers contaminated with E. coli? How do "flesh-eating bacteria" function? Will there be an AIDS vaccine? Explores the answers to these and many other fascinating questions by examining the role of microorganisms in human disease. The fundamental structure, metabolism, genetics, and ecology of clinically relevant bacteria, viruses, fungi, and parasites and presented in relationship to the human host and its immune system. The foundation, incidence, and control of microbial diseases are presented through case studies. Emphasizes active learning in which students participate in classroom discussions, experiments, and demonstrations. Laboratory exercises designed to introduce techniques for the identification of important pathogenic microorganisms and disease diagnosis. Special fee. Lab.

**BMS 503 - General Microbiology**
**Credits:** 5.00
Principles of microbiology; morphology, physiology, genetics, culture, and classification of bacteria and other microorganisms; and their relationships to agriculture, environment, industry, sanitation, and infectious diseases. Prereq: BIOL 411-412 or equivalent; CHEM 403-404 or equivalent. Special fee. Lab.

**BMS 507 - Human Anatomy and Physiology I**
**Credits:** 4.00
Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: the cell, chemistry, tissues, integument, osseous tissue and the skeleton, muscular tissue and muscles, nerves, the brain,spinal cord, autonomic nervous system, and special senses. No credit earned for ANSC 511 and ANSC 512. Lab. Special fee.

**BMS 508 - Human Anatomy and Physiology II**
**Credits:** 4.00
Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: endocrine, blood, cardiovascular, respiratory, immune, digestive and metabolism, urinary, acid-base and electrolyte balance, reproductive. Prereq: BMS 507. No credit earned for ANSC 511/512. Lab. Special fee.

**BMS 560 - Body Fluids**
**Credits:** 3.00
The study of diseases and disorders through the analysis of extra-vascular body fluids. Emphasizes renal anatomy and physiology, and diseases and metabolic disorders affecting renal function.

**BMS 561 - Body Fluids Laboratory**
**Credits:** 1.00
Practical experience in the performance and clinical correlation of urinalysis and selected body fluid procedures. Permission required. Special fee.

**Co-requisites:** BMS 560

**BMS 600 - Field Experience**
**Credits:** 1.00 to 4.00
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Prereq: permission. May be repeated to a maximum of 8 credit hours. Only 4 credit hours can be used toward the major. Cr/F.

**BMS 600W - Field Experience**
**Credits:** 1.00 to 4.00
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Prereq: permission. May be repeated to a maximum of 8 credit hours. Only 4 credit hours can be used toward the major. Cr/F. Writing intensive.

**BMS 601 - Bacteriology of Food**
**Credits:** 5.00
Lectures and laboratories address modern technical concepts of microbiology, physiology, and biochemistry related to food sanitation. Theoretical and practical approach serves as an integrative experience. Food sanitation is a serious public health issue in the meat, dairy, fish, and water industries. Benefits students seeking employment in public health or sanitary microbiology fields. Topics include food as a substrate for microorganisms, causes of food spoilage, food borne disease outbreaks, public health complications, isolation and identification of food spoiling microorganisms, and essentials for food safety and sanitation. Prereq: BMS 503 or equivalent. (Not offered every year.) Special fee. UNHM only.

**BMS 602 - Pathogenic Microbiology**
**Credits:** 3.00
An introduction to microbial disease, with a focus on bacterial and viral diseases in humans and animals. This course examines the clinical presentation, laboratory diagnosis, and treatment of specific microbial pathogens. Molecular aspects of both microbial infection and host immune response are discussed. Case studies based on real clinical and research microbiology problems are presented. Prereq: BMS 501 or BMS 503.

**BMS 603 - Pathogenic Microbiology Laboratory**
**Credits:** 2.00
An introduction to morphologic, cultural, biochemical and pathogenic characteristics of microorganisms causing human and animal diseases. Laboratory exercises focus on both classical and modern laboratory diagnostic testing. Prereq: BMS 501 or BMS 503. Special fee.
**Co-requisites:** BMS 602

**BMS 610 - Biomedical Lab Management**
**Credits:** 4.00
An overview of biomedical laboratory management, including financial operations, personnel management, marketing, information management, and instructional skills. Writing intensive.

**BMS 620 - Tissue Engineering Cell Culture Laboratory**
**Credits:** 4.00
Introduction to culture of mammalian cell lines with applications to bioengineering and biomedical sciences. Techniques and skills include those most relevant to bioengineering and biomedical sciences: basic cell culture, sterile technique, growth and maintainance of cell lines, growth curves, transfection, cryopreservation, and cytotoxicity assays. Inquiry-based final project. Preference given to Bioengineering majors. Prereq: BMS 503 or permission.

**BMS 623 - Histology: Microscopic Cellular Structure and Function**
**Credits:** 4.00
Cellular structure, function, and physiology, as well as the interactions between cells in different organ systems, will be examined at the microscopic level. Digital microscopic images will be utilized to examine the cellular structure of all the different organ systems and the interactions between cells in these organs. Prereq: ANSC 511 and 512 or BMS 507 and 508.

**BMS 635 - Preceptorial in Prehospital Care**
Credits: 2.00
Practice and evaluation of prehospital care. Understand the roles of different provider levels in a healthcare setting. Students participate in ambulance activities, then discuss assessment and treatment of patients in the prehospital setting. Licensure by the New Hampshire Board of EMS required before course start date. Prereq: KIN 684/685 or equivalent. Permission required. Cr/F.

BMS 640 - Phlebotomy Theory
Credits: 2.00
The procedures involved in blood collection with emphasis on safety and professionalism. Students observe all techniques and have an opportunity to perform them. Recommended for students considering a health care profession. Special fee. Permission required.

BMS 641 - Phlebotomy Clinical Internship
Credits: 1.00 to 2.00
Students obtain experience and proficiency in blood collection techniques at a health care facility (80 to 120 hours). Prereq: BMS 640. Permission required. Special fee. Cr/F.

BMS 642 - Clinical Immunology and Serology
Credits: 2.00
This course discusses the chemical and cellular response of the human immune system to microbial challenge and other foreign materials, and the immunologic basis and pathology of autoimmunity, immune proliferation, immune deficiency and hypersensitivity. Current clinical analytical methodologies and diagnostic criteria used to identify, differentiate and/or monitor these responses and conditions will be included. Prereq: BIOL 411/412 or BMS 507/508 or ANSC 511/512.

BMS 643 - Clinical Serology Laboratory
Credits: 2.00
Practical experience testing for immune system disorders. Permission required. Special fee.
Co-requisites: BMS 642

BMS 644 - Hematology
Credits: 4.00
Human blood cell physiology in both health and disease. Includes all benign and malignant conditions of red blood cells, white blood cells, platelets, and hemostasis factors.

BMS 645 - Clinical Hematology Laboratory
Credits: 2.00
The analysis of whole blood for cellular components and plasma for hemostatic evaluation. Special emphasis on differentiating benign from malignant processes, and cellular identification by morphologic, cytochemical, and CD marker abnormalities. Permission required. Special fee.

BMS 650 - Molecular Diagnostics
Credits: 4.00
Introduce students to the concepts and principles of infectious disease detection and human genetic screening used in clinical labs. This includes covering the major methods required to go from nucleic acid extraction to analysis (DNA extraction, PCR, hybridization, and sequencing). Course reviews what clinically relevant pathogens (bacteria, virus, and fungi) are ideal targets for molecular identification in the clinical lab and what methods are currently used in this application. It will also emphasize societal and ethical issues resulting from application of these technologies for human identity testing, cancer diagnosis, and screening for inherited diseases.

BMS 655 - Human and Animal Parasites
Credits: 3.00
Introduction to the parasitic process in humans and different animals indigenous to domestic and foreign areas of the world. Topics include epidemiology, infection, control, genetics, immunology as well as global economic consequences. Prereq: BMS 503.

BMS 656 - Immunohematology
Credits: 3.00
The immunology of blood, including blood group systems and the critical role they play in safe transfusion medicine. Additional topics include blood collection, component use, transfusion reactions, and transfusion-transmitted infections.

BMS 657 - Blood Banking Laboratory
Credits: 1.00
Students obtain experience in blood banking practices including blood typing, antibody screening, cross matching, and confirmatory testing. Permission required. Special fee. Co-requisites: BMS 656

BMS 658 - Medical Biochemistry
Credits: 3.00
The assessment of disease states through the analytical assessment of amino acids, proteins, enzymes, tumor markers, non-protein nitrogen metabolites, carbohydrates, lipids, electrolytes, blood gases, hormones, vitamins, and trace elements. Prereq: BMCB 658/659, BIOL 528 or other statistics course.

BMS 659 - Clinical Chemistry Laboratory
Credits: 2.00
Utilizing analytical methodologies with an emphasis on quality control, students will analyze blood analytes such as glucose, BUN, creatine, electrolytes, enzymes, cholesterol, bilirubin and serum protein and evaluate their clinical significance. Special fee. Permission required. Co-requisites: BMS 658

BMS 696 - Independent Study
Credits: 1.00 to 6.00
In-depth studies under faculty supervision. Prereq: approval of the faculty the area concerned. May be repeated up to a maximum of 16 credits. Cr/F.

BMS 696W - Independent Study
Credits: 1.00 to 6.00
In-depth studies under faculty supervision. Prereq: approval of the faculty the area concerned. May be repeated up to a maximum of 16 credits. Writing intensive. Cr/F.

BMS 702 - Endocrinology
Credits: 4.00
Biochemical and molecular structure and function of vertebrate endocrine systems. Influence of endocrine system on the physiology of vertebrates, with special reference to mammals. Current investigations of the endocrine system as a regulator and integrator of body functions including such systems as growth, reproduction, metabolism, differentiation, and behavior. Prereq: BMCB 658 or 751;/or permission.

BMS 703 - Infectious Disease and Health
Credits: 4.00
Principles underlying the nature of infectious disease agents, including representative parasites, fungi, bacteria, viruses, and prions. Established pathogens and emerging human and animal disease agents; will highlight zoonotic diseases. Will include epidemiology, pathogenesis, host immune response, disease
transmission, treatment, and control. Weekly review and discussion of current world disease events using the Program for Monitoring in Emerging Infectious Diseases (ProMED) as a resource. Prereq: BMS 503.

**BMS 704 - Pathologic Basis of Disease**  
**Credits:** 4.00  
Principles and mechanisms of disease at the cellular and tissue levels, including responses to cell injury, death and adaptation, inflammation, circulatory disturbances, disorders of the immune system, and neoplasia. Prereq: ANSC 511/512 or BMS 507-508 is recommended, but not required.

**BMS 705 - Immunology**  
**Credits:** 3.00  
Introduces the major cellular and molecular components of the immune system; examines their development and production, their interactions with each other and with other systems in the body, and their regulation; explores their role in beneficial and harmful immune responses in humans and animals. BMS:MM students must take BMS 715 as a co-requisite. Prereq: BMS 503.

**BMS 706 - Virology**  
**Credits:** 3.00  

**BMS 708 - Virology Laboratory**  
**Credits:** 2.00  
**Co-requisites:** BMS 706

**BMS 711 - Toxicology**  
**Credits:** 4.00  
Toxicology is the study of mechanisms by which chemicals and other toxicants produce adverse effects in biological systems. This course includes consideration of toxicant exposure and absorption, systemic and cellular distribution and metabolism, and cellular mechanisms and systemic effects of toxicity. Discussions highlight different types of interactions of toxicants with specific organ systems. Lecture material is integrated with case-based discussions of toxicants affecting humans and other species in environmental and clinical contexts. Prereq: BMCB 658.

**BMS 712 - Grand Rounds**  
**Credits:** 2.00  
Interactive presentation and observation of disease through pathological examination of animals submitted to the NH Veterinary Diagnostic Lab for necropsy. Discussion of underlying pathogenesis of diseases and disorders. Examination of archived gross and digital tissue specimens. Integrates aspects of anatomy, physiology, microbiology, immunology, and other core sciences as well as medical ethics and social issues. Intended for those in pre-professional medical, dental, pharmacy, veterinary and biomedical fields. Prereq: BMS 507/508 or ANSC 511/512. May be repeated up to a maximum of 4 credits.

**BMS 714 - Research Methods/Endocrinology**  
**Credits:** 5.00  
Principles of biomedical, cellular, and molecular techniques and their applications to research in the endocrine system. Techniques include protein and nucleic acid assays, thin layer chromatography, radioimmunoassay, enzyme-linked immunosorbent assay, agarose and polyacrylamide gel
electrophoresis, transfection, restriction analysis, plasmid amplification, RNA extraction, and dot-blot hybridization. Prereq: ANSC 701 or BMCB 658 or BMCB 702; permission. Special fee. Lab. Writing intensive.

**BMS 715 - Immunology Laboratory**  
**Credits:** 2.00  
Introduction to major components of the immune system; principles and applications for cellular and antibody based immunological techniques. Prereq: BMS 503. Special fee  
**Co-requisites:** BMS 705

**BMS 716 - Public Health: Food- and Water-borne Diseases**  
**Credits:** 4.00  
Course has three sections: 1) government, 2) disease and epidemiology, and 3) sources of anthropogenic (of human origin) pollution. The overall theme of the class is to understand how and why food-borne and water-borne agents (virus, protozoal, bacterial and toxic material) are still prevalent within our society. The class includes field trips, to a wastewater plants and/or drinking water plants, town meetings and/or public hearings on government policy. In lab students design their own experiment which are then executed by other students. The class fulfills the capstone requirement. Prereq: Restricted to BMS: Medical Microbiology majors only or by instructor permission. Prereq: BMS 503. Special fee. Writing intensive.

**BMS 718 - Mammalian Physiology**  
**Credits:** 4.00  
Advanced study of the systems that control mammalian functions with emphasis on cellular and molecular mechanisms. Includes the nervous, muscular, cardiovascular, renal, gastrointestinal, and endocrine systems. Prereq: at least one semester of animal/human physiology, or one semester of anatomy and physiology. Permission required. Writing intensive.

**BMS 719 - Host-Microbe Interactions**  
**Credits:** 4.00  
This course examines the way microorganisms interact with their hosts, with an emphasis on the pathogenic and commensal organisms of humans. Course material is introduced via reading, analysis and group presentations of primary scientific literature. You are not only introduced to different types of host-microbe interactions, but different methods, systems and model organisms used to study these interactions. Prereq: BMS 501/503, GEN 604..

**BMS 720 - Mycology, Parasitology, and Virology**  
**Credits:** 3.00  
Covers human fungal, parasitic, and viral infections. The mechanism of infection, life cycles, and infectious stages of the organism as well as disease progression within the host. Prereq: BMS 602.

**BMS 721 - Mycology, Parasitology, and Virology Laboratory**  
**Credits:** 2.00  
Practical experience in diagnosing and identifying specific organisms as well as correlating test results with the studied fungal, parasitic, or viral disease. Permission required. Special fee.  
**Co-requisites:** BMS 720

**BMS 730 - Ethical Issues in Biomedical Science**  
**Credits:** 4.00  
Advances in the biological sciences impact the need for scientific integrity. From guiding students in the laboratory to scientific record keeping, from authorship and peer review to potential conflicts of interest, from use of animals and humans in research to genetic technology, scientists need to understand the ethical issues that underlie their work. These and related issues are presented and discussed in a format
that encourages both an appreciation of established guidelines and an opportunity to critically examine them. Writing intensive. Prereq: BIOL 411, BMS 503.

**BMS 740 - Human Microbiome**
**Credits:** 4.00
The human microbiome is a new, rapidly growing field of microbiology that has already made important contributions to the understanding of human health. This laboratory course utilizes current research methodology to investigate the microbiome of the human skin. Students gain hands-on experience in PCR, genomics, bioinformatics, and modern clinical identification techniques. They also generate primary data to make their own contribution to this important field of research. Open to BMS:MLS, BMS:MM and BMS:MVS, GEN, GEN:Genomics, NUTR:NS majors, others by permission. Prereq: GEN 604; BMS 501 or BMS 503. Special fee

**BMS 750 - Case Studies**
**Credits:** 1.00 to 5.00
In this course patient case studies are analyzed in the areas of microbiology, hematology, clinical chemistry, or immunohematology. Case analysis includes correlation of patient history and current symptoms with laboratory results. Student interprets given information, recognizes abnormal results and their clinical significance, generates etiologic possibilities, and determines the best diagnosis for the patient condition (incorporating appropriate treatment and recommended follow-up testing). Writing intensive. Variable (1-5) credits: 2 cr. for Microbiology case studies (prereq: BMS 602 and BMS 720/721; 1 cr. for Hematology case studies (prereq: BMS 644/645); 1 cr. for Medical Biochemistry case studies (prereq: BMS 658/659); and 1 cr. for Immunohematology case studies (prereq: BMS 656/657).

**BMS 751 - Advanced Clinical Microbiology Internship**
**Credits:** 5.00
Advanced clinical bacteriological procedures, fluorescent techniques, and special procedures. Mycology and parasitology identification and testing. Prereq: senior BMS:MLS majors only. Special fee.

**BMS 751W - Advanced Clinical Microbiology Internship**
**Credits:** 5.00
Advanced clinical bacteriological procedures, fluorescent techniques, and special procedures. Mycology and parasitology identification and testing. Prereq: senior BMS:MLS majors only. Writing intensive.

**BMS 752 - Advanced Hematology Internship**
**Credits:** 5.00
Special hematology procedures including diagnostic staining, advanced hemostasis studies, and evaluation of blood cells in disease states. Prereq: senior BMS:MLS majors only.

**BMS 752W - Advanced Hematology Internship**
**Credits:** 5.00
Special hematology procedures including diagnostic staining, advanced hemostasis studies, and evaluation of blood cells in disease states. Prereq: senior BMS:MLS majors only. Writing intensive.

**BMS 753 - Advanced Immunohematology Internship**
**Credits:** 5.00
Advanced blood-banking procedures, including antibody identification, and component therapy. Principles and procedures for detecting disorders of cellular and humoral immunity. Prereq: senior BMS:MLS majors only.

**BMS 753W - Advanced Immunohematology Internship**
**Credits:** 5.00
Advanced blood-banking procedures, including antibody identification, and component therapy. Principles and procedures for detecting disorders of cellular and humoral immunity. Prereq: senior BMS:MLS majors only. Writing intensive.

**BMS 754 - Advanced Clinical Chemistry Internship**  
**Credits:** 5.00  
Theory, operation, evaluation, and maintenance of automated chemistry systems. Advanced laboratory analysis of body fluid chemistries including enzymology, isotopes, hormones, blood gases, and toxicology. Data analysis, computerization. Prereq: senior BMS:MLS majors only.

**BMS 754W - Advanced Clinical Chemistry Internship**  
**Credits:** 5.00  
Theory, operation, evaluation, and maintenance of automated chemistry systems. Advanced laboratory analysis of body fluid chemistries including enzymology, isotopes, hormones, blood gases, and toxicology. Data analysis, computerization. Prereq: senior BMS:MLS majors only. Writing intensive.

**BMS 761 - Clinical Microbiology Internship**  
**Credits:** 20.00  
Advanced instruction in clinical bacteriology, mycology, parasitology, and virology at local hospital or reference laboratory. Isolation, identification, and antibiotic sensitivities for common pathogens are emphasized. Prereq: BMS 602; senior BMS:MLS majors only. Special fee.

**BMS 761W - Clinical Microbiology Internship**  
**Credits:** 20.00  
Advanced instruction in clinical bacteriology, mycology, parasitology, and virology at local hospital or reference laboratory. Isolation, identification, and antibiotic sensitivities for common pathogens are emphasized. Special fee. Writing intensive.

**BMS 762 - Clinical Hematology Internship**  
**Credits:** 20.00  
Advanced instruction in hematology and hemostasis at a local hospital or reference laboratory. Specialized tests such as automated cell counts, cytochemical analyses, and specialized hemostasis are covered. Prereq: BMS 652; senior BMS:MLS majors only. Special fee.

**BMS 763 - Clinical Immunohematology Internship**  
**Credits:** 20.00  
Advanced instruction in clinical immunohematology at a local hospital or reference laboratory. Pre-transfusion testing, donor screening, phlebotomy and component therapy emphasized. Prereq: BMS 653; senior BMS:MLS majors only. Special fee.

**BMS 764 - Clinical Chemistry Internship**  
**Credits:** 20.00  
Advanced instruction in clinical chemistry at a local hospital or reference laboratory. Analysis of carbohydrates, proteins, enzymes, lipids, hormones, electrolytes, blood gases, and drugs. Prereq: BMS 654; senior BMS:MLS majors only. Special fee.

**BMS 790 - Undergraduate Teaching Experience**  
**Credits:** 1.00 to 4.00  
Students assist Graduate Teaching Assistants in preparing, presenting, and executing a Biomedical Science course laboratory. May be repeated up to a maximum of 4 credits.

**BMS 795 - Investigations**
Credits: 1.00 to 8.00
Special projects in biomedical science. May be repeated up to 8 times for up to a maximum of 8 credits.

**BMS 795W - Investigations**
**Credits:** 1.00 to 8.00
Special projects in biomedical science. May be repeated up to 8 times for up to a maximum of 8 credits. Writing intensive.

**BMS 796 - Biomedical Research Internship**
**Credits:** 4.00 to 16.00
Advanced instruction/participation in some aspect of biomedical research, either on or off campus. Student designs program of study with research supervisor and BMS faculty advisor. May be repeated up to a maximum of 16 credits.

**BMS 799 - Senior Thesis**
**Credits:** 1.00 to 4.00
A special project conducted under faculty supervision and resulting in a written thesis. Students must initiate discussion of the project with an appropriate faculty member and obtain permission. Only open to BMS and MLS majors. Writing intensive.

**BMS 799H - Senior Honors Thesis**
**Credits:** 1.00 to 4.00
A special project conducted under faculty supervision and resulting in a written thesis. Students must initiate discussion of the project with an appropriate faculty member and obtain permission. Writing intensive.
BUS 115 - Financial Accounting  
Credits: 4.00

BUS 400 - Introduction to Business  
Credits: 4.00
Introduces the study of business: examines the origins and development of American business, its place in a global economy, and its legal and ethical roles in modern society. Includes an overview of the functional areas of business such as finance, marketing, and organizational behavior. Designed for business majors as well as for students considering a major in business.

BUS 410 - Introduction to Entrepreneurship  
Credits: 4.00
This course explores the structure and framework of entrepreneurial endeavors, both inside and outside of the business world. Questions to be addressed include: What is entrepreneurship? What is opportunity recognition and selection? How can you create and define competitive advantage? How can you think about people in the entrepreneurial context? How can you garner support (financial and other) for an entrepreneurial venture? What do you do when nothing works as planned?

BUS 413 - Business Communication  
Credits: 2.00
The principles of business communication relate to people in business or students planning a career in business. The course includes the study of the mechanics, form, style, and content of business letters, memos, e-mails, reports, proposals, and presentations.

BUS 430 - Introduction to Business Statistics  
Credits: 4.00
The use of statistical methods for managerial decision making. Emphasis is on understanding concepts, including inferences from sample data and model formulation, as aids in decision-making. Lab: Using class-focused statistics problems, designed to provide opportunity to develop course-specific problem solving strategies; to adapt from mathematical to statistical thinking; to analyze and communicate significance and meaning of numerical outcomes; to develop course-specific test taking prowess. No credit for students who have received credit for BIOL 528; ADMN 420; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

BUS 453 - Leadership for Managers  
Credits: 4.00
This course provides the critical element of analytical and intellectual examination and reflection of certain core issues in the practice of leadership. These objectives are achieved through open discussion, honest self-assessment, experiential exercises, and observation of real-life leadership practice. What is valued in this course are honest relationships and dialogue, risk-taking, dedication to the topic of leadership, initiative, and exploring the confusion and gray areas involved in these topics. Prereq: BUS 400. Only open to Business Admin majors.

BUS 455 - Management of Human Resources Management  
Credits: 4.00
This course emphasizes the development of skills for dealing with selected aspects of human resource management. It aims to enhance the students' ability to apply theoretical concepts and alternative
approaches for dealing with common issues concerning the human side of the enterprise. The course is
gear ed to serve the needs of line and staff administrators in supervisory positions. Thus, it strives to train
students and facilitate the development of better understanding of human resources issues as they relate
to other managerial functions, organizational behavior, and the ability of managers and the organization to
achieve prescribed goals. Prereq: ADMN 400 or permission of instructor.

BUS 492 - American Business History  
Credits: 4.00  
This course explores the historical development of American business institutions from the colonial era to
the present. Thematic units organize the materical focusing in turn on the most significant developments in
the American business environment. The goal is a cumulative understanding of the development of the
system. A great deal of our discussion and reading centers on the interaction of market operations and
social values and how these interactions influenced the business environment at different times. It is the
udy of business in the coontext of past times that makes this course different from a course in business
methods or institutions. Through the study of the past students develop their critical thinking and writing
skills.

BUS 511 - Human Relations  
Credits: 3.00  
Through readings and involvement in experimentally oriented activities, the student will gain an
understanding of the principles of human relations and organizational psychology. Topics to be
consdered include organization socialization, decision-making, motivation, perception, group process and
leadership. Prereq: BUS 342 or permission of the instructor.

BUS 512 - Financial Analysis and Decision Making  
Credits: 3.00  
Use of financial tools to examine various alternatives and make relevant decisions. The case study
approach is used and the students are encouraged to relate to their own applications where possible.
Prereq: BUS 115 and BUS 226 or permission of the instructor.

BUS 517 - Coll Barg & Ind Relations  
Credits: 3.00  
The development of unions, employment legislation and the main issues confronting our industrial relations
system. Through use of the case method, an examination of employee right to organize and employer
response, NLRB elections and certification and the duty to bargain. Special attention is placed on the
strategies and tactics of collective bargaining: preparing for negotiations, actual dynamics at the bargaining
table, dispute resolution and administration of the agreement.

BUS 520 - Training and Development  
Credits: 4.00  
Students interested in career options in training and development of human resources development learn
some of the theoretical bases, core practices, competencies, and issues of this professional field, as well
as considerations for global training and development. They are exposed to research and discoveries on
skills ans knowledge related to training and adult learning, and models for effective training. They learn the
most current trends and issues in international training and development, including the push for
management and leadership training for intercultural understanding. Prereq: BUS 400, BUS 455, or
permisssion from instructor.

BUS 521 - Managerial Economics  
Credits: 3.00  
A survey of economic principles and their relationship to business cycles in our economy so as to aid
managerial planning. The fundamentals of incremental concepts, marginalism, time, discounting,
opportunity costs and the equi-marginal principle will be explored with respect to demand, cost analysis, pricing, risk and budgeting. Prereq: ECON 255, ECON 256 and MATH 230 or permission of the instructor.

BUS 522 - Legal Environ of Business  
Credits: 3.00  
A basic understanding of legal problems is expanded, analytical ability is developed and an awareness of the presence of legal problems which surround the businessman is explored. Freedom of Choice, Taxation, Stockholder Status, Acquisitions and Divisions, Antitrust, Employment, Administrative Law and Bankruptcy are covered as time will allow.

BUS 524 - Sem in Org Communication  
Credits: 3.00  
An in-depth study of the variables which affect the transmission of internal and external organizational communication. While focusing on audience analysis, message transmission, and business/media relations, critical skills such as listening, speaking, writing analysis and an understanding of non-verbal, visual and mass communication will be developed. Practical topics will include: organizational systems, conference organization, metacommunications, public relations, improved listening skills and presentational speaking.

BUS 532 - Introduction to Financial Accounting  
Credits: 4.00  
Fundamental concepts of accounting and their impact on the business world and society as a whole. Emphasis on the recording of economic transactions, and preparation and analysis of financial statements. No credit for students who have had ACFI 501, 502, ADMN 502.

BUS 533 - Introduction to Managerial Accounting  
Credits: 4.00  
Emphasizes how organizational managers use accounting information to support their functions of planning, control, and decision making. Examples taken from corporations, small business, and not-for-profit organizations. No credit for students who have received credit for ACFI 503, ADMN 503. Prereq: BUS 532.

BUS 550 - Business Law  
Credits: 4.00  
This course explores the legal environment in which businesses operate and studies the interaction between business and the legal system. Students examine various areas of the law which are integral to operating a business enterprise. Topics include contracts, torts, agency, Uniform Commerical Code, ethical and criminal implications of business actions, property laws, and the legal aspects of different business entities. Business owners, managers, accountants, paralegals, and all those seeking to gain or broaden their general understanding of the legal system should benefit from this course. Prereq: BUS 400. Business Admin majors only.

BUS 551 - Operations Management  
Credits: 3.00  
Examination of the nature and structure of decision-making under uncertainty. Formal techniques for measurement of risks and rewards are applied to case studies based chiefly on production systems. The course concludes with a survey of current techniques for operations analysis, planning and control.

BUS 558 - Real Estate Entrepreneurship  
Credits: 3.00  

BUS 562 - Auditing Perspectives
Credits: 3.00
Theory and procedures underlying auditors' responsibilities in examining and reporting on financial statements of a business enterprise. Includes professional ethics, auditing standards, reports, internal control and the selection, scope and application of auditing procedures.

BUS 563 - Pol Topic: Public Relat
Credits: 3.00
Contemporary management policy in the business or economics discipline is defined and explored. The topics to be discussed will be announced prior to offering and will focus on issues not normally covered in cataloged courses. Students may repeat this course when offered under a different topic title. Instructor permission required. Offered upon demand.

BUS 565 - Selling and Sales Management
Credits: 4.00
The sales and selling management (SSM) course covers both the strategies, and the tactics, of selling, from the wide-ranging perspectives of sales people and customers. Management topics include: motivation and behavior, sales methodologies, channel optimization, recruiting and selecting representatives, training, compensation, and evaluation. Class also covers in-depth through the class practice sales tactics such as: prospecting and sales call planning, communicating the sales message, negotiating for win-win situations, overcoming objections, closing the sale, and follow-up management. Reflecting the nature of practice selling, the SSM course is offered in a short series of longer days. Prereq: none, but BUS 400 or 610 is encouraged. No credit earned if credit earned for BUS 675 if listed as Selling and Sales Management.

BUS 567 - Cases in Mktg Strategy
Credits: 3.00
The course has three primary objectives. First, to assist students in integrating ideas, techniques, concepts and strategies acquired in more specialized courses taken previously with "real world" problems facing the marketing manager. Second, to gain experience in detecting problems, making decisions and formulating marketing strategy at a policy level under conditions of uncertainty and time constraints. Third, to develop skills in effectively communicating and persuasively presenting innovative marketing plans.

BUS 569 - Behav Persp in Marketing
Credits: 3.00
The objective of this course is to provide an understanding of consumer behavior and its relationship to marketing management. Applications of concepts from psychology, social psychology, cultural anthropology, sociology and economics will be emphasized. The course interprets current studies in consumer research and illustrates their marketing implications. Areas of concentration include image management, brand loyalty, product positioning, attitude measurement, market segmentation and the consumer decision-making process. The course is an applied orientation of behavioral science to marketing management. Prereq: BUS 570.

BUS 570 - Marketing Techniques
Credits: 3.00
The objective of this course is to help the student develop a broad understanding of marketing techniques, strategies, and tactics employed by the marketing manager. The course will cover the use of the "marketing mix" elements as they pertain to the planning and implementation of the marketing plan.

BUS 572 - Sem in Exec Management
Credits: 3.00
From a decision-maker's point of view, students will participate in a seminar involving middle and upper-level managerial responsibilities, as well as discussions concerning "state-of-the-art" methodologies appropriate to all levels of management. Case studies and group projects will be combined with informal
lectures and discussions involving such areas as strategic planning, action planning techniques, policy-making, managerial ethics, decision-making methods, control systems and the integration of all resources for optimum performance. Course offering contingent upon adequate demand. Prereq: Basic Management core courses and/or commensurate work experience.

**BUS 574 - Adv & Prom Policy Formul**
Credits: 3.00
Designed to provide a broad perspective of advertising as it relates to the marketing mix, its role in promotional planning, the goals it can achieve, the creative process, media selection and the concepts applied in the production of campaign development. The forum is on how advertising is planned, created, executed and evaluated. Emphasis also includes other elements of the promotional mix such as sales promotion, publicity, publications and preconditioning

**BUS 576 - Consumer Law**
Credits: 3.00
Uniform commercial code sections 1,2,3, parts of 4 and 9. Comparison of common law remedies and those under the Code. Based on the case study concept. Moot Court included. Security devices, sales, commercial paper, consumer legislation.

**BUS 600 - New Venture Creation**
Credits: 4.00
An opportunity for students to identify and create a new business venture via a business plan. Elements of a business plan are examined as well as review of the other entrepreneurial course that move up the minor. Prereq: BUS 410, BUS 453, BUS 550, BUS 565.

**BUS 601 - Financial Management**
Credits: 4.00
Study of investment, finance, and dividend decisions of the business firm. Topics include capital budgeting, designing and issuing securities, management of working capital and evaluating manager performance. Prereq: completion of Introductory Business Core or permission.

**BUS 603 - Intermediate Financial Accounting I**
Credits: 4.00
The first of two in-depth financial accounting courses. Course provides student with the in-depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external uses. Topics include the income statement, the statement of cash flows and balance sheet with an emphasis on asset accounts. Prereq: BUS 532 and BUS 533. No credit if credit received for BUS 675 Intermediate Accounting I.

**BUS 610 - Marketing Principles and Applications**
Credits: 4.00
Studies the process of planning and distributing goods and services to the marketplace. Topics include product planning, pricing, promotion, and distribution. Emphasis on the application of marketing principles to real world business cases. Prereq: BUS 400, ECN 412.

**BUS 615 - Intermediate Financial Accounting II**
Credits: 4.00
The second of two in-depth financial accounting courses. Course provides students with an in depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external users. Topics include time value of money, current and non-current
liabilities, leases, deferred taxes, retirement benefits, stockholders equity, earning per share, accounting changes and errors, and statement of cash flows. No credit if credit received for BUS 675 Intermediate Accounting. Prereq: BUS 532, BUS 533, BUS 603.

BUS 620 - Organizational Behavior
Credits: 4.00
Applications of behavioral science concepts to work settings. Topics include worker incentives and perceptions toward work, group versus individual decision making, conflict resolution, interpersonal and leadership skills, and the study of other behaviors relevant to effective managing of a business organization. Prereq: Completion of Introductory Business Core or permission. Writing intensive

BUS 629 - Adv Managerial Accounting
Credits: 4.00
Further develop the basic managerial accounting knowledge base and skill set. Emphasis on the cost accounting concepts and techniques used to produce the information needed to make both planning and control decisions as well as cost analysis, overhead allocation, transfer pricing, and decision making. Prereq: BUS 532; BUS 533. No credit if received for BUS 675 Intermediate Accounting.

BUS 630 - International Management
Credits: 4.00
This course introduces students to the world of international business and management by studying cultural influences, government, and business structures in our global economy. Students also learn about trade relations, international finance and legal and labor agreements. Also covered, are topics on information needs, production systems, marketing and promotion, and career planning. Prereq: an international business course. Only open to Business Administration majors.

BUS 635 - Entrepreneurial Application through Enactus
Credits: 2.00
This is a two credit project driven course aimed at teaching students an understanding of free enterprise through the application of economic activities within the community. In addition, students will have special topic sessions on leadership, time management, public speaking, project management, and fundraising. Emphasis on teamwork. Course is open to all students who have junior or senior level standing, in and out of the business program. Prereq: junior or senior level standing. Special fee. Course may be repeated to a maximum of 12 credits.

BUS 640 - Business Communication and Conflict
Credits: 4.00
This course is designed to give students a comprehensive view of communication, its scope and importance in business, and the role of communication in establishing a favorable outside the firm environment as well as an affective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication. Prereq: Completion of Introduction to Business Core and BUS 455; or Approval by instructor.

BUS 650 - Operations Management
Credits: 4.00
Studies the operational issues and problems related to the design and implementation of an organization's production process. Topics include production planning and analysis, inventory and quality control, scheduling, and methods for evaluating production performance in both the goods and service sectors of the economy. Prereq: Completion of Introductory Business Core or permission.

BUS 660 - Employment and Labor Law
Credits: 4.00
This course includes a study of the organizational rights of employees and unions and the governance of the use of economic force by employers and unions. Also studied is the duty to bargain collectively, the manner in which collective bargaining is conducted, and the subjects to which it extends, as well as the manner in which collective bargaining agreements are administered and enforced. The relationship between a union and its members is also treated. Prereq: Completion of Introduction to Business Core and BUS 455.

BUS 661 - Integrated Marketing Communication
Credits: 4.00
Integrated Marketing Communications (IMC) is a fast evolving field in business and marketing. This course covers the full spectrum of planning, budgeting, data collection and analysis, creative tools and models, including perspectives on both Business to Consumer and Business to Business, IMC. Special emphasis for: cultural, lifestyle ans ethnic sensitivity, global versus individual country tactics, and the fast evolving techniques of social and mobile marketing. All of the above are in the context of building brands and customer loyalty. Prereq: BUS 400 and BUS 610. No credit earned if credit earned for BUS 675 or BUS 685 if listed as Marketing Communication.

BUS 663 - Services Marketing and Operations Management
Credits: 4.00
This course is designed to prepare students for NH business and marketing careers by understanding the issues, challenges, and terminology inherent in industries as diverse as health care, construction, education, professional and technical offices, transportation, information and publishing, tourism, retailing, etc. Case studies are used throughout the term. We study many of these sectors, both as academicians and as consumers, to build a portfolio of understanding across divergent sectors. Students learn about services marketing strategies and management models that: increase costumer satisfaction, improve customer retention and create dominant service brands that can create a competitive advantage for firms in any given industry. Prereq: BUS 400; BUS 610. No credit if credit earned for BUS 675 or BUS 685 if listed as Services Marketing.

BUS 665 - International Marketing Strategy Management
Credits: 4.00
The primary missions of the International Marketing Strategy Management (IMSM) course are to help students to: (1) develop understanding and knowledge of the important role International marketing plays in business (2) develop and improve global thinking, problem solving and integrative skills in a case based context (3) learn and apply the varying tools and models for evaluating when, where are how international marketing investments should be made. (4) understand and implement special approaches for cultural and ethnic differences in taste and attitudes, including trade legalities and regulations. Prereq: BUS 400 and BUS 610. No credit if credit earned for BUS 675 or BUS 685 if listed as International Marketing.

BUS 675 - Special Topics in Business Administration
Credits: 1.00 to 4.00
Provides students with an opportunity to explore a topic in business administration such as marketing, management, finance, or accounting. Topics will vary. Barring duplication of subject, may be repeated for credit. Prereq: Completion of Introductory Business Core or permission.

BUS 685 - Applications in Business Management
Credits: 4.00
Selected topics. Topics will vary. Barring duplication of subject, may be repeated for credit.

BUS 690 - Business Program Internship
Credits: 1.00 to 4.00
Supervised internship practicum within the private, public or non-profit sector. Focus is for the student to gain valuable insights into both professional and managerial positions, applying their college knowledge to a variety of roles and projects, influencing their career trajectory through 'real world' experience. Can be taken multiple times for credit, with credit varying from 1-4 hours based on time spent on the internship. For the 16 credit concentration, up to 4 BUS 690 credits can be applied. Credits beyond will be applied to general credits. Does not substitute for the internship required as part of the Business Capstone Course BUS 750 - Business Internship Senior Seminar. Offered, Fall, Spring and Summer. Cr/f.

**BUS 695 - Independent Study in Business**
**Credits:** 1.00 to 4.00
Independent study exploring a special topic emphasizing the managerial, organizational, strategic, political or economic context(s) within which business decisions are made. Prereq: ADM 400 and permission of instructor. May be repeated for a maximum of 8 credits.

**BUS 701 - Business, Government and Society**
**Credits:** 4.00
Examines relationships between business and its broader social, political and economic contexts. Topics include business ethics, social responsibilities, the impact of globalization, the impact of government policies, and how business influences government. Prereq: BUS 620 or permission. Writing intensive.

**BUS 705 - Business Ethics**
**Credits:** 4.00
Analysis of ethical issues that arise in contemporary business practice, both domestically and locally. Topics will include ethical issues concerning labor practices, marketing, financial services, environmental practices, human rights, and emerging technologies. Students will be taught to recognize, analyze, and address ethical challenges as they arise in their careers. Consideration will also be given to public policies and global ethics codes that inform business decision-making. Writing intensive.

**BUS 710 - Federal Taxation**
**Credits:** 4.00
Introduction to the basics of the federal income tax rules for individuals. Basic concepts in federal taxation include gross income, exclusions, adjusted gross income, deductions, exemptions, and credits. Additional tax concepts included are cash and accrual methods, passive loss rules, and like-kind exchange. Prereq: BUS 532, BUS 533, BUS 603, BUS 615, and BUS 629. No credit if received for BUS 675 Taxation.

**BUS 715 - Forensic Accounting**
**Credits:** 4.00
This course will develop the students' understanding of what forensic accounting is and how it pertains to both civil and criminal matters. The participant in this course will gain a basic understanding of the characteristics of forensic accounting, the tools used in this area and the applications in the business world today, including financial statement and tax fraud, bankruptcy, divorce, identity theft, organized crime and litigation services. Pre- or Coreq: BUS 720.

**BUS 720 - Auditing**
**Credits:** 4.00
Introduction to the basics of auditing and other assurance services theory and practice. It provides an overview and understanding of the public accounting profession and the professional auditing standards. The class also integrates auditing material with previous financial and managerial accounting course. Prereq: BUS 532, BUS 533, BUS 603, BUS 615, BUS 629. No credit if credit received for BUS 675 Auditing.

**BUS 725 - Financial Statement Analysis**
Credits: 4.00
This course will examine: financial reporting, the quality of accounting information, and US GAAP and IFRS. The flexibility which is built into GAAP will be examined, noting how firms may take advantage of this flexibility to manipulate financial information while staying within the bounds of the rules for proper reporting. Also examined will be the relationships found within the reported numbers by comparing various elements of the financial statements. Prereq: BUS 720.

BUS 750 - Business Internship Seminar
Credits: 4.00
A seminar course in which students report on and discuss their business internship experiences. Selected group readings and written and oral student presentations. Prereq: ADM 620 and senior standing or permission. Special fee.

BUS 755 - Co-op Program
Credits: 1.00
This is a program that enables students to integrate classroom learning with practical, professional, experience in their field of study. Students majoring in professional and liberal arts programs experience the working world through an educationally managed agreement between the employer, the student, and the institution. Students need to have a minimum 3.0 cumulative GPA and have junior or senior level status.

BUS 760 - Applied Senior Project
Credits: 4.00
An independent study research project involving an in-depth exploration into a business topic chosen in consultation with a faculty member. Designed for students with extensive prior work experience. Prereq: BUS 620 and senior standing or permission. Special fee.

BUS 770 - Special Topics Senior Seminar
Credits: 4.00
In-depth exploration into the theoretical and applied aspects of a special business topic. Topics vary according to instructor. Prereq: ADM 620 and senior standing or permission. Special fee.
ADMN 400 - Introduction to Business
Credits: 4.00
This course will introduce students to business organizations, the business disciplines and critical issues in contemporary business. The priority will be in having students develop strong intellectual foundations in business, knowledge of core disciplines of business, and an awareness of businesses' role in the economy and in the larger society. The course will include once a week lectures and also small group discussion sessions. The lectures will be organized by the lead PAUL faculty person and include visits and discussions with executives from New Hampshire companies. Writing intensive.

ADMN 403 - Computing Essentials for Business
Credits: 1.00
Self-paced course covering the fundamental skills and proficiency of general business software applications. Topics will include word processing and spreadsheet applications. Cr/F.

ADMN 410 - Management Information Systems
Credits: 4.00
This course provides an introduction to computer literacy, basic computer hardware and software concepts, business applications of information technology and computer ethics. Hands-on exercises include spreadsheets, databases and web pages. Students registering for ADMN 410 are expected to be able to bring a laptop computer to each class session running the Windows version of Microsoft Office Professional (including Microsoft Access). Prereq: ADMN 403.

ADMN 420 - Business Statistics
Credits: 4.00
Introductory coverage of statistical methods for managerial decision-making: probability, descriptive and inferential statistics, and regression. Quantitative techniques common to many introductory statistics courses are covered, but the emphasis is on understanding concepts such as uncertainty, inferences from sample data, and model formulation, and on utilizing these techniques as aids in decision-making. No credit for students who have had ADM 430; BIOL 528; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; PYSC 402; SOC 502. Prereq: ADMN 403; MATH 420 or 424A.

ADMN 444 - Business for People, Planet, and Profits
Credits: 4.00
An in-depth exploration of the relationship between the modern corporation and democratic values. Among industrialized democracies, corporate concentrated economic power privileges those who strategically control the firm and have direct claims on the firm’s surplus. This surplus generates new wealth which raises living standards over time. Also explores the tension between the rights of the private/civil sector and the reach of government. Writing intensive.

ADMN 502 - Financial Accounting
Credits: 4.00
Fundamentals of financial accounting concepts and procedures for analyzing economic events and the preparation and use of financial statements. No credit for students who have taken ACFI 501.

ADMN 503 - Managerial Accounting
Credits: 4.00
The use of information by managers to (1) determine the cost and profitability of the organization's
products or services; (2) plan, control, and evaluate routine operations; and (3) make special non-routine decisions. The demand for managerial accounting information is derived from an integrated treatment of organizational objectives, an orientation to customers, and a focus on activities as the unit of analysis for measurement of cost, quality, and time. Prereq: ADMN 502.

**ADMN 570 - Introduction to Financial Management**

**Credits:** 4.00

The investments, financing, and dividend decisions of the firm in a global setting. Topics include capital budgeting, designing and issuing securities, manager performance evaluation, resolution of agency problems, and working capital management. Open to PAUL majors only. Prereq: ECON 401. Pre- or Coreq: ADMN 420, ADMN 502; ECON 402.

**ADMN 575 - Behavior in Organizations**

**Credits:** 4.00

Behavioral science concepts applied to work settings. Focus on understanding and analyzing individual beliefs, values, goals, perceptions, motivation, commitment, and decision making; group structures and processes (interpersonal skills, communication, conflict resolution, leadership, and team work); organizational control systems (rewards, task design, performance appraisal); outcomes (satisfaction and development of the person as well as the organization); and organizational change. No credit for students who have already had MGT 580. Prereq: ADMN 400, ADMN 403, ADMN 502. Writing intensive.

**ADMN 580 - Quantitative Decision Making**

**Credits:** 4.00

Introduction to the use of quantitative tools in the decision-making process of an organization. Planning and operational problems in the manufacturing and services sectors are emphasized. Topics include forecasting, capacity planning, optimization, project scheduling, simulation and risk analysis, quality, inventory management, and waiting lines. Open to PAUL majors only. Prereq: ADMN 420, ADMN 503.

**ADMN 585 - Marketing**

**Credits:** 4.00

Covers marketing as the process of planning and developing goods and services to satisfy the needs of target customers: consumers, other businesses, institutions. Focus on how marketing contributes to the firm's goals through product planning, pricing, promotion, and distribution policies. Open to PAUL majors only. No credit for students who have had MKTG 550 or HMGT 600. Prereq: ADMN 400; ECON 401.

**ADMN 598 - Topics**

**Credits:** 1.00 to 4.00

Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission. Cr/F.

**ADMN 685 - Study Abroad**

**Credits:** 16.00

Open to students studying abroad in the discipline as approved by the department chair and Undergraduate Programs Office. Special fee. Cr/F.

**Co-requisites:** INCO 588

**ADMN 686 - Study Abroad**

**Credits:** 16.00

Open to students studying abroad in the discipline as approved by the department chair and Undergraduate Programs Office. Special fee. Cr/F.

**Co-requisites:** INCO 588

**ADMN 700 - Assurance of Learning Assessment**
Credits:
One of the learning objectives in the Business Administration Program is that all students will graduate with an understanding of these core knowledge assembled from the various disciplines that contribute courses to the program. We assess this learning as part of our Assurance of Learning Program. The zero credit course provides an administrative mechanism for accomplishing this goal. Permission required. Cr/F.

ADMN 703 - Strategic Management: Decision Making
Credits: 4.00
Capstone course: Problem-solving, decision-making, and strategic thinking relative to managerial, economic, ethical, legal, political, social, and technological aspects of an organization's environment. Integrates the functional discipline skills within the role of the general manager as leader and chief strategist, organizational builder and doer. Case discussion and analysis, industry and competitive analysis, environmental scanning, industry simulation, strategic audit, stakeholder analysis, values, ethics and social issues management within the public policy process are important course components. Open to PAUL majors only. Prereq: ADMN 570; ADMN 575 or ADMN 580; ADMN 585 and senior standing.

ADMN 790 - Honors/The Workshop
Credits: 1.00
Open to students enrolled in the Paul Honors Program, this workshop is specifically designed for honors students starting the program in their junior year. It is designed to enable students to share the work they are doing for the honors designated course. The workshop will also include guest speakers and other programming of interest to Paul Honors Students. Permission required. Cr/F.

ADMN 792 - Honors/The Consulting Project
Credits: 2.00
Open to students enrolled in the Paul Honors Program, this course is designed to broaden perspectives and build bridges to the external business community. Students will work across all of the disciplines offered by Paul College on consulting projects developed in conjunction with the NH SBDC (Small Business Development Center). Permission required. Cr/F.

ADMN 794 - Honors/The Research Process
Credits: 2.00
Open to students enrolled in the Paul Honors Program, this course is designed to help students formulate a thesis topic, learn the skills needed to write a thesis and serve as a mechanism for pairing students with a faculty thesis advisor. In addition, students will be expected to attend several research seminars. Permission required. Cr/F.

ADMN 798 - Topics
Credits: 1.00 to 4.00
Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission.

ADMN 798W - Topics
Credits: 1.00 or 4.00
Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission. Writing intensive.

ADMN 799 - Honors Thesis/Project
Credits: 4.00 to 8.00
Supervised research leading to the completion of an honors thesis or project; required for graduation from the honors program in administration. Prereq: permission of director of undergraduate programs and department chair. Writing intensive.
Chemical Engineering

CHE 400 - Chemical Engineering Lectures  
Credits: 1.00  
Introduces the profession, the process engineer as designer and problem solver; and the goals of the chemical engineering/ENE-IP curriculum. Lectures by faculty and practitioners. Introduction to computer skills, engineering ethics, safety, and careers in chemical/environmental (IP) engineering. Field trips. Cr/F.

CHE 410 - Energy and Environment  
Credits: 4.00  

CHE 410H - Honors/Energy and Environment  
Credits: 4.00  

CHE 501 - Introduction to Chemical Engineering I  
Credits: 3.00  
Systems of units; material balances and chemical reactions; gas laws; phase phenomena.

CHE 502 - Introduction to Chemical Engineering II  
Credits: 3.00  
Energy and material balances for systems with and without chemical reactions; design case studies.

CHE 601 - Fluid Mechanics and Unit Operations  
Credits: 3.00  
Continuity, momentum, and energy equations; laminar and turbulent flow in pipes; rheology. Applications to flow in porous media, filtration, and fluidization.

CHE 602 - Heat Transfer and Unit Operations  
Credits: 3.00  
Thermal properties of materials, steady-state and transient conduction and convection; radiation; applications to heat exchangers and process equipment.

CHE 603 - Applied Mathematics for Chemical Engineers  
Credits: 4.00  

CHE 604 - Chemical Engineering Thermodynamics  
Credits: 3.00  
Volumetric and phase behavior of ideal and real gases and liquids; cycles; steady-flow processes; chemical equilibrium.
CHE 612 - Chemical Engineering Laboratory I  
**Credits:** 3.00  
Selected experiments in fluid mechanics, heat transfer, and unit operations. Writing intensive.

CHE 614 - Separation Processes  
**Credits:** 3.00  
Adsorption, Chromatography, Membrane Separations, Liquid-liquid, Extraction and Crystallization, requires junior level studies in chemical engineering or permission.

CHE 651 - Biotech Experience/Biomanufacturing  
**Credits:** 4.00  
Course begins by introducing students to the proteins and companies of biotechnology and to current good manufacturing practices. For remainder of the course, students use cell culture of bacteria, mammalian and yeast cells to produce human proteins using the tools and manufacturing standards, operating procedures of biotechnology, including upstream and downstream processing of proteins, and quality control of protein production. Permission required. Also listed as ANSC 651 and MICR 651.

CHE 695 - Chemical Engineering Project  
**Credits:** 1.00 to 4.00  
Independent research problems carried out under faculty supervision.

CHE 696 - Independent Study  
**Credits:** 1.00 to 4.00  
Prereq: permission of the adviser and department chairperson; granted only to students having superior scholastic achievement.

CHE 703 - Mass Transfer and Stagewise Operations  
**Credits:** 3.00  
Diffusion in gases, liquids, and solids; design and analysis of distillation, absorption, and other stagewise equipment and operations.

CHE 705 - Fossil Fuels and Renewable Energy Sources  
**Credits:** 4.00  
Processing and refining of coal, crude oil, natural gas, tar sands and shale oil. Biomass co-combustion, biofuel extraction, impediments to widespread utilization. Exploration of environmental issues with energy generation and consumption. Lab.

CHE 706 - Electrochemical Methods for Energy Applications  
**Credits:** 4.00  
Fundamentals and applications of thermodynamics of electrochemical processes; kinetics of electrochemical reactions; electrocatalysis basics and current technologies for batteries, supercapacitors and fuel cells. Prereq: CHEM 683, 684.

CHE 707 - Chemical Engineering Kinetics  
**Credits:** 3.00  
Use of laboratory data to design commercial reactors. Continuous, batch, plug-flow, and stirred-tank reactors for homogeneous and catalytic multiphase reactions.

CHE 708 - Chemical Engineering Design  
**Credits:** 4.00  
Introduction to cost engineering. Application of acquired skills to design of chemical processes. Individual
major design project required. Safety for industrial processes. Lab. Writing intensive.

**CHE 709 - Fundamentals of Air Pollution and Its Control**  
**Credits:** 4.00  

**CHE 712 - Introduction to Nuclear Engineering**  
**Credits:** 4.00  
Development of nuclear reactors; binding-energy; radioactivity; elements of nuclear reactor theory; engineering problems of heat transfer, fluid flow, materials selection, and shielding; environmental impacts.

**CHE 713 - Chemical Engineering Laboratory II**  
**Credits:** 3.00  
Selected experiments in mass transfer, stagewise operations, thermodynamics, and kinetics. Writing intensive

**CHE 722 - Introduction to Microfluidics**  
**Credits:** 4.00  
Fundamentals and applications of microfluidics; scaling laws; microfabrication technology; hydrodynamics and electrodynamics; interfacial phenomena; capillary effects and diffusion; microvalves; micropumps; lab-on-a-chip systems; biochips. Prereq: fluids mechanics course or permission of instructor.

**CHE 744 - Corrosion**  
**Credits:** 4.00  
Fundamentals of corrosion processes in industrial and environmental settings; thermodynamics, kinetics, and mass transport in local corrosion cells; protection by electrochemical, chemical, surface modification or barrier methods; instrumental methods in corrosion science. Lab. (Also listed as ME 744 and OE 744.)

**CHE 752 - Process Dynamics and Control**  
**Credits:** 4.00  
Dynamic behavior of chemical engineering processes described by differential equations; feedback control concepts and techniques; stability analysis. Lab. (Also listed as ENE 752.)

**CHE 761 - Biochemical Engineering**  
**Credits:** 4.00  
Immobilized enzyme technology, microbial biomass production, transport phenomena in microbial systems, biological reactor design, process instrumentation and control, applications in separation and purification processes. Lab.

**CHE 762 - Biomedical Engineering**  
**Credits:** 4.00  
Overview of the biomedical engineering through topical studies such as drug delivery and sensors. Discussion of modern engineering methods through primary research sources. Prereq: differential equations and statistics. Writing intensive.

**CHE 766 - Biomaterials**  
**Credits:** 4.00  
Fundamental principles of biology and material science, along with latest topics in biomaterials research. Topics include cell biology, wound healing, host response to foreign materials, polymers, hydrogels, diffusion and methods of material characterization. Specific medical applications of biomaterials such as orthopedic and dental implants, heart valves, artificial blood vessels, cochlear and ophthalmic implants and
tissue engineering. Laboratory. Students are expected to have some background in chemistry, mathematics, and high school biology. Also listed as BENG 766.
**Chemistry**

**CHEM 400 - Freshman Seminar**
*Credits: 1.00*
An introduction to the chemistry profession. Talks and workshops on the career of a chemist in academia, industry, medicine, law, teaching and government. Required for chemistry majors. May be repeated. Cr/F.

**CHEM 403 - General Chemistry I**
*Credits: 4.00*
Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Special fee. Lab. Cannot be taken for credit if credit received for CHEM 405. Required for chemistry majors.

**CHEM 404 - General Chemistry II**
*Credits: 4.00*
Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Required for chemistry majors. Special fee. Lab. Prereq: CHEM 403 and 403L.

**CHEM 404H - Honors/General Chemistry II**
*Credits: 4.00*
Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Required for chemistry majors. Special fee. Lab. Prereq: CHEM 403 and 403L. Honors course is designed for students who have enrolled in the honors degree program. Special fee. Lab. Cannot be taken for credit if credit received for CHEM 402. Prereq: CHEM 403.

**CHEM 405 - Chemical Principles for Engineers**
*Credits: 4.00*
Basic principles; atomic structure, bonding, equilibria, and thermodynamics. Prereq: one year of high school chemistry, algebra, and knowledge of logarithms. Cannot be taken for credit if credit received for CHEM 403-404. Required for chemical engineering, mechanical engineering, electrical and computer engineering, environmental engineering; industrial majors. Not applicable for credit for majors in chemistry or biochemistry.

**CHEM 409 - Chemistry and Society**
*Credits: 4.00*
Elementary survey of chemistry; integrates principles and applications. For students who do not intend to take any other chemistry courses and those interested in satisfying a general education science requirement. Not a prerequisite for any other chemistry courses. (Not offered every year.) Chemistry majors are excluded from taking this course.

**CHEM 411 - Introductory Chemistry for Life Sciences**
*Credits: 4.00*
Fundamental and pragmatic aspects of chemistry, particularly as foundation for nutritional biochemistry. Includes basics of bonding, acid/base behavior, reaction energy, intermolecular forces, stoichiometry, and equilibrium. High school chemistry not required. This course is not a replacement to CHEM 403 and is not

**CHEM 413 - General Chemistry Lecture I**  
**Credits:** 3.00  
Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Special permission required. Not offered every summer. Cannot be taken for credit if credit received for CHEM 401, 403, 405, or 409.

**CHEM 414 - General Chemistry Lab I**  
**Credits:** 1.00  
Lab application of fundamental laws and concepts applied to nonmetals, metals and their compounds. Previous general chemistry lecture required. Special permission. Special fee. Not offered every summer. Cannot be taken for credit if credit received for CHEM 401, 403, 405, or 409. Not open to Chemistry majors.

**CHEM 415 - General Chemistry Lecture II**  
**Credits:** 3.00  
Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Cannot be taken for credit if credit received for CHEM 402 or 404. Prereq: CHEM 403 or 413.

**CHEM 416 - General Chemistry Lab II**  
**Credits:** 1.00  
Lab application of fundamental laws and concepts applied to nonmetals, metals and their compounds. Previous general chemistry lecture required. Special permission. Special fee. Not offered every summer. Cannot be taken for credit if credit received for CHEM 402 or 404. Prereq: CHEM 403 or 414. Not open to Chemistry majors.

**CHEM 444A - Fire and Ice**  
**Credits:** 4.00  
Embodies a focus on the perception, movement, creation, understanding, and everyday use of heat. Examines historical evolution and controversy regarding the concept of heat across physical and life sciences.

**CHEM 444B - Symmetry in Nature, The Arts, and Daily Life**  
**Credits:** 4.00  
The elements of symmetry and its occurrence and role in nature (bilateral symmetry in butterflies and animals; cylindrical symmetry in trees and volcanoes; helical symmetry in shells, proteins, and DNA; the role of symmetry in design of medicines); its role in art and design (textiles, advertising); and in our lives (design of houses, chairs, scissors). The course is non-mathematical and is open to students having little background in science. Writing intensive.

**CHEM 444G - Green Goggles**  
**Credits:** 4.00  
In this course, we investigate the principles and practice of Green Chemistry. Green Chemistry is the field of science that uses a principle-based approach to design (or redesign) chemical reactions and processes to make them more sustainable. In exploring green chemistry, many of the fundamental concepts of a general chemistry course are investigated in order to understand how chemists "green" chemical reactions.
A service learning project is a major component of this course, where students reach out to the community at large and practice discovering the world through their new "green goggles". Online technology is incorporated in this course to further disseminate student projects and work.

**CHEM 444O - The Story of Oxygen**
**Credits:** 4.00
The course will deal with a single element - oxygen. We will examine the role that oxygen compounds play in the atmosphere, including the ozone layer, global warming, and smog. In addition, the history of oxygen can be seen as emblematic of the development of chemistry from the mystical philosophy of alchemy to a quantitative science. We will discuss the development of chemistry by considering the history of our understanding of the element.

**CHEM 496 - Freshman Independent Study**
**Credits:** 1.00 to 8.00
Independent study for students who have not had organic chemistry. Designed for students who wish to pursue independent study topics, but do not have the experience to pursue lab research. Cannot be counted toward the major. (Not offered every year.)

**CHEM 501 - Peer-led Team Learning in Chemistry**
**Credits:** 2.00
Initial experience as peer instructional leader. Practical application of theories of cognition, group dynamics, learning, and motivation to helping other students learn chemistry in general chemistry. Requires one weekly meeting with students. Permission required. Prereq: CHEM 403 or 404.

**CHEM 502 - Advanced Peer-led Team Leadership in Chemistry**
**Credits:** 1.00
Development and assessment of leadership skills. Practical application of theories of cognition, group dynamics, learning, and motivation to helping other students learn chemistry in general chemistry. Requires one weekly meeting with students. Permission required. Prereq: CHEM 403 and CHEM 501.

**CHEM 503 - Mentoring for Peer Team Learning**
**Credits:** 1.00
Experienced leaders mentor a new leader in implementation of PLTL model, including initial co-leading and observational formative assessment. Mentors report on mentee development, visit other experienced leaders, and provide a final evaluation. Mentors lead their own weekly group and assist part-time in the PLTL leader meetings. Prereq: CHEM 501.

**CHEM 517 - Quantitative Analysis**
**Credits:** 4.00
Combines lecture, laboratory, and in-class problem solving to study solubility, acid-base, redux, and complexation reactions and their application for quantitative chemical measurements. Prereq: CHEM 404 or 405. Lab.
**Co-requisites:** CHEM 518

**CHEM 518 - Quantitative Analysis Laboratory**
**Credits:** 1.00
Volumetric methods with an emphasis on technique; separations; and selected instrumental methods such as potentiometry, spectrophotometry, atomic absorption, and gas chromatography. Prereq: CHEM 404 or 405. Special fee.
**Co-requisites:** CHEM 517

**CHEM 545 - Organic Chemistry**
Credits: 3.00
Introductory study of carbon compounds for those who desire a brief terminal course. This course is a one semester course only. CHEM 545 and 546 are not applicable for pre-med, pre-vet, pharmacological majors or minors requiring a year long course of organic. CHEM 545 and 546 cannot be used to meet semester 1 of the year long-organic course (CHEM 547 or CHEM 651). Prereq: CHEM 403 and 403L and CHEM 404 and 404L or CHEM 405. CHEM 545 and 546L are co-requisites and must be taken together.

Co-requisites: CHEM 546

CHEM 546 - Organic Chemistry Laboratory
Credits: 2.00
Introductory study of carbon compounds for those who desire a brief terminal course. Prereq: CHEM 404 or 405. Special fee. Lab.

Co-requisites: CHEM 545

CHEM 547 - Organic Chemistry I
Credits: 3.00
Principal classes of organic compounds, aliphatic and aromatic; class reactions and structural theory. Intended primarily for chemistry and biochemistry majors. Prereq: CHEM 404; 405;/or permission. Students receiving credit for CHEM 547-548 may not receive credit for either CHEM 545 or 651-652.

Co-requisites: CHEM 549

CHEM 548 - Organic Chemistry II
Credits: 3.00
Principal classes of organic compounds, aliphatic and aromatic; class reactions and structural theory. Intended primarily for chemistry and biochemistry majors. Prereq: CHEM 404; 405; and 547/or permission. Students receiving credit for CHEM 547-548 may not receive credit for either CHEM 545 or CHEM 651-652. Only listed majors allowed: Chemistry (BS), Chemistry (BA), Bchmmolcebio, and Biochemistry.

Co-requisites: CHEM 550

CHEM 549 - Organic Chemistry Laboratory
Credits: 2.00
Special fee. Lab.

Co-requisites: CHEM 547

CHEM 550 - Organic Chemistry Laboratory
Credits: 2.00
Special fee. Lab.

Co-requisites: CHEM 548

CHEM 574 - Chemistry Across the Periodic Table
Credits: 4.00
Ninety-eight elements form the building blocks of every substance on Earth—they are elegantly organized into what we now call The Periodic Table. This course will discuss the structure/property/reactivity patterns inherent in The Periodic Table, their origins according to the quantum mechanical model of the atom, and how they are manifest in current research advancements and modern applications of main group element chemistry, transition metal chemistry, and the chemistry of solids and materials. Prereq: CHEM 404 or CHEM 405.

CHEM 651 - Organic Chemistry I
Credits: 3.00
Principal classes of organic compounds, aliphatic and aromatic, class reactions and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Prereq: CHEM 404; 405;/or permission. Students receiving credit for CHEM 651-652 may not receive credit for either CHEM 545 or 547-548.
Co-requisites: CHEM 653

CHEM 652 - Organic Chemistry II
Credits: 3.00
Principal classes of organic compounds, aliphatic and aromatic, class reactions and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Prereq: CHEM 404; 405; and 651/or permission. Students receiving credit for CHEM 651-652 may not receive credit for either CHEM 545 or 547-548.
Co-requisites: CHEM 654

CHEM 652A - Organic Chemistry II
Credits: 3.00
Principal classes of organic compounds, aliphatic and aromatic, class reactions, and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Prereq: CHEM 404; 405; and 651/or permission. Students receiving credit for CHEM 651-652 may not receive credit for either CHEM 545 or 547-548. This course is for Chemical Engineers only.

CHEM 653 - Organic Chemistry Laboratory
Credits: 2.00
Special fee. Lab. Co-requisites: CHEM 651

CHEM 654 - Organic Chemistry Laboratory
Credits: 2.00
Special fee. Lab. Co-requisites: CHEM 652

CHEM 683 - Physical Chemistry I
Credits: 3.00
Topics may be chosen from: properties of gases, liquids, and solids; thermochemistry, and thermodynamics; chemical equilibria; reaction rates; quantum chemistry and spectroscopy. Prereq: CHEM 404 or 405; MATH 426. Pre- or Coreq: PHYS 402 or 407. Coreq: CHEM 685-686.
Co-requisites: CHEM 685

CHEM 684 - Physical Chemistry II
Credits: 3.00
Topics may be chosen from: properties of gases, liquids, and solids; thermochemistry, and thermodynamics; chemical equilibria; reaction rates; quantum chemistry and spectroscopy. Prereq: CHEM 404 or 405 and CHEM 683; MATH 426. Pre- or Coreq: PHYS 402 or 407.
Co-requisites: CHEM 686

CHEM 685 - Physical Chemistry Laboratory
Credits: 2.00
Co-requisites: CHEM 683

CHEM 686 - Physical Chemistry Laboratory
Credits: 2.00
Co-requisites: CHEM 684
CHEM 696 - Independent Study
Credits: 1.00 to 4.00
For exceptional students. Individual reading, writing, or laboratory work carried out under the tutelage of a faculty member. May be used to replace specific required courses in chemistry. Prereq: approval of the adviser and department chairperson. Credits to be arranged.

CHEM 698 - Seminar
Credits: 1.00
Student reports on topics of interest. Prereq: CHEM 548 or 652; CHEM 684. Writing intensive.

CHEM 699 - Thesis
Credits: 4.00
Yearlong investigation in a selected topic, with background and experimental investigation. For chemistry majors who have completed CHEM 548, 684, and 762. Required for B.S. majors. Strongly recommended for B.A chemistry majors. Prereq: 2.50 average and approval of department chairperson. Permission required. Lab. Two semesters of 4 credits each are required. Writing intensive.

CHEM 708 - Spectroscopic Investigations of Organic Molecules
Credits: 3.00
Identification and structural analysis of chemical compounds by selected instrumental methods. Typical topics include proton and carbon-13 NMR spectroscopy, IR and UV spectroscopy, and mass spectrometry.

CHEM 755 - Advanced Organic Chemistry
Credits: 3.00
Methods of synthesis and determination of structure, including stereochemistry of complex organic compounds. Prereq: CHEM 548 or 652 or equivalent. Coreq for CHEM majors: 756.
Co-requisites: CHEM 756

CHEM 756 - Advanced Organic Chemistry Laboratory
Credits: 2.00 or 3.00
Synthesis and structural determination of complex organic compounds, techniques for the separation, determination of purity, and identification of compounds by spectroscopic and chemical means. Coreq for CHEM majors: 755. Special fee.
Co-requisites: CHEM 755

CHEM 762 - Instrumental Methods of Chemical Analysis
Credits: 3.00
Theory, instrumentation, and application of methods such as atomic absorption, coulometry, emission spectrography, gas and liquid chromatography, polarography, potentiometry, IR and UV-VIS absorption spectrophotometry, and mass spectrometry to chemical analysis. Prereq: CHEM 406 or 517; CHEM 684 as a pre- or co requisite;/or permission.
Co-requisites: CHEM 763

CHEM 763 - Instrumental Methods of Chemical Analysis Laboratory
Credits: 2.00 or 3.00
Experimental parameters, error analysis, and applications of the methods covered in CHEM 762. Special fee.
Co-requisites: CHEM 762

CHEM 774 - Inorganic Chemistry
Credits: 3.00
Basic theoretical concepts and their applications to inorganic reactions and compounds. Prereq: organic
chemistry; physical chemistry;/or permission.

**Co-requisites:** CHEM 775

**CHEM 775 - Inorganic Chemistry Laboratory**

**Credits:** 2.00

In-depth instruction of selected techniques of synthesis and characterization of inorganic compounds. Emphasis on the analysis and presentation of results and experiment planning. Includes open-ended and collaborative projects. Special fee.

**Co-requisites:** CHEM 774

**CHEM 776 - Physical Chemistry III**

**Credits:** 3.00

Application of quantum theory to atomic electron structure, molecular structure, and spectroscopy. Advanced topics in physical chemistry. Prereq: CHEM 683-684. Special fee.

**CHEM 795 - Special Topics**

**Credits:** 2.00 to 4.00

New or specialized topics not covered in regular course offerings. May be repeated to a maximum of 4 credits. Prereq: permission.
Chinese

**CHIN 400 - Conversational Chinese**  
**Credits:** 4.00  
This course, for students with no previous training in Chinese, is designed to promote conversational skills in the target language. Communicative strategies are developed within the context of cultural components. Topics include those which enable students to function in China in everyday situations (e.g., food, leisure activities, transportation, business exchanges, tourism, and daily life). This course does not satisfy the foreign language requirement. It may be repeated for up to a maximum of 8 credits. Special fee.

**CHIN 401 - Elementary Chinese I**  
**Credits:** 4.00  
Aural-oral practice in meaningful contexts of the fundamental vocabulary and grammar of Mandarin Chinese. Reading and writing in Romanization (pinyin) and in Chinese characters. Special fee.

**CHIN 402 - Elementary Chinese II**  
**Credits:** 4.00  
Aural-oral practice in meaningful contexts of the fundamental vocabulary and grammar of Mandarin Chinese. Reading and writing in Romanization (pinyin) and in Chinese characters. Special fee.

**CHIN 410 - Communicative Chinese for the Professions**  
**Credits:** 4.00  
A skill-based course for students who wish to focus on the Chinese language in relation to the health fields, business, law, tourism, and social service. Helps students develop a practical understanding of China through communicative activities in specific fields. Does not satisfy the foreign language requirement. Special fee.

**CHIN 420 - Summer Experience in China**  
**Credits:** 4.00  
This course is designed to let students experience the Chinese language and culture first hand. It is conducted in China each summer. Students first travel to Beijing, Xian, Chengdu and Shanghai for about a week with a faculty. They then need to learn the basic Chinese conversation for two and a half weeks at Chengdu University. Students can choose to take either elementary or intermediate Chinese in Chengdu.  
**Co-requisites:** INCO 589

**CHIN 425 - Introduction to Chinese Culture**  
**Credits:** 4.00  
Taught in English. Aspects of the political, social and cultural life of China through readings, discussion, papers, and film. Strongly recommended for students planning an Asian Studies minor. Special fee.

**CHIN 503 - Intermediate Chinese I**  
**Credits:** 4.00  
Continuation of CHIN 401-402. Conducted entirely in Chinese, with work on listening comprehension, speech, reading, and writing of Chinese characters, with increasing attention to reading contemporary Chinese texts. Special fee.

**CHIN 504 - Intermediate Chinese II**  
**Credits:** 4.00  
Continuation of CHIN 401-402. Conducted entirely in Chinese, with work on listening comprehension,
speech, reading, and writing of Chinese characters, with increasing attention to reading contemporary Chinese texts. Special fee

**CHIN 521 - Chinese Literature in Translation**
**Credits:** 4.00
Representative works of master Chinese writers reflecting themes of 20th century China. Lu Hsun, Shen Ts'ung-Wen, Bei Dao, and others. Lectures, discussion, and readings in English. Special fee.

**CHIN 631 - Advanced Chinese Conversation and Composition I**
**Credits:** 4.00
Advanced spoken and written Chinese to attain aural-oral fluency. Advanced reading and composition. Prereq: CHIN 504 with a grade of C or better or permission of the instructor. Special fee.

**CHIN 632 - Advanced Chinese Conversation and Composition II**
**Credits:** 4.00
Advanced spoken and written Chinese to attain aural-oral fluency. Advanced readings and composition. Prereq: CHIN 631 with a grade of C or better or permission of instructor. Special fee.

**CHIN 686 - Spring Semester in Chengdu China**
**Credits:** 16.00
*Discovery World Cultures fulfilled by length of time in county*. The program provides a unique opportunity to study abroad in Chengdu, China during the spring semester. It enables upper-level students in the Chinese language program as well as students in other colleges to spend a full semester immersed in another language and culture. Special fee.
**Co-requisites:** INCO 588

**CHIN 795 - Independent Study**
**Credits:** 1.00 to 4.00
Open to highly qualified juniors and seniors. To be taken only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.
Civil Engineering

CIE 402 - Introduction to Civil Engineering
Credits: 4.00
Introduction to the civil engineering profession: structural, geotechnical, water resources, materials, and environmental. Overviews the civil project process including the creative design process, teamwork, bidding and construction. The relationship between civil engineering works and society including ethics, earthquakes, failures, successful signature structures, current events, and professional licensure. The production of professional engineering documents including writing tasks and calculations sets. Campus resources, the University system, and relationship between required curriculum, student objectives, and the civil engineering profession. Introduction to spreadsheet software, data analysis, and probability and statistics.

CIE 505 - Surveying and Mapping
Credits: 4.00

CIE 525 - Statics for Civil Engineers
Credits: 3.00
Introduction to statics with emphasis on civil engineering topics; two and three dimensional force systems; static equilibrium; friction; analysis of trusses and beams; centroids; and moment and shear diagrams for flexural members. Prereq: PHYS 407. Pre- or Coreq: MATH 426.

CIE 526 - Strength of Materials
Credits: 3.00
Strength of materials with emphasis on civil engineering applications. Virtual work; work and energy relationships; analysis of members subjected to flexure, torsion, and axial loads; stresses and strains; and stability of columns. Prereq: CIE 525 or ME 525.

CIE 533 - Project Engineering
Credits: 3.00
Techniques for financial analysis, and operation and management of engineering systems, engineering economics, material take-offs, estimating, scheduling, modeling physical systems, and decision-making. CIE/ENE major or permission.

CIE 564 - Fundamentals of CAD
Credits: 3.00
Fundamentals of CAD and computer-based graphics, including using CAD as a design tool to create engineering drawings. AutoCAD and Softdesk Civil software used to cover the following topics: drawing file storage and retrieval, display functions, basic drawing and editing commands, symbol libraries, plotting drawings on paper, and using parametric design features in the CAD system. Basic DOS familiarity is assumed. Prereq: civil engineering majors only. Special fee. Lab.

CIE 622 - Engineering Materials
Credits: 4.00
Structural properties and applications of the various materials used in civil engineering projects, including steel, cement, mineral aggregates, concrete, timber, and bituminous materials. Microstructure and properties of common metals, plastics, and ceramics. Prereq: CIE major or permission, CIE 526 or ME 526. Lab. Writing intensive.

CIE 642 - Fluid Mechanics
Credits: 4.00
Properties of fluids, fluid statics, continuity, momentum and energy equations, resistance to flow, boundary layer theory, flow in open channels and piping systems, dimensional analysis, similitude, drag, and lift. Laboratory exercises on measurement of fluid properties, energy principles, flow resistance, discharge measurements, momentum, hydropower, groundwater flow, and settling of spheres. Prereq: PHYS 407, CIE/ENE Hydrology major; or permission. Lab. Writing intensive.

CIE 665 - Soil Mechanics
Credits: 4.00
Soil classification and physical properties. Permeability, compressibility, consolidation, and shearing resistance are related to the behavior of soils subjected to various loading conditions. Prereq: CIE 622, 642, CIE/ENE major; or permission. Lab.

CIE 681 - Classical Structural Analysis
Credits: 3.00
Analytical stress and deflection analysis of determinate and indeterminate structures under static and moving loads by classical methods. Prereq: CIE 526, CIE major; or permission.

CIE 721 - Pavement Design and Analysis
Credits: 4.00
Introduction to flexible and rigid pavement design and analysis for highways and airports. Examines design inputs, materials, analysis methods, design tools, and maintenance treatments. Prereq: CIE 622 and CIE 665 or permission.

CIE 722 - Properties and Production of Concrete
Credits: 3.00
Basic properties of hydraulic cements and mineral aggregates, and their interactions in the properties of plastic and hardened concrete; modifications through admixtures; production handling and placement problems; specifications; quality control and acceptance testing; lightweight, heavyweight, and other special concretes. Prereq: CIE 622 or permission.

CIE 723 - Asphalt Mixtures and Construction
Credits: 3.00
Specification of asphalt cements, aggregates and proportioning of mixture constituents for paving applications. Asphalt mixture design methods, production, construction, and quality control are discussed. Current new material production and construction technologies are introduced. Prereq: CIE 622.

CIE 741 - Open Channel Flow
Credits: 3.00
Energy and momentum principles in open channel flow; flow resistance; channel controls and transitions; unsteady flow concepts and dam failure studies. Modeling with HEC programs. Prereq: CIE 642 or permission.

CIE 745 - Engineering Hydrology
Credits: 3.00
Hydrologic cycle, probability theory related to hydrology and the design of water resources structures,
water law, flood discharge prediction, hydrograph development, hydraulic and hydrologic river routing, reservoir routing, theory of storage, reservoir operations, hydropower development, modeling of watershed hydrology with program HEC-1, HEC-HMS, multipurpose projects.

CIE 750 - Ecohydrology
Credits: 3.00
Introduction to ecohydrological concepts in terrestrial and riverine systems. Topics include the historical practices, resource management impacts, hydrologic variability, and the relationships among water and ecology, vegetation, biology, geomorphology, and water quality. Prereq: CIE 745 or ESCI 705 or permission.

CIE 753 - Residential Construction
Credits: 3.00
Introduces innovations in residential design. Investigates heat loss, electrical usage, green energy alternatives, and construction procedures. Addresses private and subdivision construction and mortgage financing for residential properties. Considers planning, zoning and soil usage codes applicable to residential zoned areas. Each student prepares a set of construction drawings for a private home, and a subdivision layout.

CIE 754 - Transportation Engineering and Planning
Credits: 3.00
Fundamental relationships of traffic speed, density, and flow applied to public and private modes of transport. Principles of demand forecasting and urban systems planning. Prereq: permission.

CIE 755 - Design of Pressurized Water Transmission Systems
Credits: 4.00
Theory developed for individual components to large complex systems. Analysis and designs of components and systems. Topics include: steady and unsteady closed conduit flow, valves and meters, pump requirements, pump selection, system planning and layout, water hammer, and system operation and maintenance. Pressure system modeling with program EPANET. Prereq: CIE 642 or permission.

CIE 757 - Coastal Engineering and Processes
Credits: 3.00
Introduction to small amplitude and finite amplitude wave theories. Wave forecasting by significant wave and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave-structure interaction. Design of coastal structures. Introduction to mathematical and physical modeling. Prereq: CIE 642 or permission.

CIE 758 - Stormwater Management Designs
Credits: 3.00
Historic review of stormwater management leading up to the current regulatory framework. Overview of stormwater management strategies, strategy selection, and the targeting of specific contaminants, contaminant removal efficiencies, construction and site selection, and system maintenance. Hydrologic concepts including watershed and storm characteristics, design hydrology (peak flows, storm and treatment volumes), hydrograph routing, and critical review of hydrology and drainage reports. Design and sizing of treatment systems including: conventional, BMPs, low impact development, and manufactured devices. Rainfall runoff calculations with US SCS TR55 model. Prereq: CIE 642 or permission.

CIE 759 - Stream Restoration
Credits: 3.00
The assessment, planning, design, engineering, and monitoring of stream and watershed practices intended to protect and restore the quality and quantity of flowing surface waters and stream corridors.
Lecture material covers hydrology, geomorphology, and ecosystems, with the intent of understanding the variables associated with stream systems and their interplay. Students measure field variables and then are challenged with actual designs. Examples of stream restoration issues include: in-stream flow, dam removal, induced recharge, improvements to fish habitat, and channel stabilization.

CIE 760 - Foundation Design I  
Credits: 4.00  
Foundation design based on subsurface investigation and characterization using current methods of laboratory and in situ testing. Use of consolidation theory and bearing capacity theory for the design of shallow foundations including footings and rafts. Basic design of pile foundations. Earth pressure theory applied to design of retaining walls. Slope stability theory and applications. Prereq: CIE 665 or permission.

CIE 761 - Foundation Design II  
Credits: 3.00  
Advanced pile and pier design under vertical and lateral loads. Slope stability by circular and noncircular arc methods. Design of flexible bulkhead walls and mechanically stabilized walls. Excavation and dewatering. Soil and site improvement. Prereq: CIE 760 or permission.

CIE 762 - Introduction to Geotechnical Earthquake Engineering  
Credits: 3.00  
Overviews earthquake source mechanisms; magnitude and intensity; seismicity of the United States. Dynamics of simple structures; response spectra. Selection of design parameters; source, magnitude, input records. Measurement of dynamic characteristics of soils; site response, liquefaction, and ground deformation. Prereq: CIE 760 or permission.

CIE 763 - Geological Engineering  
Credits: 3.00  
Functional classification of rocks and rock masses, stereographic projection, engineering properties of rocks, and rock mechanics. The influence of geology in the design of underground excavations, tunneling, foundations, and rock slope engineering. Prereq: ESCI 401 or permission.

CIE 766 - Geo-Environmental Engineering  
Credits: 3.00  
Soil composition and structure; hydrogeology; attenuation and contaminant transport; containment design including landfills, geo-synthetics for liners and covers, leachate collection systems, vertical cutoff walls and stability analyses; geo-environmental site characterization and investigation using geotechnical and geophysical methods; ground water, soil and gas monitoring and sampling; remediation including in situ and ex situ techniques and treatment methods. Prereq: CIE 665 or permission.

CIE 767 - Engineering Behavior of Soils  
Credits: 4.00  

CIE 774 - Reinforced Concrete Design  
Credits: 4.00  
Introduces the design of reinforced concrete structural members by the strength method and considering deflection performance. Includes loads, approximate analyses, slabs, beams, and columns. Prereq: CIE 622, 681; or permission.
CIE 776 - Structural Design in Masonry  
Credits: 3.00  
Introduces the design of reinforced masonry structural members by the stress and strength method and considering deflection and other serviceability performance criteria. Includes development of wind and seismic load, curtain wall, shear wall, lintels and columns. Prereq: CIE 622, 681; or permission.

CIE 778 - Issues in Engineering Practice and Management  
Credits: 3.00  
Non-technical professional engineering topics including: participation in multidisciplinary teams, interpersonal and human resources skills, verbal and written communication skills, project management, marketing, ethics, professional licensure, professional liability, and contract administration. Prereq: seniors only; juniors with permission.

CIE 780 - Building Information Modeling  
Credits: 3.00  
Building Information Modeling (BIM) is the process of generating and managing project data during its life cycle by integrating 3D multidisciplinary drawings with dynamic scheduling and visualization. BIM provides a digital representation of project data to facilitate the exchange of information beyond the standard two dimensional plan set. This course introduces students to the fundamentals of model creation, scheduling, material take-offs, visualizations, and animations that improve the communication of information to potential clients. Pre- or Coreq: TECH 564. Open to CIE and EnvEngr:MunicipalProc majors only.

CIE 781 - Green Building Design  
Credits: 3.00  
This course gives an overview of green designs and sustainable practices in building construction. We will cover technical topics and requirements of a nationally recognized rating system (LEED), with a specific focus on Green Building Design and Construction. Students are introduced to basic building designs and systems related to sustainability. Additionally, they learn about green design topics such as site plans, water and energy efficiency, material and resources usage, environmental quality and renewable energy source. As an outcome of the course, students are able to assess and incorporate green technologies and designs into building projects.

CIE 782 - Timber Design  
Credits: 3.00  
Introduces the design of timber structures. Structural properties of wood, determination of horizontal and vertical loads, horizontal and vertical load-resisting systems, and design of horizontal diaphragms, shear walls, beams, and columns. Bolted, screwed, and nailed connections. Prereq: CIE 681 or permission.

CIE 783 - Matrix Structural Analysis and Modeling  
Credits: 3.00  
Modeling and analysis of determinate and indeterminate structures by matrix computer methods. Creation of matrix elements using compatibility, equilibrium, and constitutive relationships. Plane trusses, beams, frames, and space trusses. Prereq: CIE 681 or permission.

CIE 784 - Introduction to Project Planning and Design  
Credits: 1.00  
Part one of a two-part sequence. Student groups develop a project statement to address a large-scale civil engineering system design. Each team prepares a project plan to be executed in CIE 788, part two of this sequence. Cr/F.

CIE 787 - Dynamics of Structures
Credits: 3.00
Dynamics of single- and multi-story buildings. Response due to earthquakes, blasting, traffic, and mechanical equipment. Analysis in the time domain and through the Fourier Transform. Fundamentals of structural vibration measurement. Prereq: CIE 785 or permission.

CIE 788 - Project Planning and Design
Credits: 3.00
Student groups are formed into design teams to prepare a design plan for a large-scale civil engineering system including consideration of budgetary constraints, building code criteria, and environmental impacts. Each team prepares a final written report and gives a formal presentation. Prereq: CIE 784; Civil Engineering and EnvEngr: Civil Engr majors only. Writing intensive.

CIE 791 - Pre-stressed Concrete
Credits: 3.00
Analysis and design of prestressed and post-tensioned concrete sections in flexure and shear. Strength, deflection, and losses in flexural members. Optimization of section and prestressing force selection. Prereq: CIE 774 or permission.

CIE 792 - LRFD Bridge Design
Credits: 3.00
AASHTO LRFD Bridge Design Specifications using SI units. Design objectives, loads, load case analysis and selection, load distributions, static analysis, and design for axial loads, flexure, and shear. Design of slender columns, composite, beams, and plate girders. Prereq: CIE 774. Pre- or Coreq: CIE 793 or permission.

CIE 793 - Structural Design in Steel
Credits: 4.00
Introduction to steel member design, including horizontal and vertical members for design and analysis of buildings. Examines design inputs, material choice, analysis methods and design and construction methodologies. Prereq: CIE 622 and CIE 681.

CIE 795 - Independent Study
Credits: 1.00 to 4.00
Seniors in good standing may pursue independent studies under faculty guidance. A written culminating report is required. Prereq: permission.

CIE 796 - Special Topics
Credits: 1.00 to 4.00
Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission.

CIE 799H - Senior Honors Thesis
Credits: 4.00
Students in the honors program in civil engineering complete a project under the direction of a faculty sponsor resulting in a written thesis which must be accepted by the sponsor by the end of the second semester, senior year. Four credits total during senior year; 3 of which may be used to fulfill a CIE non-design elective.
Civil Technology

CT 423 - Introduction to Surveying and Mapping
Credits: 3.00
An introduction to the field of surveying and mapping and its fundamental principles, theories and methods. Specifically: horizontal and vertical distance measurements, angle and direction measurements, determination of positions, areas and topographic contours. Includes mapping, geographic information systems and the Global Positioning System, measurement accuracy, and statistical analysis.
Co-requisites: CT 425

CT 425 - Surveying and Mapping Lab
Credits: 2.00
A series of labs and recitations that provide an introduction to the field of surveying and mapping and its fundamental principles, theories and methods. Specifically: horizontal and vertical distance measurements, angle and direction measurements, determination of positions, areas and topographic contours. Includes mapping, geographic information systems and the Global Positioning System, measurement accuracy, and statistical analysis.
Co-requisites: CT 423

CT 427 - 2D Computer Aided Design
Credits: 4.00
The student designs fundamental design project work including site work and buildings, prepares plans using computer software (AutoCAD). Emphasis is on learning the software, basic design and plan requirements. Students then apply this knowledge to produce presentation drawings and develop proficient skills with this software. The student also works concurrently on course projects. 2-hr lec/2-hr rec.

CT 428 - 3D Design, Modeling and Visualization
Credits: 4.00
Provides foundational skills in critical thinking, design process and creative expression in three dimensions. Individual and group projects provide opportunities for enhancing spatial thinking, understanding and communication. Hand sketching, computer sketching, REVIT Building Information Modeling (BIM) software and ArcGIS Geographic Information System (GIS) software is utilized to develop a rich awareness of 3D spatial relationships in the natural and built environments.

CT 432 - Applied Environmental Technology
Credits: 4.00
The technical and administrative issues inherent to the management of our impact on the environment are covered. Topics to be covered include: examination of the evolution, design, and processes inherent to manage and treat stormwater, deliver potable water, collect and treat wastewater discharge, manage solid and hazardous waste, and promote recycling. Global climate change monitoring is also discussed when appropriate.

CT 442 - Construction Surveying
Credits: 4.00
This course applies methods and techniques learned in CT 423/424 to real world situations. The student works as part of a project team on a proposed construction site. Tasks and materials covered include: setting control, mapping of sites, design and layout of roadways, site planning, building and infrastructure layout, area and volume calculations. Class expands on use of survey equipment such as data collectors, RTK-GPS and land design computer software. Prereq: CT 423/424 with a grade of C- or better. 2-hr lec/1-
CT 446 - GIS Apps in Sustainability
Credits: 4.00
Students gain an understanding of how modern Geographic Information Systems (GIS) can be used as a tool to better understand and address issues of sustainability, such as population growth, climate change, energy consumption and natural resources. While gaining a rich understanding of the complex nature of sustainability issues, students also develop competencies in GPS data collection, the essential functionality of GIS software and the application of GIS in decision making processes.

CT 483 - Mechanical and Electrical Systems
Credits: 4.00
Description, analysis and design application of conventional heating, ventilating, air conditioning, lighting and plumbing systems for residences. Electrical principles, laws, and installation with emphasis on the National Electrical Code. 2-hr lec/2-hr rec.

CT 538 - Construction Contracting
Credits: 4.00
Overview of administrative skills required to manage a construction concern. Emphasis on project management through the entire construction and design process. Building codes and the ADA code included. 2-hr lec/2-hr rec.

CT 541 - Legal Aspects of Surveying
Credits: 4.00
The legal issues involved when performing a property boundary survey are presented. Ownership of land, the search for boundary evidence, methods of performing research and resolving conflicting information and disputes are discussed. Other topics include: An introduction to legal principles, statutes, case law, terminology, liability, ethics and standards relating to surveying. A course-long project is undertaken whereby research, the search for evidence, a field survey, boundary determination and a plat are completed. Prereq: CT 423/424 with a grade of C- or better. 2-hr lec/2-hr rec.

CT 543 - Advanced Surveying and Mapping
Credits: 4.00
A continuation of surveying topics not covered in CT 423/424, CT 442 and 541. Specifically: Geodesy, Map Projection Systems, State Plane Coordinates, Control Surveys, Static and Real Time Satellite Positioning, Astronomic Observations, Equipment Testing, Site Detail Mapping, Laser Scanning, Observation Adjustment Theory and 3D Least Squares Adjustment. Prereq: C- or better in CT 423/424. 3-hr lec/3-hr lab.

CT 548 - Advanced Surveying Computation
Credits: 4.00
Emphasis on how to perform the typical surveying computations encountered in the field. Use of surveying and mapping software and plotters for topographic mapping and subdivision design. Advanced GIS theory and applications including Photogrammetry and Remote Sensing. Field equipment testing and adjustment. Prereq: CT 423/424, 442, 543, minimum grade of C- or better in all, or permission. 3-hr lec/2-hr lab.

CT 551 - Statics and Materials
Credits: 4.00
Determining and evaluating physical properties of common building construction materials: wood, steel and non-ferrous metals, cement, concrete, brick, and bituminous materials. Application of materials to design of structural elements in beam and column applications, under various load conditions. Emphasis on appropriate material selection and optimization of design. Prereq: MTH 203. 2-hr lec/2-hr rec.
**CT 554 - Soils and Foundations**  
**Credits:** 4.00  
Subsurface exploration, soil sampling, testing and evaluating subsurface materials, and their effect on foundations, site development, and construction. Hands-on laboratory component. Introduction to site excavation methods and foundation design. 2-hr rec/2-hr lab/rec.

**CT 557 - Land Design and Regulations**  
**Credits:** 4.00  
Hydrology of drainage and storm water runoff, basic concepts of hydraulic flow in pipes and channels, and overview of pump systems. Technical and regulatory requirements of designing residential water supply and septic disposal systems. Review of federal, state, and local ordinances with respect to construction and land development. 2-hr lec/2-hr rec.

**CT 576 - Building Science/Residential Construction**  
**Credits:** 4.00  
The study of inter-relationship of physical principles that affect the functionality and life span of a building; foundations, floor and framing systems, roofing styles and options, siding and interior finish work, and fenestrations. The materials and methodologies of residential construction with an emphasis on energy efficiency, air quality management, and moisture control. Includes safe and efficient operation of industry-standard power tools in hands-on shop environment (table saw, jointer, miter saw, etc.).

**CT 581 - Architecture I History and Design**  
**Credits:** 4.00  
Develops a basic understanding of American residential architectural history while developing architectural programming and design skills in a project based environment. Moderate CAD usage for project submissions 2-hr lec/2-hr rec.

**CT 582 - Architecture II**  
**Credits:** 4.00  
Studio application of principles and skills developed in the architectural concentration. Design of a complete shelter system into the design development phase. Prereq: CT 581. 2-hr lec/2-hr rec.

**CT 591 - Studies**  
**Credits:** 1.00 to 4.00  
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples may include energy conservation, surveying, construction, or hydrographic surveying.

**CT 592 - Studies**  
**Credits:** 1.00 to 4.00  
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples may include energy conservation, surveying, construction, or hydrographic surveying.

**CT 597 - Work Experience**
Credits:
Career-oriented work experience (10 weeks, full time) to include, but not limited to, architecture, construction, surveying, and mapping. Cr/F.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>CLAS 401</td>
<td>Classical Mythology</td>
<td>4.00</td>
<td>Survey of myths and sagas of ancient Greece and Rome. No classical preparation necessary. Background course for majors in English, the arts, music, history, modern languages, classics. Special fee.</td>
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<tr>
<td>CLAS 401H</td>
<td>Honors/Classical Mythology</td>
<td>4.00</td>
<td>Survey of myths and sagas of ancient Greece and Rome. No classical preparation necessary. Background course for majors in English, the arts, music, history, modern languages, classics. Special fee. Writing intensive.</td>
</tr>
<tr>
<td>CLAS 402</td>
<td>Hellenic and Roman Institutions</td>
<td>4.00</td>
<td>Lecture, discussion. Introduction to ancient Greek and Roman literature. Emphasis on the institutions from the earliest period to the end of the classical age. Open to all students.</td>
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<tr>
<td>CLAS 405</td>
<td>Introduction to Greek Civilization</td>
<td>4.00</td>
<td>A broad historical exploration of Greek civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and the Greek's legacy to the modern world. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages. Special fee.</td>
</tr>
<tr>
<td>CLAS 406</td>
<td>Introduction to Roman Civilization</td>
<td>4.00</td>
<td>A broad historical exploration of Roman civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and their legacy to the modern world. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages. Special fee.</td>
</tr>
<tr>
<td>CLAS 411</td>
<td>Elementary Hittite I</td>
<td>4.00</td>
<td>Elements of grammar, reading of simple prose. Special fee.</td>
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<tr>
<td>CLAS 412</td>
<td>Elementary Hittite II</td>
<td>4.00</td>
<td>Elements of grammar, reading of simple prose. Special fee.</td>
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<tr>
<td>CLAS #414</td>
<td>Elementary Sanskrit II</td>
<td>4.00</td>
<td>Elements of grammar, reading of simple prose. Special fee.</td>
</tr>
<tr>
<td>CLAS 421</td>
<td>Major Greek Authors in English</td>
<td>4.00</td>
<td>Major classical authors such as Homer, the Tragedians of Athens, Herodotus, Thucydides, and Plato in the context of their civilization, from which so much of our contemporary culture derives. For students unprepared to read Greek. Background for majors in English, history, Latin, Greek, the arts, music,</td>
</tr>
</tbody>
</table>
philosophy, modern languages. Open to all students. Special fee. Writing intensive.

**CLAS 444 - Individual and Society in the Ancient World**  
**Credits: 4.00**  
This class examines one of the major issues faced by people throughout history, whether and under what circumstances an individual should act against the wishes of society. The great philosophical and historical works of the ancient world shed light not only on how the Greeks and Romans approached the idea of personal responsibility but also on the assumptions we today make about human nature and the relationships on which society depends. No prior knowledge of the ancient world required. All readings are in English. Writing intensive.

**CLAS #444C - Is Winning Everything? Competition in Ancient Sports**  
**Credits: 4.00**  
An investigation of the competitive nature of Greek athletics and the Roman games. Focus is on how Greek and Roman views of the value of competition reflect the differences in their histories. Particular attention paid to the types of evidence and methods used by ancient historians. Open to all students. All readings in English.

**CLAS 444D - Athens, Rome, and the Birth of the United States**  
**Credits: 4.00**  
What did Washington, Jefferson, Adams (John and Abigail), Madison and Paine have in common? They were all instrumental in shaping the US political system, but they were also educated in the classics. When building the framework of our democratic republic, they continually looked to Athens and Rome as models, inspirations and warnings. The course examines ancient political systems and how they helped fashion our founder's notion of the ideal government and continue to do so.

**CLAS 500 - Classical Mythology: Topics in World Literature**  
**Credits: 4.00**  
Topics are chosen to introduce students to major themes and genres. (Also offered as FREN 500, GERM 500, ITAL 500, PORT 500, RUSS 500, SPAN 500.) May be repeated for credit. Writing intensive.

**CLAS 506 - Introduction to Comparative and Historical Linguistics**  
**Credits: 4.00**  
Major language families (primarily Indo-European) and the relationships among the languages within a family. Diachronic studies, methods of writing, linguistic change, glottochronology, etymological studies. Some language training and LING 505 desirable. (Also offered as LING 506.)

**CLAS 510 - Building Rome**  
**Credits: 4.00**  
An introduction to the buildings and structures for which the Romans remain famous, such as the Pantheon, the Colosseum, and the aqueducts that allowed Rome to become a metropolis. A major focus is the connection between the changes in Roman society and the development of Roman architecture. Looks at both Rome and other important cities in the Roman Empire. All readings are in English. No prior knowledge of the ancient world required. Special fee.  
**Co-requisites:** INCO 589

**CLAS 511 - Special Studies in Greek History**  
**Credits: 4.00**  
The course uses historical and literary sources in conjunction with the city of Athens itself and its archaeological remains to explore the history of a particular theme, cultural practice or institution in ancient Greek civilization. The topics changes with different instructors but always takes a fundamentally historical orientation to the material and the city, even if interdisciplinary approaches are incorporated into the
coursework. CLAS 511 is offered only as part of a study abroad program.

**CLAS 520A - Classical Society, Politics and Ethics: Democracies and Republics**

**Credits:** 4.00

We frequently use the terms "democracy" and "republic" to describe our own political system, but where did these words and ideas originally come from? This course examines the historical development of the original democracies in Greece (primarily Athens) and the Roman Republic, as well as the particular institutions and practices that were associated with each. Course will also cover the development of democratic and republican institutions in the modern world. No prerequisite. Open to all students.

**CLAS 520B - Classical Society, Politics and Ethics: Happiness and Ancient Views of the Good Life**

**Credits:** 4.00

How did the Greeks and Romans define happiness and was happiness considered an essential component of the "good life"? How do ancient concepts of the "good life" influence later views of human flourishing and how do specific historical circumstances alter utopian visions of a life well lived? This course traces the concept of the "good life" from ancient Greece to today and challenges students to create their own vision of a "good life".

**CLAS 520C - Classical Society, Politics and Ethics: Sports, Spectacle and Competition**

**Credits:** 4.00

This course treats the details of athletic training and competition, but it's primary focus is on investigating the importance of athletics to society and how athletics reflected the broader cultural values of the Greeks and Romans. Open to all students. All readings in English. Special fee.

**CLAS 520D - Classical Society, Politics and Ethics: Greek and Roman Religion**

**Credits:** 4.00

This course traces the historical development of ancient Greek and Roman religion from its antecedents in Near Eastern, Minoan, and Mycenaean culture to the rise of Christianity in Rome's early imperial period. This course also introduces students to the methods and materials of historians of religion. Topics covered in this course include: changing conceptions of divinity, animal sacrifice, sanctuaries, festivals, death and the afterlife, divination, magic, and mystery cults.

**CLAS 525 - Greek and Latin Origins of Medical Terms**

**Credits:** 4.00

Study of medical terminology. Exercises in etymology and the development of vocabulary in a context at once scientific, historical, and cultural. No knowledge of Greek or Latin is required. Useful to premedical, pre-dental, pre-veterinary, nursing, medical technology, and other students in the biological and physical sciences. Open to all students. Special fee.

**CLAS 530A - Classical Literary Performance Genres: War and Adventure in Ancient Epic**

**Credits:** 4.00

Storytelling has long been one of the primary means to preserve and transmit cultural ideas and traditions. In this course students read and analyze the earliest epic tales from the Greek and Roman period with a view toward understanding the roots and nature of epic, the myths it told, and the influence it has had on subsequent literature. No credit earned if credit received for CLAS 444B. Writing intensive.

**CLAS 530B - Classical Literary and Performance Genres: Tragedy and Comedy on the Ancient Stage**

**Credits:** 4.00

Investigations into the dramatic works of the Greek and Romans, the power of performance, and the cultural importance of stage productions. Readings include the tragedies of Aeschylus, Sophocles, and Euripides, and the comedies of Aristophanes, Menander, and Plautus. Ideal background for students of all
theatrical and performance traditions. Open to all students. All readings in English. Special fee.

**CLAS 540A - Environment, Technology and Ancient Society: Sustaining Ancient Rome Ecology and Empire**
**Credits:** 4.00
This course examines the interplay between the ancient Roman environment, Roman technological innovations, and the values of Roman imperial society. Examining Roman innovations in water supply, building technology, mining, and more, this course explores the ethical questions that arise through the use of ancient Roman technology, evaluates the effects of these technologies on the environment and Roman society, and determines whether Roman values encouraged or discouraged a responsible approach to technology and the environment.

**CLAS 540B - Environment, Technology and Ancient Society: Roman Houses, Domestic Space and Public Life**
**Credits:** 4.00
The Romans used the house as a communication technology for defining and expressing their identities in society and in the natural world. In this course, we examine literary and visual sources for Roman houses, apartments, villas, and palaces, and we compare and contrast the role of the house in the ancient world and in American society. We pay special attention to how domestic space shapes and is shaped by environment, politics, and culture.

**CLAS 540C - Environment, Technology and Ancient Society: Tech, Tools and Engineering in the Ancient World**
**Credits:** 4.00
This course examines positive and negative impacts of ancient technological advances: engineering (fire, metallurgy), writing technology (scripts, including the alphabet, the emergence of papyrus and vellum), military technology (shipbuilding, defensive and offensive technologies, and navigation), artistic (invention of dyes, lost-wax methods of bronze casting), infrastructure (roads, bridges, and aqueducts), and monumentality (Stonehenge, Greek temples, and the Roman Colosseum). Focus on the ways in which societal and environmental factors influenced technological development and vice versa.

**CLAS 550A - Identities and Difference in the Ancient World: Greek and Roman Women**
**Credits:** 4.00
The impact of women on society in Greece and Rome throughout Antiquity. The role of women in public, religious, and private life as well as their legal status through law codes. Men's views of women in different literary texts. Especially concentrating on the few existing texts written by women. All readings are in English. No prerequisite. Special fee. Writing intensive.

**CLAS 550B - Identities and Difference in the Ancient World: Slaves and Masters**
**Credits:** 4.00
Students explore the different ways slavery developed in the Greek and Roman worlds with an emphasis on the connections to other historical developments such as the practice of warfare, changes in political systems, and ancient views about human rights. To better understand the development of Greek and Roman slavery, we look at how the ancient systems compare to slavery in the American South and modern human trafficking.

**CLAS 551 - Greeks and Barbarians: Culture, Identity and Difference in the Ancient World**
**Credits:** 4.00
Exploration of how the ancient Greeks' conceptions of foreign ethnicities and cultures -- most notably a contrast between European Greeks and various peoples from Asia, especially the Persians--evolved and was expressed in ancient literary and historical sources. Course examines how the Greeks came to think of themselves as a distinct people with shared attributes amidst non-Greeks, to all of whom they applied the
generic term "barbaroi," or barbarians

**CLAS 560 - Sports, Spectacle, and Competition in the Ancient World**  
**Credits:** 4.00  
This course treats the details of athletic training and competition, but its primary focus is on investigating the importance of athletics to society and how athletics reflected the broader cultural values of the Greeks and Romans. Open to all students. All readings in English. Students who have previously taken CLAS 402 cannot receive credit for CLAS 410A, although they may receive credit for CLAS 410B and CLAS 410C. Special fee.

**CLAS 595 - Topics**  
**Credits:** 4.00  
Introduction and elementary study related to linguistic study of Latin and Greek or relevant to Greco-Roman culture and history. Primarily for students unprepared to read Latin and Greek. Topics: A) Byzantine Heritage; B) Grammar: Comparative Study of English and the Classical Languages; C) Greek and Latin Origins of Legal Terms; D) Greek and Latin Origins within the English Language; E) Classical Backgrounds of Modern Literature; F) Classical Archaeology.

**CLAS 601 - Classical Myth II: The Power and Persistence of Myth**  
**Credits:** 4.00  
An in-depth look at the myths of the Greeks and Romans, at the power of myth as a cultural force, and at the importance of myth both in the ancient period as well as the modern era. The focal point is on the myths of the Greeks and Romans, but the myths of other cultures are addressed. All readings are in English. Special fee. Writing intensive.

**CLAS 604 - Golden Age of Rome**  
**Credits:** 4.00  
A study of the early Roman Empire as created by Augustus and his immediate successors; glorified by Vergil, Horace, and the poets of the Golden Age; and described by Tacitus, Suetonius, and the prose writers of the Silver Age. Open to all students. Prereq: any CLAS course or permission of instructor. Writing intensive.

**CLAS 686 - UNH in Greece Study Abroad**  
**Credits:** 6.00  
Study abroad in Greece. Interested students should consult a Classics advisor. Prereq: must satisfy university requirements for studying abroad. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.) Contact james.parsons@unh.edu at the COLA Center for Study Abroad or visit www.cola.unh.edu/greece for more information.  
**Co-requisites:** CLAS 511, INCO 589

**CLAS 694 - Supervised Practicum**  
**Credits:** 2.00 or 4.00  
Participants earn credit for suitable pre-professional activities, including high school outreach, assisting in undergraduate courses and work with professional organizations, museum work. Enrollment limited to
juniors and seniors who are Classics, Latin, or Greek majors or minors and have above-average G.P.A.s. Writing assignments are required. Prereq: permission of instructor and program coordinator. Course does not count toward Classics, Latin, or Greek major or minor requirements. May be repeated up to a maximum of 8 credits. Special fee. Cr/F.

**CLAS 695 - Special Studies**
**Credits:** 2.00 or 4.00
Advanced work in classics. Research paper. Not open to freshmen and sophomores.

**CLAS 696 - Special Studies**
**Credits:** 2.00 or 4.00
Advanced work in classics. Research paper. Not open to freshmen and sophomores. Special fee.
COLA 400 - Career Planning in the Liberal Arts  
**Credits:** 2.00  
An exploration of career paths and the strategies to market the skills and competencies associated with a liberal arts major. Restricted to COLA students. Cr/F.

COLA 401 - Undeclared Liberal Arts Advising Seminar  
**Credits:** 1.00  
This course is an introduction to the nature of academic knowledge, academic standards, and academic management skills essential for success in the University. This course is the foundation of the Undeclared Liberal Arts Advising program. The course is focused on exploring majors, academic success, and building a 4 Year Plan. Cr/F.

COLA 453 - Introduction to British Culture  
**Credits:** 1.00  
Students participating in the UNH London Program are required to take this course whose purpose is to familiarize them with British culture and the city of London. Variable topics. Pre- or Coreq: COLA 655.  
**Co-requisites:** COLA 655, INCO 588

COLA 454 - Intro to British Culture  
**Credits:** 1.00  
Students participating in the UNH London Program are required to take this course whose purpose is to familiarize them with British culture and the city of London. Variable topics.  
**Co-requisites:** COLA 656, INCO 588

COLA 655 - London Program  
**Credits:** 18.00  
Enables students to pursue a semester or academic year of in UNH's programs in London, England. Students must be admitted before enrolling in the course. For information and application forms, consult program secretary, 53 Hamilton Smith Hall. Special fee. IA (continuous grading) grade will be assigned until official transcript is received. Program fee. Cr/F.  
**Co-requisites:** COLA 653, INCO 588

COLA 656 - London Program  
**Credits:** 16.00  
Enables students to pursue a semester or academic year of in UNH's programs in London, England. Students must be admitted before enrolling in the course. For information and application forms, consult program secretary, 53 Hamilton Smith Hall. Special fee. IA (continuous grading) grade will be assigned until official transcript is received. Program fee. Cr/F.  
**Co-requisites:** COLA 654, INCO 588

COLA 657 - Justice Studies Budapest Program  
**Credits:** 16.00  
This program is designed to introduce students interested in the field to a broader appreciation of the cross-cultural perspective. Each fall, fifteen UNH students spend the semester in residence at the Budapest University of Economic Sciences in Budapest, Hungary, where they have an opportunity to witness first hand the evolution of a criminal justice system within a context of significant cultural, political, economic, and social change. Situated along the Danube in one of Europe’s oldest cities, the program...
offers a unique educational experience to students interested in the study of criminology, law and society, and the administration of justice. Under the supervision of a UNH faculty member also in residence, students carry a four course load, two of which are taught by the UNH faculty member. All courses are taught in English. Eligible students must hold sophomore standing, have completed either SOC 515 or POLT 507 and one other course in the Justice Studies curriculum, and have a minimum cumulative grade point average of 2.50. Special fee. Cr/F.

Co-requisites: INCO 588

**COLA 658 - Humanities Spring Budapest Program**

**Credits:** 16.00

Enables students to pursue a spring semester in UNH's program in Budapest, Hungary. The program is designed to provide undergraduates with an intensive study abroad experience focusing on modern Hungarian and Central European history and culture. Students study at Corvinus University and take courses taught by Hungarian and University of New Hampshire faculty. Under the supervision of a UNH faculty member in residence, students carry a four course load, two of which (HUMA 550 and HUMA 551) are taught by the UNH faculty member. All courses are taught in English. Students must be admitted before enrolling in this course. For information and application forms, consult the COLA Study Abroad Coordinator. IA (Continuous grading) grade is assigned until official transcript of courses taken at Corvinus University is received. Cr/F.
Communication

CMN 455 - Introduction to Media Studies
Credits: 4.00
Nature, development, and the effects of mass media. Overview of mass communication history and theory.

CMN 455H - Honors/Introduction to Mass Communication
Credits: 4.00
Nature, development, and the effects of mass media. Overview of mass communication history and theory.

CMN 456 - Propaganda and Persuasion
Credits: 4.00
Introduction to theories of propaganda and persuasion. Examination of symbolic strategies designed to secure or resist social and institutional change. Attention given to case studies of social, political, economic, and religious reformation. Special consideration of the ethical ramifications of such efforts.

CMN 456H - Honors/Propaganda and Persuasion
Credits: 4.00
Introduction to theories of propaganda and persuasion. Examination of symbolic strategies designed to secure or resist social and institutional change. Attention given to case studies of social, political, economic, and religious reformation. Special consideration of the ethical ramifications of such efforts.

CMN 457 - Introduction to Language and Social Interaction
Credits: 4.00
An introduction to the study of the conversational basis of social reality. Presents an overview of interpersonal communication processes and the ways in which they influence the formation of identity, personal relationships, gender, interactional patterns, conflict, culture, and power. Readings and class material from a variety of authors in the communication discipline as well as related fields in the humanities and the social sciences.

CMN 500 - Public Speaking
Credits: 4.00
Performance course buttressed by practical theories of public discourse. Focus on analysis of speaking situations and audiences, message construction, presentation, and critical evaluation. Does not count towards the CMN major.

CMN 504 - Introduction to Argumentation
Credits: 4.00
Persuasive discourse as inquiry and advocacy grounded in practical inductive and deductive reasoning. Discovery, analysis, and testing of practical arguments. The nature and function of proof. Some emphasis on applied presentation. Prereq: CMN 456 with C or better, or by permission. Writing intensive.

CMN 505 - Analysis of Popular Culture
Credits: 4.00
Locates the development of popular cultural artifacts and practices within the 20th-century social history of the U.S. Examines the political-economic forces that underpinned the commercialization of art, leisure, sports, and other elements of culture in industrial and postindustrial America. Prereq: CMN 456 with C or better, or by permission.

CMN 507 - Introduction to Rhetorical Theory and Analysis
Credits: 4.00
Major precepts of rhetorical theory. Application of those precepts in analysis and understanding of a wide range of human communication. Consideration of how precepts and issues of rhetorical theory apply to contemporary issues and problems. Prereq: CMN 456 with C or better, or by permission.

CMN 515 - Analysis of News
Credits: 4.00
Explores the psychological, social, economic, political, and cultural factors that influence the definition and reporting of news. Prereq: CMN 455 with C or better, or by permission.

CMN 519 - Advertising as Social Communication
Credits: 4.00
Social role of advertising, public policy debates concerning advertising, influence of advertising on culture, and methods of analyzing advertising messages. Prereq: CMN 455 with C or better, or by permission.

CMN 556 - Persuasion and Public Problems
Credits: 4.00
Examination of communication about public problems using major precepts from classical and contemporary rhetorical theory. Application of those precepts discloses how persuasive communication frames public problems and constrains responses to them. By the end of the course students will know how to conduct a rhetorical analysis of public discourse and how to use results from that analysis to criticize, improve, or participate in deliberations about public problems. Prereq: CMN 456; Communication, CMN: Media Practices, and CMN: Business Applications majors only. Writing intensive.

CMN 567 - Gender, Race, and Class in the Media
Credits: 4.00
The purpose of this course is to introduce students to contemporary critical scholarship on the construction of gender, race, and class in the media - particularly popular media. Subjects such as the portrayal of ethnic groups, ideal body image, blue collar men, and gay, lesbian, bisexual, and transgender groups are case studies. This course is one that introduces students to performing communication analysis. Prereq: CMN 455; Communication, CMN: Media Practices, and CMN: Business Applications majors only.

CMN 572 - Analysis of Language and Social Interaction
Credits: 4.00
In this mid-level course, students develop the observational and analytic skills necessary for the in-depth study of interaction in a variety of everyday and institutional social settings. Settings may include dialogue, multiparty interaction, non-verbal communication and embodiment, identity talk, and communication in organizations. Special attention to developing the reading and research skills used in upper level interpersonal communication courses. Prereq: CMN 457 with C or better, or by permission.

CMN 575 - Research Practicum
Credits: 1.00 to 4.00
Student engagement through direct participation in faculty research projects. Elective credits which do not count towards the major. Instructor permission required. May be repeated for a maximum of 8 credits. Prereq: CMN 455, 456, 457, and permission. Cr/F. Communications majors only.

CMN 588 - Analyzing Institutional Interaction
Credits: 4.00
Examinations of institutional interactions in emergency services, justice/law, medicine, family school encounters, journalism and politics. Shows how the work of society gets done through interaction. Students get hands-on experience analyzing persons' conduct in these interactions. This course is designed to develop students' analytic skills in studying social interaction in institutions, using recorded data in the form
of naturally-occurring interactions in these settings. Prereq: CMN 457.

**CMN 596 - Special Topics in Media Studies**  
**Credits:** 4.00  
Selected topics not covered by existing courses in media studies. Topics vary; course descriptions are available in department office during preregistration. May be repeated for credit if topics differ. Prereq: CMN 455 with C or better, or by permission.

**CMN 597 - Special Topics in Rhetorical Studies**  
**Credits:** 4.00  
Selected topics not covered by existing courses in rhetorical studies. Topics vary; course descriptions are available in department office during registration. May be repeated for credit if topics differ. Prereq: CMN 456 with C or better, or by permission.

**CMN 598 - Special Topics in Interpersonal Studies**  
**Credits:** 4.00  
Selected topics not covered by existing courses in interpersonal communication. Topics vary; course descriptions are available in department office during registration. May be repeated for credit if topics differ. Prereq: CMN 457 with C or better, or by permission.

**CMN 599 - Internship**  
**Credits:** 1.00 to 4.00  
Internships are designed to integrate classroom study and supervised practical experience in a work setting. Each student is required to write a series of reports focusing on aspects of the work experience that are related to coursework in the Communications Department. These assignments are designed to enhance a student's ability to reflect critically on the internship experience and to merge theory and practice. Assignments are available, depending on the number of credits granted (1-4). Students are expected to hold the common exam time (TR, 1240-2) open for occasional meetings. Before starting the internship, students must submit a written proposal to both the work supervisor and the faculty sponsor. The proposal should include detailed information on the duties and responsibilities to be undertaken at the internship site and on the goals and learning objectives as relevant to the Communication Department curriculum. May be repeated for a maximum of 8 credits. Prereq: CMN 455, 456, 457, or permission. Cr/F.

**CMN 600 - Public Speaking as a Civic Art**  
**Credits:** 4.00  
Performance course buttressed by the traditional civic art of rhetoric. Focuses on analysis of speaking situations and audiences, message of construction, presentation, and critical evaluation using major precepts of rhetorical theory. Theoretical and critical issues in the context of rhetorical practices. Prereq for CMN majors: CMN 455, 456, 457, and 500-level courses, or permission; prereq for non-majors: junior or senior standing. Writing intensive.

**CMN 602 - Theories of Interpersonal Communication**  
**Credits:** 4.00  
Analysis and criticism of contemporary perspectives on interpersonal communication. Theories and concepts, issues, and research models are examined as they contribute to our understanding of social interaction. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Writing intensive.

**CMN 607 - Persuasion in American Politics**  
**Credits:** 4.00  
Study of the forms and strategies of persuasive discourse employed by contemporary American political leaders. Analysis of important political addresses of the 20th century, with attention to theoretical and critical issues in political communication and public address. Discussion of the status of rhetoric in modern
politics, and the impact of persuasive discourse on campaigns, policy decisions, crisis management, political scandal, and the national identity. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Writing intensive.

**CMN 615 - Public Opinion and Mass Communication**

**Credits:** 4.00

Examines the historical development of the 18th century public sphere and its relationship to the press. Traces the transformation of the press from an ideological grounding to a commercial base. Analyzes the consequences of contemporary mass consumer-oriented media on the public sphere and democratic life. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Writing intensive.

**CMN 627 - Great Speakers and Speeches**

**Credits:** 4.00

Historical and critical survey of masterpieces of oratory examining the rhetorical situation and artistic features of great works of spoken discourse. Demosthenes, Cicero, Edmund Burke, Daniel Webster, Frederick Douglass, Abraham Lincoln, and Elizabeth Cady Stanton may be among the orators studied. The course will engage students in critical assessment of eloquence by emphasizing study of historical circumstances, ethical choices, and artistic virtue of the most effective and admired public speakers in Western tradition. Prereq: CMN 455, 456, 457, and two 500-level courses, or permission. Writing intensive.

**CMN 630 - Psychology of Communication**

**Credits:** 4.00

Recasts human psychology as a communicative accomplishment, offering a critique of the individualist tradition. Emphasis on the ways in which identity, knowledge, values, and beliefs are constructed in daily social engagements and the pragmatic, political, and moral implications of this view. Implications for our major cultural institutions such as education, health, and politics. Prereq: CMN 455, 456, and 457 with C or better and two 500-level courses with a C- or better, or by permission. Writing intensive.

**CMN 634 - Media and Politics**

**Credits:** 4.00

The goal of this course is to study the role of the media in American politics, and what media evolution means for future politics. Topics such as political campaigns, media effects, news reporting, framing terrorists, etc. are studied in depth. Timely topics such as "are the media liberal or conservative?" are debated in class. Research projects and papers study questions related to important social issues such as women in the media. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level CMN courses; Only open to Communication, CMN: Media Practices, and CMN: Business Applications majors. Writing intensive.

**CMN 637 - Controversy and Reasoning in Law**

**Credits:** 4.00

Uses rhetorical analysis and criticism to evaluate communication practices in courtroom disputes. Compares conventional American litigation to alternative methods. Explains how stages of a trial shape communication options and norms. Illustrates common subjects and forms for judicial reasoning. Prereq:: CMN 455, 456, 457, and two CMN 500-level courses. Writing intensive.

**CMN 647 - Rhetorical Criticism of Media**

**Credits:** 4.00

Use of rhetorical approaches and methods in the analysis and criticism of contemporary forms of visual media culture. Students examine the social, political, and aesthetic implications of contemporary media forms from within a framework of rhetorical theory. Emphasis on practical analysis employing various rhetorical approaches with a goal of understanding persuasive elements in contemporary media (including television, film, print & broadcast advertising, internet, and social media). Prereq: CMN 455,456, 457, and two 500-level communication courses. Writing intensive.
CMN 650 - Critical Perspectives on Film
Credits: 4.00
Advanced, focused study of film theory as cultural practice. Topics vary from year to year and with instructor. May be repeated for different topics. Focus may range from general considerations of film theory, criticism, and history, to specific analyses of selected genres, directors, national cinemas, and periods. Course descriptions available in department office during preregistration. Prereq: CMN 455, 456, 457, 550, ENGL 533, or permission. Special fee. May be repeated for credit.

CMN 650W - Critical Perspectives on Film
Credits: 4.00
Advanced, focused study of film theory as cultural practice. Topics vary from year to year and with instructor. May be repeated for different topics. Focus may range from general considerations of film theory, criticism, and history, to specific analyses of selected genres, directors, national cinemas, and periods. Course descriptions available in department office during preregistration. Prereq: CMN 455, 456, 457, 550, ENGL 533, or permission. Special fee. Writing intensive. May be repeated for credit.

CMN 666 - Conversation Analysis
Credits: 4.00
Exploration in how participants in interpersonal communication display their orientation to the fundamental orderliness of conversational sequences in everyday, institutional, and mass media settings. Basic concepts covered include the interactional co-construction of turn-taking, repair, overlap, openings, closings, silences, adjacency, pairs, disagreement, preference, and the role of various linguistic, paralinguistic, and nonlinguistic features in the conversation process. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Only open to Communication majors. Writing intensive.

CMN 680 - Perspectives on Culture and Communication
Credits: 4.00
Critical interpretation of culture focused on the communication practices and resources of diverse groups. Examination of the reciprocal relationship between communication practices, forms of culture, and cultural identity. Exploration of the conditions necessary for dialogue between differing cultural groups. Emphasis on the role of communication in constructing race, power, cultural domination, and globalization. Prereq: CMN 455, 456, and 457 with C or better and two 500-level courses with a C- or better, or by permission. Writing intensive.

CMN 696 - Seminar in Media Studies
Credits: 4.00
Variable topics in media research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission.

CMN 696W - Seminar in Media Studies
Credits: 4.00
Variable topics in media research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Writing intensive.

CMN 697 - Seminar in Rhetorical Study
Credits: 4.00
Variable topics in rhetorical research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Writing intensive.
CMN 697H - Honors/Seminar in Rhetorical Study  
**Credits:** 4.00  
Variable topics in rhetorical research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Writing intensive.

CMN 698 - Seminar Interpersonal Studies  
**Credits:** 4.00  
Variable topics in interpersonal research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, 456, 457 and two 500-level courses, or permission. Writing intensive.

CMN 702 - Seminar in Interpersonal Communication Theory  
**Credits:** 4.00  
In-depth concentration on a particular theoretical orientation in interpersonal communication. Original works are read. Theoretical orientation varies by semester. May be repeated for different topics. Prereq: CMN 455, 456, and 457 and two 500-level CMN courses. Writing intensive.

CMN 703 - Seminar in Rhetorical Theory  
**Credits:** 4.00  
Focused study of problems in rhetorical theory construction through examination and criticism of selected theoretical frameworks used to explain or interpret rhetorical phenomena. May be repeated for different topics. Prereq: permission. Writing intensive.

CMN #730 - Family Communication  
**Credits:** 4.00  
Exploration of the patterned communication in families and the ways in which our understanding of these patterns can be utilized to understand and transform unwanted family interactions. Varying cultural discourses of family communication are used to explore the dialogic construction of family and self. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. Writing intensive.

CMN 732 - Communication Theory  
**Credits:** 4.00  
Terminology, concepts, theoretical models, functions, levels, modes, and media in human communication. Prereq: CMN 455, 456, 457, and two 500-level CMN courses, or permission. Writing intensive.

CMN 737 - Principles of Rhetorical Crit  
**Credits:** 4.00  
Application of critical principles to message evaluation. Consideration of the varying roles, methods, and standards of rhetorical critics. Special attention to major perspectives on rhetorical criticism including Neo-Aristotelian, historical, dramaticistic, generic, literary, and psychological. Prereq: CMN 455, 456, 457, and two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

CMN 742 - Dialogue and Teamwork  
**Credits:** 4.00  
This course is about team building, alternative conflict resolution, and creative problem solving. We will explore the idea that, contrary to prevailing cultural assumptions, a significant factor in our achievements at work and play can be traced not to our individual attributes but rather to the relationships that we develop in our conversations with others. We will examine the dialogic basis of these relationships, drawing on a range of philosphic traditions and practical activities that highlight the social basis of thought. Prereq: CMN 455, 456, 457, and two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

CMN 756 - Rhetorics of Display
Credits: 4.00
This course examines a selection of displays with the goal of acquiring perspective for understanding and evaluating how they engage with people who come into contact with them. Displays examined range among oratory, photographs, advertisements, films, architecture, monuments, and statuary, public demonstrations, and presentations of self. Attention is given to questions about identity and belonging, authenticity and simulation, and public memory. Prereq: CMN 455, 456, 457, and two 500-level courses, or permission. CMN majors only. Writing intensive.

CMN 757 - Public Address and the American Experience
Credits: 4.00
Study of persuasive texts set firmly in their historical and social contexts. Discussion of the impact of popular discourse on historically significant political and social events. Analysis of how leading persuasive speakers and writers responded to the fundamental questions confronting their age and articulated ideas in a manner that provoked or motivated their community, state, or nation. Historical period studied will vary. May be repeated for credit to a maximum of 12 credits when topic varies. Prereq: CMN 455, 456, 457 and two 500-level CMN course or permission. CMN majors only. Special fee. Writing intensive.

CMN 758 - Media Analysis and Criticism
Credits: 4.00
Approaches and methodologies for media criticism. Analysis of sample studies. Students work on original media analysis projects. Prereq: CMN 455, 456, 457 and any two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

CMN 760 - Mediation
Credits: 4.00
This course will explore different theories and models of mediation as they inform the broader topic of conflict resolution. Emphasis will be on models that examine relational processes as opposed to models that provide a list of skills or techniques for mediation. To that end, the course will focus on transformative dialogue as a mode of mediation and conflict resolution rather than on compromise or consensus models. Prereq: CMN 455, 456, 457, and two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

CMN 765 - Police Talk
Credits: 4.00
How do police get people to comply with a communicative action? How do they ask questions to investigate, to problem-solve, and to get a confession during an interrogation? How do citizens resist or cooperate with police action? This course examines questions such as these to understand basic communication processes, and how these processes are utilized in talk-in-interaction between police and citizens. This is a hands-on research methods course that instructs students in the methodology of video analysis, and has students pursue their own research projects in the content area of police-citizen interaction. Prereq: CMN 455, 456, 457, and two 500-level CMN courses, or permission; CMN majors only. Writing intensive.

CMN 772 - Seminar in Media Theory
Credits: 4.00
Detailed analysis of major theories related to the interaction of communication technologies and society. Application to current examples in politics, advertising, and entertainment. May be repeated for a different topic. Prereq: at least one 600-level course or permission. Writing intensive.

CMN 788 - Opening Everyday Interaction
Credits: 4.00
Examination of how everyday human social interactions begin. Provides hands-on experience analyzing verbal and nonverbal social actions during naturally occurring interactions, including telephone conversations and especially face-to-face encounters between previously acquainted and unacquainted persons socializing and/or doing work. Explores how parties use the openings of interactions to (re)-create and maintain social relationships. Encourages students to develop intellectual curiosity about everyday social life. Prereq: CMN 455, 456, 457, (2)-CMN 500 levels or permission. Open to CMN majors only. Writing intensive.

**CMN 795 - Independent Study**  
**Credits:** 1.00 to 4.00  
Advanced individual study in rhetoric, media, or interpersonal communication. Project to be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Prereq: permission.

**CMN 795W - Independent Study**  
**Credits:** 1.00 to 4.00  
Advanced individual study in rhetoric, media, or interpersonal communication. Project to be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Prereq: permission. Writing intensive.

**CMN 796 - Comm-Entary Journal**  
**Credits:** 1.00  
Serve on the editorial board of student run communication journal. Elective credit which does not count toward the major. May be repeated for a maximum of 2 credits. Prereq: CMN 455, 456, 457, or permission. CMN majors only. Cr/F.

**CMN 799H - Honors Thesis**  
**Credits:** 4.00  
Written thesis based on substantial and original research under the direction of a full-time member of the communication faculty. Thesis must be in the form and style of a publishable, scholarly work. Restricted to seniors seeking honors in major.
Communication Arts

CA 450 - Introduction to Public Speaking
Credits: 4.00
Theories of rhetoric applied to the practice of speech composition, oral performance, and critical evaluation. Focus on student speeches for a variety of situations and audiences. Not for credit if credit earned for CMN 500.

CA 500 - Media Writing
Credits: 4.00
An introduction to business, creative and freelance writing for a variety of media. Writing, editing and rewriting in areas such as video scripts, short magazine articles, audio scripts, ads, press releases, news, short one-act plays, blogs and more. Prereq: ENG 401. Writing intensive.

CA 501 - Internship/Communication in the Urban Community
Credits: 1.00 to 4.00
Field-based learning experiences. Connects students to the urban community and integrates their classroom education within a business or organizational setting. Students work under the direction of a faculty advisor and workplace supervisor to fulfill the obligations of the workplace internship plan and to complete individually-designed academic projects. Projects must be approved in advance by the faculty advisor. Open to matriculated students with a GPA of 2.50 or better and junior standing. Permission of instructor required. May be repeated for up to 8 credits, with 4 credits maximum accepted toward satisfaction of requirements for the CA major. Cr/F.

CA 502 - Image and Sound
Credits: 4.00
Image and Sound is a foundation course in the aesthetics of motion picture and sound production. This course explores the aesthetic principles that are used to communicate stories, emotions and messages in popular media. Students will study film, television and new media and survey production methods. This is not a production course per se, but is particularly helpful to students interested in video and film production. No credit for students who have completed CA 444.

CA 506 - Gender
Credits: 4.00
How gender is created, maintained, repaired, and transformed through communication in particular historical, cultural, and relational contexts. Examines a variety of topics including the relationship between sex and gender, language, cultural mythologies, identity, health care, sexuality, and strategies for resisting conventional gender definitions. Prereq: CMN 457 or permission.

CA 507 - Relational Violence
Credits: 4.00
This course explores relational violence and its impact on individuals, families, and communities. Topics include relational violence as a continuum, types of relational violence (domestic, gangs, hate crimes), causes of relational violence, PTSD, responding to relational violence, silencing, compassion fatigue, and restorative justice. Prereq: CMN 457 or permission of the instructor.

CA 508 - Conflict in Relational Communication
Credits: 4.00
Introduces communication theories relevant to the study of conflict interaction in interpersonal
relationships. Considers interpersonal concerns contributing to conflict such as power, face-saving, and goals. Examines behaviors that affect our ability to resolve conflict, and strategies, such as mediation, to resolve conflict. Develops the ability to diagnose productive and destructive conflict patterns in relationships. The course is both theoretical and practical in orientation. A combination of lecture, discussion, case studies, and in-class group assignments are employed. Prereq: CMN 457.

CA 512 - Screenwriting  
Credits: 4.00  
Examines the preproduction phase of moving image media, focusing especially on the art and business of writing for the screen. Covers the process of developing student work from original story idea to completed, first draft screenplay. Topics include script formats, narrative structure, plot development, characterization, style, and marketing strategies. Prereq: ENGL 401, CMN 455 or 456; or permission. Cannot receive credit if credit received for CA 512 Scriptwriting. Writing intensive.

CA 514 - Fundamentals of Video Production  
Credits: 4.00  
Beginning electronic field production using digital video and nonlinear editing formats. Covers basic aesthetic principles and practices of video communication. Introduces techniques for effective image and sound recording in the field, fundamentals of shot and sequence construction, and basic postproduction practices on nonlinear editing systems. Prereq: ENGL 401, CA 502 or CA 444, CMN 455, or permission. Preference given to CA majors. Special fee.

CA 515 - Advanced Video Production  
Credits: 4.00  
Advanced electronic field production and post production using digital video and nonlinear editing formats. Emphasizes original student work of increasing conceptual, formal, and technical complexity that begins to incorporate a wider range of images, sounds, and editing techniques. Prereq: CA 514 or permission. Preference given to CA majors. May be repeated, with permission, to a maximum of 8 credits. Special fee.

CA 517 - Fundamentals of Audio Prod  
Credits: 4.00  
This course provides students with an introduction to the history, principles, and techniques of audio production. Through hands-on experience, class projects, and homework assignments, student learn how to use voice, music, writing, sound effects, and audio hardware and software to design sound and tell a story. This class will also look at the radio industry and how sound design is being used by a variety of industries. Special fee.

CA 518 - Advanced Topics in Digital Media Production  
Credits: 1.00 to 4.00  
Advanced topics in digital media production not covered in depth in other course offerings. Topics vary and change. May be repeated for up to 12 credits if topics differ. Prereq: CA 514 or CIS 515 or permission.

CA 519 - Advanced Screenwriting  
Credits: 4.00  
Advanced examination of the preproduction phase of moving image media, focusing on the art and business of screenwriting. Develops students works from original idea through the numerous steps to completed, second draft screenplay. Advanced topics and genres may vary. Prereq: CA 512. May be repeated, with permission, to a maximum of 8 credits. Cannot receive credit if credit earned for CA 520 Special Topics in Communication: Advanced Screenwriting.

CA 520 - Special Topics in Applied Communication  
Credits: 1.00 to 4.00
New or specialized topics in applied communication not covered in regular course offerings. Topics vary; descriptions listing course content and any prerequisites are available during preregistration. May be repeated for credit if topics differ for a maximum of 12 credits. Prereq: contingent on topic. Writing intensive when topic is advanced feature scriptwriting.

CA 522 - Graphic Design I  
Credits: 4.00  
Presents fundamentals of Graphic Design while touching on foundation art theories and vocabulary. Through examination and analysis of professional graphic design, students become familiar with the relationship between graphic design process, creative solutions and critical thinking. Students work with a variety of traditional and digital media, with an emphasis on the process of design, composition and typography. Class includes a significant amount of computer lab and creative studio time.

CA 523 - Graphic Design II  
Credits: 4.00  
Students explore the creative process that helps them communicate ideas and information to a target audience. Higher level, theoretical ideas related to communication, design and cognitive theories will be introduced. Students will engage in intermediate design projects through software and traditional media. Class includes a significant amount of computer lab and creative studio time. Prereq: CA 522, or permission of instructor.

CA #526 - Organization of Newswork  
Credits: 4.00  
Examines news as socially situated discourse. The professional norms, work routines, representational practices, ideologies, and ethics of news producing organizations. Prereq: CMN 455 or permission.

CA 527 - History of Film  
Credits: 4.00  
The history of film since 1948. Historical analysis of the development of cinema since the emergence of television, both in the United States and abroad. Selected topics include cinema and the cold war, international stylistic movements, film exhibition, the decline of the studio system, new technologies, third cinema, globalization and economic consolidation. Prereq: CMN 455 or permission. Special fee.

CA 531 - History and Organization of Advertising  
Credits: 4.00  
Examines the development of advertising in historical context, focusing on the evolving structure and function of advertising agencies, market research practices, advertising design, anthropological approaches to advertising and consumer culture, and contemporary policy issues. Prereq: CMN 455 or permission.

CA 532 - Typography I  
Credits: 4.00  
Typography is the formal study of letterforms. Students gain perspective into this important field by starting with a focus on early visual communication, symbols, handwritten letterforms, calligraphy and the development of movable type. Students explore ways to categorize type into families and identify and define similarities and subtle differences in classical typefaces. Class discussions, projects, critiques and lectures focus of typography terminology, as well as the aesthetic discipline of using type effectively as designer.

CA 533 - Typography II  
Credits: 4.00  
This course builds on skills learned in Typography I. The goal is to explore type as a two dimensional
element and to explore the elements and components needed to design multiple page projects. Emphasis
given to both the creative process and the production/printing process. Students learn to communicate with
graphic design using page layout, hierarchy, grids, and the relationship of typography and imagery.
Students learn how to use InDesign, Illustrator and Photoshop. Prereq: CA 532, or instructor permission.

CA 536 - LGBT Images and Perspectives
Credits: 4.00
This course explores the perspectives and images of lesbian, gay, bisexual, trans, and queer individuals,
from antiquity through modern day. Topics include: history, aging, religion, the media, and the law. Prereq:
CMN 457 or permission of the instructor; majors only.

CA 537 - Health Communication
Credits: 4.00
Introduces students to foundation concepts and theories in health communication, and their application to
real-world settings. Explores how health communication is embedded in social, cultural, economic, political,
technological, and historical contexts. Examines a range of issues, including the meaning of health and
illness; physician-patient interactions; caregiving; the impact of illness on identity; media campaigns;
popular cultural narratives; end of life; and ethics. Discusses healthcare careers. Prereq: CMN 457 or
permission.

CA 539 - Communicating in Families
Credits: 4.00
Explores the role of communication in the creation, maintenance, and transformation of family systems.
Focus on how meanings of "family" are constructed through familial and popular discourses, and the
consequences these communication practices have for lived experience. Prereq: CMN 457 or permission.

CA 540 - Public Relations
Credits: 4.00
This course provides students with an overview of the field of public relations, including its history, ethics,
and current practices. Will include case studies of major public relations issues that have occurred both
historically and in recent years; individual and class projects that enable students to determine how best to
plan for and respond to public relations issues; and guest practitioners who work in various fields, including
business, government, the non-profit sector, and education. Prereq: CMN 456 or CMN 455 or permission.

CA 542 - Social Media for Organizations and Business
Credits: 4.00
Focuses on the history, development and practical use of social media for organizational and business
communications. A primary focus is on the latest social media tools and their use in developing social
media campaigns. Hands-on student work is an important part of the course. Prereq: ENGL 401, CMN 455
or CA 500 - or permission. Cannot receive credit if earned for CA 520 Social Media for Organizations and
Business.

CA 550 - Special Topics in Communication Organization, History, and Policy
Credits: 1.00 to 4.00
New or specialized topics in the organization, history, and policy of communication practices not covered in
regular course offerings. Topics vary; descriptions of course content and any prerequisites are available
during preregistration. May be repeated for a maximum of 12 credits if topics differ. Prereq: contingent on
topic.

CA 600 - Research Methods in Media
Credits: 4.00
Qualitative research practices for the study of mass communication. Tools for investigating the production
contexts of media institutions, the cultural and ideological meanings of media texts, and the social dimensions of media consumption in home and family. Emphasis on how to review literature, develop a research question, define a unit of analysis, select and apply method, interpret data, and draw conclusions grounded in theory. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 is prerequisite or permission. Writing intensive.

**CA 601 - Exploring Relationships**
**Credits:** 4.00
Critically examines the myriad ways qualitative researchers approach the study of interpersonal communication. With an emphasis on the artistic practice of fieldwork, the course considers the process of research design, the relationship between researcher and researched, the moral and ethical aspects of research, issues of representation and audience, and evaluation strategies. Students design, conduct, and present original qualitative research projects. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 457 as a prerequisite or permission. Writing intensive.

**CA 610 - Communication Technologies and Culture**
**Credits:** 4.00
The role of communication technologies in shaping cultural meanings and human consciousness. Covers the work of Innis, McLuhan, Ong, Postman, Carey and others to understand the historical development of shifting communication technologies and patterns of culture from orality to computer communication. Also explores the dynamic between mass culture and sub-cultural appropriations of media forms and content. Prereq: any two CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite or permission. Writing intensive.

**CA #611 - Theories of Relational Communication**
**Credits:** 4.00
Critically examines a variety of theories which seek to explain the dynamics of interpersonal relationships including performance theory, social construction theory, systems theory, feminist theory, and narrative theory. Prereq: any two 500 level courses (excluding CA 501), one of which must have CMN 457 as a prerequisite, or permission. Writing intensive.

**CA 612 - Narrative**
**Credits:** 4.00
Considers the ways humans make sense of experience through the stories we construct within particular relational, cultural, and historical contexts. Explores a variety of topics including narrative conventions, canonical stories, subjectivity and reflexivity, the relationship between story and audience, space and time, memory and imagination, and narrative truth. Each student will conduct an original narrative research project. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 457 as a prerequisite, or permission. Writing intensive.

**CA 614 - Communication and Power**
**Credits:** 4.00
Explores the concept of power -- how we conceive of power, how we enact power, and the effects of power in our interpersonal relationships. Using a variety of theoretical approaches such as relational theory, feminist theory, and social constructionist, we will consider the idea that the expression of power is an act of self-definition, that power resides in the ability to define one's reality while identifying and choosing courses of action, and that disempowerment is the end result of the loss of freedom of action. Prereq: Any two 500 level CA courses (excluding CA 501), one of which must have CMN 457 as a prerequisite, or permission. Writing intensive.

**CA 615 - Film History/Theory and Method**
**Credits:** 4.00
Intensive study of philosophical, rhetorical, and methodological issues in film history research. Examines a series of selected historical problems in the areas of social, aesthetic, industrial, and technological film history up to 1948 and reviews existing historiography on these problems. Focus is on original student research. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite, or permission. Special fee. Writing intensive.

**CA 618 - Documentary**  
**Credits:** 4.00  
Exploration of the historical development, ethics, funding, socio-cultural significance, and communication strategies of documentary film and video. May focus on a particular genre or genres. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite, or permission. Special fee. Writing intensive.

**CA 720 - Seminar**  
**Credits:** 4.00  
Intensive readings and research course in a highly focused area of study. Topics vary. Descriptions of course content and any prerequisites are available during preregistration. May be repeated for credit to a maximum of 12 credits if topics differ. Prereq: contingent on topic. Writing intensive.

**CA 795 - Independent Study**  
**Credits:** 1.00 to 4.00  
Advanced individual study under the direction of a faculty member. Content area and research project to be developed in consultation with faculty supervisor. Prereq: permission. May be repeated for up to 8 credits, with 4 credits maximum accepted toward satisfaction of requirements for the CA major.
Communication Sci&Disorders

COMM 401 - American Sign Language I
Credits: 4.00
This course provides an introduction to the vocabulary, finger spelling, grammar, phonology, syntax and semantics of American Sign Language. Emphasis is on applying language-learning principles through discourse. Introduction to Deaf Culture and its community will be explored. This course is taught in a language-immersion environment and taught primarily in ASL. One-hour lab required per week in conjunction with course. 4 credits and meets the language requirement for some majors.

COMM 402 - American Sign Language II
Credits: 4.00
This course is a continuation of ASL I with an emphasis on the advanced linguistic principles of ASL including vocabulary, grammar, the non-manual signals of ASL such as facial expression and shoulder shifting. Improvement of speed and accuracy in receptive and expressive skills are stressed. Assignments in and outside the classroom assist the student in learning about the Deaf community and culture. This course is taught in a language-immersion environment and taught primarily in ASL. One-hour lab required per week in conjunction with this course. For the online version of this course the lab component is completed on-line. 4 credits and meets the language requirement for some majors. Prereq: COMM 401.

COMM 510 - Voodoo Science
Credits: 4.00
This course will allow students to develop an understanding of evidence-based practice in the modern health care arena. This course offers a unique opportunity to learn critical thinking skills, evaluate scientific inquiry and discern information that has evidence from that with no support. The ability to evaluate ideas, and in particular, distinguishing scientific evidence from fiction is critical to success in any scholarly discipline, different ideas, such as perpetual motion machines, cold fusion, homeopathy, the role of media in spreading voodoo and scientific misconduct will be explored. Many of these have started out as sincere attempts to understand various phenomena, but at some point were found to not be supported by evidence. Unfortunately, these ideas continued to be promoted for a variety of reasons including financial gain, professional name, or social prominence and as such became fraudulent. As part of this course, we will study evidence-based practice in health care in relation to Voodoo Science.

COMM 520 - Survey of Communication Disorders
Credits: 4.00
Causes, diagnosis, and treatment of speech, language, and hearing disorders.

COMM 521 - Anatomy and Physiology of the Speech and Hearing Mechanisms
Credits: 4.00
Anatomy, physiology, neurology, and function of the mechanisms for the production and perception of speech.

COMM 522 - Acquisition of Language
Credits: 4.00
Introduction to normal language acquisition; stages of children’s developing language examined within a linguistic framework with attention paid to syntax, morphology, phonology, semantics, and pragmatics. Theories of language acquisition overviewed.

COMM 524 - Clinical Phonetics
Credits: 4.00
Application of the International Phonetic Alphabet to normal and clinical populations; use of broad and narrow transcriptions. Basic speech science, acoustic phonetics, and acoustic analysis of speech production.

COMM 536 - Introduction to Deaf Studies
Credits: 4.00
This course addresses various aspects of the Deaf community, including the value of American Sign Language and the culture it reflects, professions within the Deaf community, legislation affecting Deaf people, educational approaches and controversies, activities and events relating to the population, and hearing-related issues.

COMM 575 - Have You Heard? The Fundamentals of Hearing and Hearing Loss
Credits: 4.00
This course will provide an overview of hearing loss including current issues and technology. Areas of study will focus on the incidence of hearing loss, terminology and definitions, service delivery models, educational trends, accessibility regulations and the impact of noise. Information about the various professionals, who work with individuals with hearing loss, and their respective roles, will also be provided. This 4 credit course is open to all undergraduates and it has no prerequisites.

COMM 630 - Organic Pathologies
Credits: 4.00
Neurological bases, diagnosis, and treatment of communication disorders; emphasis on motor speech disorders and aphasia.

COMM 631 - Articulation and Language Disorders in Children
Credits: 4.00
Research, diagnosis, and therapy procedures as applied to articulation and language disorders.

COMM 635 - Senior Capstone: Professional Issues in Communication Sciences and Disorders
Credits: 4.00
Introduction to the profession of speech-language pathology; review of issues related to scope of practice; professional ethics, certification/licensure, and current challenges facing the profession. Discussion of employment opportunities for speech-language pathologists. Seniors only. Writing intensive.

COMM 637 - Multicultural Issues in Communication Disorders
Credits: 4.00
The purpose of the course is to allow students to become informed about the complexity and the ways in which cultures differ. The students develop a comprehensive understanding of, cross cultural sensitivity to, and competence of one's own culture and the characteristics of the four major cultural groups in the United States. The students also develop intercultural skills for assessing and counseling individuals as mandated by our professional association policies and positions on language diversity in the clinical management of clients from diverse cultural and linguistic backgrounds.

COMM 704 - Basic Audiology
Credits: 4.00
Normal hearing process and pathologies of the auditory system. Hearing screening, pure-tone testing, and speech audiometry. Prereq: COMM 521 or permission.

COMM 705 - Introduction to Auditory Perception and Aural Rehabilitation
Credits: 4.00
Research, testing, and clinical procedures of auditory perception, applied to the communicatively impaired.
Prereq: COMM 704 or permission.

**COMM 723 - Observation Skills in Speech-Language Pathology**
**Credits:** 2.00
This guided observation course is designed to acquaint students with intervention and assessment while providing opportunity to begin to develop systematic observation skills. Students successfully completing this course will accrue a minimum of 25 observation hours. Cr/F.

**COMM 725 - Cued Speech**
**Credits:** 4.00
This course covers the fundamentals of the Cued Speech system, its applications ans research as well as its relevance to other communication options for children who are deaf or hard of hearing. Various topics are covered, including CS and language development, reading, auditory and speech skill development, auditory processing, bilingualism, Down Syndrome, Autism, cochlear implants and transliteration.

**COMM 734 - American Sign Language III**
**Credits:** 4.00
Builds upon the information covered in Introductory ASL I and II. Development of basic grammatical rules, vocabulary, manual alphabet/numbers, visual-gestural communication, and information related to Deaf Culture are covered. All lectures, laboratory activities, outside assignments build upon rudimentary competency in receptive and expressive use of ASL and develop fluency and competency. Class is conducted using ASL only. Prereq: American Sign Language I and II.

**COMM 735 - American Sign Language IV**
**Credits:** 4.00
Builds upon the information covered in Introductory ASL I, II, and III. Development of basic grammatical rules, vocabulary, manual alphabet/numbers, visual-gestural communication and information related to Deaf Culture are covered. All lectures, laboratory activities, outside assignments build upon rudimentary competency in receptive and expressive use of ASL and develop fluency and competency. Class is conducted using ASL only. Prereq: American Sign Language I, II, and III.

**COMM 738 - Linguistics of American Sign Language**
**Credits:** 4.00
This course provides linguistic study of the major structural aspects of phonology, morphology, syntax, lexicology, and discourse in American Sign Language. Concepts of language variation, dialect, creolization, and bilingualism are studied. Taught primarily in ASL. Prerequisites/Proficiencies: COMM 402 - Elementary American Sign Language II Minimum grade of: C.

**COMM 740 - Treatment of Adults with Acquired Brain Injury**
**Credits:** 4.00
This "hands-on" interdisciplinary experience enables students to acquire clinical skills and professional competence in a community-based day program where they assist adults with acquired brain injury meet their physical, emotional, cognitive-linguistic, social, spiritual, recreational, and vocational needs. Permission required. CSD majors only.

**COMM 777 - Speech and Hearing Science**
**Credits:** 4.00
Physical, acoustical, and perceptual correlates of normal speech production and audition. Includes theoretical models with the generation, transmission, detection, and analysis of speech signals.

**COMM 779 - Deaf and Hard of Hearing Internship**
**Credits:** 4.00
This internship will allow students in the Deaf and Hard of Hearing Minor to expand their knowledge about the needs, challenges and experiences of deaf and hard of hearing individuals. The internship locations will be varied and matched, as closely as possible, to the student's particular interests. Potential placement opportunities include a school for the deaf, a public agency or vocational setting which provides services for deaf and hard of hearing individuals. Prereq: COMM 533, COMM 536, and COMM 733; permission. Cr/F.

**COMM 795 - Independent Study**  
**Credits:** 1.00 to 8.00  
Individual or group projects involving directed study of an area of communication sciences and disorders that students wish to explore in greater depth than is covered in the required curriculum. May be repeated to a maximum of 8 credits. Prereq: permission.

**COMM 798 - Special Topics**  
**Credits:** 1.00 to 4.00  
New or specialized topics not covered in regular course offerings. May be repeated for a total of 8 credits. Special fee on some topics.

**COMM 799 - Honors Thesis**  
**Credits:** 1.00 to 4.00  
Supervised research leading to the completion of an honors thesis required for graduation from the university honors program in major. Permission required.
Community&Environmental Plan

**CEP 415 - Community Development Perspectives**  
**Credits:** 4.00  
Introduces students to a range of community development and environmental planning issues facing communities as they undergo social, economic, and environmental change. Through class discussion and examination of case studies, this course instills basic principles and processes of community development and environmental planning, formulation, and conflict resolution. Community and environmental planning topics covered in the course include land use conflict, urban/suburban sprawl, rural development, economic development, local food systems, community infrastructure, and environmental stewardship. Emphasis is placed on the roles and responsibilities of community development professionals, including land use planners, municipal administrators, and community leaders.

**CEP 508 - Applied Community Development**  
**Credits:** 4.00  
Students work in an actual community, assisting individuals and groups to identify needs and problems, establish attainable and objective goals, assess requirements and resources, and formulate programs for development and methods of collection, analysis, and integration of pertinent primary and secondary economic, social, political, and physical data for community development. Prereq: CEP 415 or permission. Lab

**CEP 614 - Fundamentals of Planning**  
**Credits:** 4.00  
Community planning process in nonmetropolitan communities; practical application of planning techniques. Communities' components: housing, jobs, schools, recreation, transportation, community appearance, and the administrative structure for planning. Use of planning tools: data gathering and analysis, the master plan, zoning and subdivision regulations, community development programs. Prereq: EREC 411; CEP 415; or permission. (Offered every other year.) Writing intensive.

**CEP 672 - Fundamentals of Real Estate**  
**Credits:** 4.00  
This course covers timely subjects in National and regional real estate, such as types of property ownership, easements, financing, contracts, appraisal, brokerage, property listings, commissions, fair housing, and property management. The goal of this class is to prepare students to pass the New Hampshire Real Estate Sales Agent License Exam and/or be knowledgeable real estate investors. Prereq: MATH 420 or higher.

**CEP 673 - Green Real Estate**  
**Credits:** 4.00  
This class covers issues related to existing and new real estate development with respect to history, law (state statutes and federal legislation), economics, and technology. The course looks at impacts of green development from an individual building level, and out to regional and global levels. We look at common problems and solutions, review case studies, and discuss emerging trends in "green development."

**CEP 710 - Seminar**  
**Credits:** 2.00 to 4.00  
Seminars arranged to students’ needs and offered as demand warrants: in-depth treatment of area, including classic work. May be repeated.
**CEP 777 - Topics in Community Planning**  
**Credits:** 4.00  
Advanced treatment of the concepts and tools required for effective local and regional planning to guide land use, capital investment in infrastructure, and organization for service delivery. Prereq: CEP 614 or permission. (Also listed as RAM 877.) (Offered every other year.) Writing intensive.

**CEP 794 - Community and Environmental Planning Internship**  
**Credits:** 1.00 to 8.00  
Fieldwork in a public planning office or agency for on-the-job skill development. Normally supervised by a qualified planner in the planning organization with frequent consultation with a faculty sponsor. A written report is required. Internship may be part- or full-time with course credits assigned accordingly. Prereq: permission. Cr/F.

**CEP 795 - Investigations**  
**Credits:** 2.00 to 4.00  
Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission.

**CEP 795W - Investigations**  
**Credits:** 2.00 to 4.00  
Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission. Writing intensive.
## Community Leadership

### CSL 400 - Technology for Community Service and Leadership  
**Credits:** 2.00  
This two-credit course will provide students with the skills needed to effectively use Microsoft Office and other related computer applications. During the second half of the semester, students will further develop their computer skills and their social science research skills by completing research assignments and other projects designed to enhance their understanding of the information available to them through web-based investigation.

### CSL 401 - Introduction to Community Service and Leadership  
**Credits:** 4.00  
Students are introduced to differing concepts of community and influence within communities, and to the challenges facing leaders within community organizations as they work to address key problems. All students participate in a significant community project which serves as the basis for both learning specific community organizing skills and for reflecting on the rewards and challenges of community leadership. Writing intensive.

### CSL 402 - Introduction to Nonprofit Organizations  
**Credits:** 4.00  
This practical course provides an overview of the unique responsibilities and practices needed to effectively manage a community-based nonprofit organization. Topics include: issues of organizational structure and staffing, strategic planning, board effectiveness, financial management, leadership roles and responsibilities, and public accountability.

### CSL 403 - Organizing and Supervising Volunteers  
**Credits:** 4.00  
This course provides students with the knowledge and skills necessary to design, organize, and manage effective volunteer programs. Topics covered include: identifying organizational volunteer needs, recruiting, supervising, and motivating volunteers, integrating volunteers into the overall goals and services of an organization, and creating effective volunteer training programs. Students will explore resources available for creating a successful volunteer program and will research the variety of approaches to volunteer management that organizations currently use. All students also volunteer with a community organization.

### CSL 405 - Communication Within Communities  
**Credits:** 4.00  
This course focuses on the ways we influence--and are influenced by--others within the communities in which we live and participate. Students have the opportunity to analyze how a specific "real life" community issue is presented, interpreted, and resolved through various written and oral mediums. Additional coursework involves frequent writing and speaking assignments, with particular emphasis on the forms of persuasion that most commonly shape "community opinion." Students will also examine on-line forms of communication such as web sites and e-newsletters and contribute to at least one of these as a service to a community organization.

### CSL 491 - Studies in Community Service and Leadership  
**Credits:** 1.00 to 4.00  
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in
greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include a specific community leadership/organizing topic. Prereq: CSL 401 or equivalent.

**CSL 492 - Studies in Community Service and Leadership**  
**Credits:** 1.00 to 4.00  
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include a specific community leadership/organizing topic. Prereq: CSL 401 or equivalent.

**CSL 504 - Managing Change and Conflict in Communities**  
**Credits:** 4.00  
This course examines a variety of approaches to promoting and responding to community change. Through active participation and analysis of specific community initiatives, students will explore such topics as issue-identification, planning for change, power dynamics and conflict within diverse groups, strategies for action, lobbying, and influencing political action. Prereq: CSL 401, permission.

**CSL 506 - Literature of Family and Community**  
**Credits:** 4.00  
Through a wide range of readings, primarily fiction, this course examines what it means to be an individual living in the context of family and community. Students use these readings both to examine differing concepts of community and to explore how individuals and groups respond to the challenges of creating as well as changing their communities. Coursework involves critical analysis, group-led discussions, and frequent short papers. Prereq: COM 211 or instructor permission. Wrinting intensive.

**CSL 507 - Introduction to Non-profit Budgeting and Accounting Practices**  
**Credits:** 3.00  
This course is designed to help students understand the responsibilities of nonprofit financial management for program managers and board members. It introduces key budgeting and accounting practices for community-based nonprofit organizations. Students will explore such topics as budget planning and development, budget design, roles and responsibilities of those involved in budgeting, and how to read and interpret financial data. Case studies are used throughout the class to illustrate these financial skills.

**CSL 508 - Essentials of Fundraising for Community-Based Organizations**  
**Credits:** 2.00  
The ability to raise funds is essential to all community-based and nonprofit organizations. This course is designed to provide students with the essential knowledge and skills to develop and execute a successful fundraising program. Topics covered include: prospect research, choosing fundraising strategies, common fundraising mistakes, maintaining relationships with donors, raising money by mail, personal solicitation, event planning, and other key approaches to raising money.

**CSL 509 - Essentials of Grant Writing for Community-Based Organizations**  
**Credits:** 2.00  
This course provides the information and skills necessary to research and apply for grants from government agencies, foundations, corporations, and other sources. Students will follow the process of grant-seeking from identifying need through application and follow up.

**CSL 510 - Civic and Community Internship**  
**Credits:** 4.00
This internship is designed to promote experiential learning about community service and leadership through active involvement within a community organization. It provides students with an opportunity to build upon their skills and interests while developing an awareness of civic and community issues. In addition to participating in community projects, students are expected to reflect upon their experiences and to relate them to assigned reading. Each student will also complete a research project based on a problem encountered at the service site. Prereq: CSL 401 or permission of instructor. May be repeated for up to 8 credits.

CSL 520 - Capstone Seminar

Credits: 4.00

This seminar provides the opportunity for students in their final semester to synthesize their learning and skills as they broaden their understanding of the political and social policy dimensions of community organizing and leadership. Each student will engage in a significant service project that will serve as the focal point for both skill application and issue analysis. Prereq: CSL 401, 402, 403, and CSL 405.
Computing Technology

COMP 405 - Introduction to Internet and Web Authoring
Credits: 4.00
The fundamental technologies, protocols, and practices that make up the Internet. The Internet as a global information system that has transformed the current business environment. Additional topics include: Internet structure; applications; business uses; legal and ethical issues introduced by networked computers such as privacy, fraud, and security. A significant portion of the course covers Web authoring procedures and languages. Students create a Web site using xhtml language and are introduced to JavaScript. No prior computer experience is required. Cannot receive credit if credit earned for CS 403.

COMP 411 - Introduction to Computer Applications
Credits: 4.00
Beginning course on computer technology, specifically microcomputer systems. Emphasis is on (1) using computers to manage information for personal and professional applications and (2) the impact of computer information technology on today's society. Software applications used include word processing, spreadsheets, database, and graphics. Independent lab activities are a major part of the course content. No prior computer experience is required. No credit if credit has been received for DCE 491; 492; CS 401.

COMP 415 - Mobile Computing First and For Most
Credits: 4.00
This course examines how mobile computing is transforming our everyday lives and the society and environment in which we live. In this course the students will engage the mobile ecosystem by inventing apps and solving problems of personal, social, and environmental relevance. Students will learn computational thinking skills and create mobile apps using AppInventor, a free and open source visual blocks-based programming environment. Students will share their creative apps with peers and communities. They will also exercise inclusion, civic engagement, and peer learning in the context of innovating with free and open source software that empower individuals and communities.

COMP 425 - Introduction to Programming
Credits: 4.00
An introduction to problem solving and object-oriented programming. Emphasis is on programming concepts and techniques and their application to software development. Students learn to write, review, document, share, and demonstrate interactive applications and participate in pair programming, peer-led tutoring, and collaborative learning throughout the course.

COMP 430 - Systems Fundamentals
Credits: 4.00
The underlying hardware and software infrastructure upon which applications are constructed is collectively described by the term "computer systems." Computer systems broadly span the subdisciplines of operating systems, parallel and distributed systems, communications networks, and computer architecture. The class will present an integrative view of these fundamental concepts in a unified albeit simplified fashion, providing a common foundation for the different specialized mechanisms and policies appropriate to the particular domain area.

COMP 490 - Statistics in Computing and Engineering
Credits: 4.00
An introduction to tools from probability and statistics that are needed by computing and engineering professionals. Exploratory data analysis including graphic data analysis, discrete and continuous
probability distributions, inference, linear regression, and analysis of variance, with applications from artificial intelligence, machine learning, data mining, and related topics. Project work and use of statistical software are an integral part of the course. Prereq: MATH 425\MATH 424B\MATH 424A.

**COMP 500 - Discrete Structures**  
**Credits:** 4.00  
This course prepares students for understanding computational complexity; i.e., what makes a given task/problem hard and how hardness is measured. It accomplishes this through the study of algorithms, permutations, combinations, probability, graph theory, and trees. Prereq: MATH 425.

**COMP 505 - Advanced Web Authoring**  
**Credits:** 4.00  
An introduction to web applications development. The course builds on introductory programming and web authoring. Emphasis is on dynamic web concepts and advanced programming techniques using markup languages and client-side and server-side scripting. Students learn to develop interactive web pages and integrate them with web-based systems. Students participate in real-world team projects. Prereq: COMP 405 and COMP 425, or permission.

**COMP 510 - Fundamentals of Computer Information Systems**  
**Credits:** 4.00  
Investigates the role and impact of computer applications on computer information systems in general and specifically as applied to business requirements. Surveys the components of a computer information system; explores computer information systems in areas such as manufacturing, medicine, education, and government; discusses the issues of computerizing information resources. Directs attention to computer information systems in business and identifies the need for and function of formal systems development methodologies. Prereq: COMP 411 or equivalent. Writing intensive.

**COMP 515 - Multimedia: Introduction and Applications**  
**Credits:** 4.00  
Examines the history and underlying theory behind computer integration of text, sound, video, and graphics. Topics include: hardware and software requirements, design criteria, analysis of current hypertext, and multimedia applications in education and business. Students gain practical experience in developing multimedia applications on the Macintosh platform.

**COMP 520 - Database Design and Development**  
**Credits:** 4.00  
An introduction to developing database applications with business users. Topics include fundamentals of the relational model, structured query language, data modeling and database design and implementation. Students use a variety of database management system tools to model, code, debug, document, and test database applications. Students complete real-world team projects. Prereq: COMP 505 and COMP 510, or permission.

**COMP 525 - Data Structures Fundamentals**  
**Credits:** 4.00  
Data structures and algorithms are fundamental to developing solutions for computational problems. In this course students design and implement data and functional abstractions; analyze and select appropriate data structures to solve computational problems; practice programming and software development techniques to implement computational solutions. Prereq: COMP 425.

**COMP 530 - Machine and Network Architecture**  
**Credits:** 4.00  
Examines the following topics. Machine organization: program and data representation; registers,
instructions, and addressing modes; assemblers and linkers. Impact of hardware on software and software on hardware. Introduces the Internet protocol suite and network tools and programming and discusses various networking technologies.

**COMP 550 - Networking Concepts**  
**Credits:** 4.00  
Explores the fundamentals of data communications and networking requirements for an organization, including the standard layers of network organization; network technologies; and protocols for LANs, WANs, wireless networks, and switched and routed networks. Includes issues of security, topology, management, and future developments. Prereq: COMP 542 or permission.

**COMP 560 - Ethics and the Law in the Digital Age**  
**Credits:** 4.00  
Examines classical and ethical and legal constructs as they pertain to current and topical issues. Students develop and articulate a personal point of view on a broad range of issues based on sound ethical principles and consider the impact of such views on co-workers, employers, and society in general. Topics also include: major social issues involving intellectual property, privacy, current U.S. and international relations relevant to ethical theories. The interplay between ethics and law is explored through current case studies and students formulate and support conclusions based on ethical constructs presented in class. Case study analysis is a major component in course delivery. Writing intensive.

**COMP 590 - Entrepreneurship Project**  
**Credits:** 4.00  
This course requires the development of a conceptual business plan for a proposed real world project undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing and refining original proposed plan. Prereq: COMP 525.

**COMP 625 - Data Structures and Algorithms**  
**Credits:** 4.00  
An introduction to object-oriented design, analysis, and implementation of data structures and algorithms. Students apply concepts and techniques to develop information processing applications. Best programming practices of editing, debugging, documentation, testing, and code review are stressed. Familiarity with an object-oriented programming language and experience with application development are required. Prereq: COMP 425 and COMP 505, or permission.

**COMP 640 - Human Computer Interaction**  
**Credits:** 4.00  
This course familiarizes students with Human Computer Interaction and the significant role it plays in product design and development. The principles of HCI, examples of good and bad applications, and factors that determine a design's effectiveness are covered. Stages of the product development life cycle are discussed to understand the progression of a project from conception to delivery and the impact it has on HCI. No credit for students who took CIS 599 Special Topics: Human Computer Interaction.

**COMP 650 - Network Administration and Maintenance**  
**Credits:** 4.00  
Advances the understanding of networks through practical application of administering and maintaining and intranet and its servers. Students use a modern server operating system and network management tools. Routine tasks include: install and configure servers, setup directory services and access privileges, tune network services, understand and implement network security, perform routine maintenance, and practice troubleshooting techniques. Prereq: COMP 550 or permission.

**COMP 685 - Professional Development Seminar**
Credits: 1.00
The Professional Development Seminar is designed to prepare students for successful internship placement and future work opportunities in the computer profession. You will learn the tools to effectively market yourself, manage job fairs, practice informational interviews, prepare for interviews, and learn about the workplace in general. You will also actively seek a work experience for the following semester. Prereq: Majors must complete 40 CIS credits, or have permission from the program coordinator. Not open to students who passed CIS 680.

COMP 690 - Internship Experience
Credits: 4.00
The internship provides field-based learning experience through placement in a computing field. Students gain practical computing experience in a business, non-profit, or government organization. Under the direction of a faculty advisor and workplace supervisor, the student is expected to contribute to the information technology products, processes, or services of the organization. Prereq: COMP 685 and instructor permission. Majors only. May be repeated up to 8 credits but no more than 4 credits may fill major requirements.

COMP 698 - Special Topics
Credits: 1.00 to 4.00
Course topics not offered in other courses. Topics covered vary depending on contemporary computing topics, programmatic need, and availability and expertise of faculty. Barring duplication of subject, may be repeated for credit. Prereq: permission.

COMP 705 - Web Application Development
Credits: 4.00
Students work in teams and implement, test, document, demonstrate, and deploy web systems that solve organizational needs expressed by real clients. Emphasis is on advanced server-side and client-side programming and integration of web application with database and web server applications. Free and open source development and communication tools are used to carry out the course project. Prereq: Senior status or permission. No credit for students who have completed CIS 605.

COMP 715 - Information Security
Credits: 4.00
Topics include general security principals and practices, network and system security, access control methodology, and cryptography. Students develop a simple cryptographic system based on sound mathematical principals, work to improve it, and find ways to attack it. Some programming required. Prereq: Senior status or permission. No credit for students who have completed CIS 615.

COMP 720 - Database Application Development
Credits: 4.00
This is a project course that provides practical experience with developing a storage subsystem of a computer information system. Topics include data modeling, database design, system implementation, and integration with a target application. Emphasis is on implementation activities, database application development artifacts, project communication, and supporting system development and project management tools. Prereq: Senior status or permission. No credit for students who have completed CIS 650.

COMP 725 - Programming Languages
Credits: 4.00
Explores the main features of modern, high-level, general purpose programming languages from the user point of view. Provides students with an opportunity to use non-imperative programming paradigms, such as object-oriented, functional, and visual, and to learn how specific features of such languages can be used
efficiently in solving problems. The purpose is to gain knowledge regarding the languages studied as well as providing the basis to conduct analysis related to comparisons and divergence in capabilities. Prereq: COMP 425 or equivalent. No credit earned if credit received for ET 647, CIS 698 Adv Perspectives on Programming, or COMP 698 Adv Perspectives on Programming.

COMP 730 - Object-Oriented Software Development
Credits: 4.00
Presents an iterative methodology for developing software systems. Development activities include requirements elicitation and analysis, system and object design, implementation and testing, project and configuration management, infrastructure maintenance, and system deployment to end user. Students work in team, assume developer roles, build models of a real-world system, and deliver a proof-of-concept or prototype. Prereq: Senior status or permission. No credit for students who have completed CIS 610. Writing intensive.

COMP 751 - Neural Networks
Credits: 4.00
Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class. Prereq: MATH 425, MATH 545 or MATH 645, COMP 490, or permission of the instructor. Also listed as DATA 751.

COMP 780 - Advanced Topics in Computing
Credits: 1.00 to 4.00
The course includes advanced topics and emerging areas in computing. Barring duplication of subject, the course may be repeated for credit. Prereq: Senior status or permission.

COMP 790 - Capstone Project
Credits: 4.00
This course requires the development of a real world project that responds to an IT organizational need. The project is undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing a prototype of the IT solution to the original problem. Prereq: COMP 690 and CIS 610. Writing intensive.

COMP 795 - Independent Study
Credits: 1.00 to 4.00
Advanced individual study under the direction of a faculty mentor. Content area to be determined in consultation with faculty mentor. Prereq: permission. May be repeated.
Computer Science

CS 400 - Introduction to Computing
Credits: 1.00
Initial exploration of computing, including comparison of the various subfields. A wide range of issues, including fundamental concepts, selected current topics and the role of both computing and computing professionals in organizations and in society are also discussed. Cr/F.

CS 401 - Computers and Their Applications
Credits: 4.00
Use of computers to manage and analyze information across a variety of settings and disciplines. Introduces major categories of computer software, including word processing, spreadsheets and database systems. Covers basic computer concepts and the computer's role in today's society. Significant hands-on work required outside of the class. Not open to CS majors. CEPS students should check with their major department for approval.

CS 401H - Honors/Computers & Their Appl
Credits: 4.00
Use of computers to manage and analyze information across a variety of settings and disciplines. Introduces major categories of computer software, including word processing, spreadsheets and database systems. Covers basic computer concepts and the computer's role in today's society. Significant hands-on work required outside of the class. Not open to CS majors. CEPS students should check with their major department for approval.

CS 404 - Do-It-Yourself Internet
Credits: 4.00
The objective of this course is to demystify the design process that leads to the evolution of the Internet. In doing so, we investigate the ways that technology changes to meet the needs of society, how society changes in response to these new technologies and how these societal changes create pressures that produce needs for new technologies.

CS 405 - Introduction to Applications Programming with Visual Basic
Credits: 4.00
Introduces the concepts and techniques of microcomputer windows programming. Students use the Visual Basic language to develop modular, event-driven programs/applications. Topics include: forms, properties, controls, variables, decision structures, and built-in and user-defined functions and subroutines. CEPS students should check with their major department for approval. Not open to CS majors.

CS 408 - Living in a Networked World: The Good, the Bad, and the Ugly
Credits: 4.00
The objective of this course is to explore the implications of living in a networked world. The course surveys the fundamental technologies and practices that make up the Internet and then ask the student to examine the ramifications of using the technologies. Users of the technologies should understand the technology in order to make educated decisions about how to use it safely and effectively. Students have the opportunity to self-publish by using various current technologies including blogs, discussion boards, email and creating web pages using xhtml.

CS 410 - Introduction to Scientific Programming
Credits: 4.00
Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Either the C language or Python is taught and used for assignments. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have completed CS 407, 415, or the equivalent.

**CS 410C - Introduction to Scientific Programming/C**  
**Credits:** 4.00  
Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have completed CS 415 or equivalent.

**CS 410P - Introduction to Scientific Programming/Python**  
**Credits:** 4.00  
Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have completed CS 415 or the equivalent.

**CS 414 - From Problems to Algorithms to Programs**  
**Credits:** 4.00  
This course is an introduction to the design and implementation of computer programs. The basic software development process (modeling, algorithm design, programming, testing and debugging) is illustrated through problem examples. Programming techniques are introduced to allow students to implement and evaluate solutions as programs.

**CS 415 - Introduction to Computer Science I**  
**Credits:** 4.00  
Theory and practice of computer science. Algorithm development and analysis; data abstraction techniques; elementary data structures; dynamic memory manipulation; debugging; and program design issues. Computer systems and applications. Intended for CS majors.

**CS 416 - Introduction to Computer Science II**  
**Credits:** 4.00  
Theory and practice of computer science. Algorithm development and analysis; data abstraction techniques; elementary data structures; dynamic memory manipulation; debugging; and program design issues. Computer systems and applications. Intended for CS majors. Prereq: CS 415.

**CS 417 - From Programs to Computer Science**  
**Credits:** 4.00  
Accelerated coverage of programming techniques for students with experience equivalent to CS410 or CS 414. Covers basic algorithm analysis. Topics include basics of classes, inheritance, and data abstraction; linear data structures (vectors, lists, stacks and queues); trees and simple graphs; hash tables; sorting and searching; recursion; and basic graph traversal algorithms. Numerous labs and programming assignments build skills in planning, problem solving, and debugging: this is a hands on course. Prereq: CS 410 or CS 414 or equivalent.

**CS #444 - Computer Technology: Balancing Risks Against Reward**  
**Credits:** 4.00  
Computer technology permeates life in our modern world, for better and for worse. Its rewards to individuals and society are unprecedented. Yet so are its risks. This course examines computer
technology's role in modern society and endeavors to assess its impact - both beneficial and detrimental. Problems are evaluated from a variety of perspectives, including technological, societal, legal, commercial and ethical.

CS 501 - Professional Ethics and Communication in Technology-related Fields
Credits: 4.00
A mixed lecture/seminar course intended to improve both reasoning and ability to communicate effectively in front of an audience. Students learn basic forms of ethical argument, they read about ethical situations in which technology and technology professions play a key role, and they participate in student-led discussions about the reading. Students also make oral presentations about both ethical and technical topics, and evaluate each other's presentations in order to improve their sense for what makes a good presentation. Prereq: ENGL 401.

CS 515 - Data Structures
Credits: 4.00
Reviews basic data structures; advanced data structures such as graphs, B-trees, and AVL trees; abstract data structure design and programming techniques; use of data abstraction language. Introduction to algorithm analysis. Prereq: CS 416 or CS 417.

CS 520 - Assembly Language Programming and Machine Organization
Credits: 4.00
Assembly language programming and machine organization: program and data representation; registers, instructions, and addressing modes; assemblers and linkers. Impact of hardware on software and software on hardware. Historical perspectives. Prereq: CS 416 or CS 417.

CS 595 - Professional Ethics and Communication in Computer Science
Credits: 2.00
A seminar course intended to improve both reasoning and ability to communicate effectively in front of an audience. Students learn basic forms of ethical argument, they read about ethical situations in which technology and technology professions play a key role, and they participate in student-led discussions about the reading. Students also make oral presentations about both ethical and technical topics, and evaluate each others' presentations in order to improve their sense for what makes a good presentation.

CS 619 - Introduction to Object-Oriented Design and Development
Credits: 4.00
Principles of problem analysis ans software design applied to the development cycle of a software system (i.e. from system requirements specification to design, implementation, and system test). Design and implementation using object-oriented principles, patterns, and tools. Experience in understanding and debugging software systems. Experience in working in groups. Prereq: CS 515.

CS 620 - Operating System Fundamentals
Credits: 4.00
Introduces operating system concepts and design. Process and memory management; scheduling; file systems; storage devices; inter-process communication. Prereq: CS 520.

CS 659 - Introduction to the Theory of Computation
Credits: 4.00
Review of sets, relations, and languages. Induction and diagonalization. Finite automata, context-free languages, pushdown automata. Basic complexity theory. Prereq: MATH 531

CS 671 - Programming Language Concepts and Features
Credits: 4.00
Explores the main features of modern, high-level, general purpose programming languages from the user (programmer) point of view. Provides students with an opportunity to use non-imperative programming paradigms, such as object-oriented, functional, and logical, and to learn how specific features of such languages can be used efficiently in solving programming problems. Prereq: CS 520.

**CS 696 - Independent Study**

**Credits:** 1.00 to 6.00  
Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. May be repeated for credit.

**CS 696W - Independent Study**

**Credits:** 1.00 to 6.00  
Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. May be repeated for credit. Writing intensive.

**CS 699 - Internship**

**Credits:** 1.00  
Provides the opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the instructor. The proposal must specify what the student will learn from the internship, why the student is properly prepared for the internship and what supervision is available during the internship. A mid-semester report and final report are required. Prereq: permission. May be repeated for a maximum of 4 credits. Only open to Computer Science majors. Cr/F.

**CS 712 - Compiler Design**

**Credits:** 4.00  
Formal languages and formal techniques for syntax analysis and parsing; organization of the compiler and its data structures; code generation. LL and LR parsing; automatic generation of scanners and parsers from high level descriptions. Implementation of features from imperative and object-oriented languages. Students required to design and implement a compiler for a simple language. This course can be counted as either a theory elective or an implementation-intensive elective, but not both. Prereq: CS 520 and CS 659.

**CS 720 - Operating System Programming**

**Credits:** 4.00  
Detailed discussion of operating system concepts and features. Practical examples and exercises that utilize advanced operating system features, including inter-process communication, synchronization, client-server communication, shared memory, threads, remote procedure calls, and device-level I/O. Discussion of POSIX 1003.1 Part I Standards. Prereq: CS 520 and CS 619.

**CS 723 - Performance Evaluation of Computer Systems**

**Credits:** 4.00  
Introduces the main concepts, techniques, and tools needed to evaluate the performance of computer systems under various configurations and workloads. The techniques allow one to perform capacity planning based on quality of service requirements of users and workload characteristics. Course is mainly based on the use of analytic queuing network models of computers systems. The performance techniques are applied to study the performance of centralized, distributed, parallel, and client/server systems. The course also discusses performance measuring tools for operating systems such as Unix and Windows NT. Prereq: CS 620 and (MATH 539 or MATH 644).

**CS 725 - Computer Networks**

**Credits:** 4.00
Introduction to fundamental concepts of computer networks and exploration of widely-used networking technologies. Topics include principles of congestion and error control; network routing; local, wireless and access networks; application protocol design; and network programming. In-depth discussion of the Internet suite of protocols. Prereq: CS 520.

CS 730 - Introduction to Artificial Intelligence  
**Credits:** 4.00  
In-depth introduction to artificial intelligence, concentrating on aspects of intelligent problem-solving. Topics include situated agents, advanced search techniques, knowledge representation, logical reasoning techniques, reasoning under uncertainty, advanced planning and control, and learning. Prereq: CS 515.

CS 730W - Introduction to Artificial Intelligence  
**Credits:** 4.00  
In-depth introduction to artificial intelligence, concentrating on aspects of intelligent problem-solving. Topics include situated agents, advanced search techniques, knowledge representation, logical reasoning techniques, reasoning under uncertainty, advanced planning and control, and learning. Prereq: CS 671. Writing intensive.

CS 735 - Introduction to Parallel and Distributed Programming  
**Credits:** 4.00  
Programming with multiple processes and threads on distributed and parallel computer systems. Introduces programming tools and techniques for building applications on such platforms. Course requirements consist primarily of programming assignments. Prereq: CS 520.

CS 745 - Formal Specifications and Verification of Software Systems  
**Credits:** 4.00  
Course focuses on the formal specification and verification of reactive systems, most notably concurrent and distributed systems. Topics relevant to these systems, such as non-determinism, safety and liveness properties, asynchronous communication or compositional reasoning, as discussed. We rely on a notation (TLA+, the Temporal Logic of Actions) and a support tool (TLC, the TLA+ Model Checker). Prereq: CS 520 and CS 659.

CS 758 - Algorithms  
**Credits:** 4.00  
An introduction to important concepts in the design and analysis of algorithms and data structures, including implementation, complexity analysis, and proofs of correctness. Prereq: CS 515 and CS 659.

CS 760W - Introduction to Human-Computer Interaction  
**Credits:** 4.00  
Human-computer interaction is a discipline concerned with the design, evaluation, and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them. Prereq: CS 619 and CS 620. Writing intensive.

CS 767 - Interactive Data Visualization  
**Credits:** 4.00  
Detailed discussion of how an understanding of human perception can help us design better interactive displays of data. Topics include color, space perception, object perception and interactive techniques. Students write interactive programs, give presentations and undertake a project designing and evaluating a novel display technique. Prereq: instructor's permission.

CS 767W - Interactive Data Visualization  
**Credits:** 4.00
Detailed discussion of how an understanding of human perception can help us design better interactive displays of data. Topics include color, space perception, object perception and interactive techniques. Students write interactive programs, give presentations and undertake a project designing and evaluating a novel display technique. Prereq: instructor's permission. Writing intensive.

**CS 770 - Computer Graphics**  
**Credits:** 4.00  
Input-output and representation of pictures from hardware and software points of view; interactive techniques and their applications; three-dimensional image synthesis techniques and their applications. Prereq: CS 671.

**CS 770W - Computer Graphics**  
**Credits:** 4.00  
Input-output and representation of pictures from hardware and software points of view; interactive techniques and their applications; three-dimensional image synthesis techniques and their applications. Prereq: CS 671. Writing intensive.

**CS 771 - Web Programming Paradigms**  
**Credits:** 4.00  
In this course you will learn languages to program the Web. Languages integrated into browsers, like JavaScript, and languages invoked on the server, like Ruby. You will also learn about frameworks, like Rails, and various techniques used to support the programming process. In addition, you will learn languages you will need to create, modify, and process Web documents. Although we will learn how to read and write in these languages, our primary goal will be an understanding of how the design of these multi-paradigm dynamic languages support the process of developing Web applications. Prereq: CS 671.

**CS 775 - Database Systems**  
**Credits:** 4.00  
Introduction to database management systems --- design, implementation, and usage --- with focus on the relational model. Data description, manipulation, and query language in the context of MySQL. Schema design and normalization; indexes, transaction processing. Web access of databases (PHP); overview of XML and noSQL systems. No credit if credit earned for IT 775. Prereq: CS 515 and MATH 531.

**CS 780 - Topics**  
**Credits:** 1.00 to 4.00  
Material not normally covered in regular course offerings. May be repeated for credit.

**CS 791 - Senior Project I**  
**Credits:** 2.00  
The principal goal of CS 791 is to develop precise functional specifications for the senior projects as well as a complete software design specification. The course will review and expand upon design concepts presented in previous courses, including UML, and CRC approach, and design patterns. Students apply these concepts to the design of their own senior projects. A significant component of the design includes specifications of the testing methodology to be used. Prereq: CS 619. Computer Science and CS: Bioinformatics majors only.

**CS 792 - Senior Project II**  
**Credits:** 2.00  
Continuation of CS 791: Senior Project I. Students complete the project by implementing their design. Students work in teams. Successful completion of this course fulfills the Capstone Experience requirement for Computer Science majors. Prereq: CS 791.
Culinary Arts & Nutrition

**CAN 200 - Introductory Chemistry**  
**Credits:** 3.00  
Introduces chemical concepts and principles, including chemical symbols, conversion factors, chemical calculations, chemical and physical properties, and changes. Touches upon organic compounds—their structure, major reactions, and applications—followed by an elementary introduction to biomolecules and how they function in metabolism. Dietetic technician students only. 3 lec.

**CAN 401 - Food Preparation Fundamentals**  
**Credits:** 2.00 or 3.00  
Preparation techniques, knife skills, measurements, food handling, selection, and classification. CAN majors only. 2hr lec. Students in both Restaurant Management and Dietetic Technician concentrations must also complete a lab. Practical application of skills and techniques utilized in a professional kitchen. 2hr lab.

**CAN 402 - Quantity Food Practicum**  
**Credits:** 3.00  
Students utilize cooking principles and food preparation techniques learned in CAN 401 to produce foods in a quantity food setting. Elements of food sanitation and workplace safety in the operation of commercial cooking equipment are stressed. Students operate Stacey's Express, open to the public and participate in various positions such as production manager, cashier, production cooks, and utility workers. Students standardize, cost, and assign selling prices for all menu items prepared for Stacey's Express. Prereq: CAN 401. Culinary Arts & Nutrition majors only.

**CAN 403 - Culinary and Baking Skills**  
**Credits:** 4.00  
This course serves as the foundation course for students in the Culinary Arts concentration. Students practice and become proficient in all areas of food preparation required in the commercial kitchen. Topics include but are not limited to sanitation and safety, knife skills, butchering, stocks, sauces, soups, vegetables, breakfast cookery and entree preparation. Majors only. 1 hr lec/6 hr lab.  
**Co-requisites:** CAN 401

**CAN 404 - Baking and Pastry Fundamentals**  
**Credits:** 4.00  
Baking and Pastry Fundamentals is an introductory-level baking course exploring the science and art of small-scale and high-volume commercial production of classical and modern pastries and baked goods. Students will gain an understanding of basic ingredients, equipment and techniques used in the production and presentation of plated desserts, as well as the display and storage of pastries and baked goods. Special fee.  
**Co-requisites:** CAN 401

**CAN 407 - Hospitality Sanitation and Safety**  
**Credits:** 1.00  
This course covers the responsibilities of food service operators for food safety and sanitation. Students learn safe food production policies and procedures, how to implement HACCP standards, pest control, and crisis management, with an overall focus on learning to take a proactive approach to maintaining a safe food environment. Students sit for the National Restaurant ServSafe Exam.
CAN 410 - Introduction to the Dietetic Technician Profession  
Credits: 1.00  
This course provides an introduction to the dietetics profession with an emphasis on dietetic technician practice. Topics include educational requirements, credentialing, nutrition resources and professional development. Students participate in a health and wellness project.

CAN 422 - Cuisine and Culture  
Credits: 4.00  
Focuses on the history of people by examining cuisines and cultures from the African savanna to the kitchens of California. Students study various cultures from around the world and learn how the same foods demonstrate profound differences in attitudes to those foods, nature, and the environment. Using this approach, students understand how historical events have affected and defined culinary traditions in different societies around the world.

CAN 426 - Dining Room Practicum  
Credits: 3.00  
A front-of-the house supervised training experience with an emphasis on customer service and table service techniques in one of the TSAS restaurants. Students also take the Serve Safe Alcohol Examination and, upon successful completion of the exam, are awarded a certificate from the National Restaurant Association. Culinary Arts & Nutrition majors not allowed.

CAN 443 - Quantity Food Production and Display Cooking  
Credits: 4.00  
Students gain practical-based experiential learning in quantity food production working directly with chefs in the Holloway Commons (one of UNH's dining commons) facility. Students also prepare cooked-to-order menu items in front of customers while rotating through the eight culinary concepts at Holloway; including stir-fry, sushi, brick oven pizza, vegan, vegetarian and gluten free stations. 1 hr lec/6 hr lab.

CAN 506 - Food and Beverage Cost Control  
Credits: 4.00  
Course places emphasis on methods used to solve mathematical problems that relate to food service operations as they apply to controls. Topics: weights and measures, recipe conversion, menu pricing, purchasing, food costs, inventories, break-even analysis, and financial statements.

CAN 508 - Baking and Pastry Externship  
Credits: 5.00  
This externship introduces the student to the activities of the professional pastry kitchen as they relate to the overall operation of a licensed food service establishment. Students participate in a variety of activities including, but not limited to proper sanitation and safety practices, baking preparation and scaling methods, working with standardized formulas, proper receiving, storage and inventory techniques, effective utilization of leftovers, and active participation as a contributing member of a professional culinary team. Prereq: CAN 401, 403, 404, 405, and 504.  
Co-requisites: CAN 507

CAN 512 - Hospitality Human Resources Managment  
Credits: 3.00  
Designed to teach the first-line hospitality supervisor how to create a positive work climate to assist identifying and keeping employees who cook, serve and tend bar. Students learn and develop skills, attitudes and abilities needed to lead and manage in an industry with numerous demands. Course focuses on employee recruitment, training and development, performance evaluation, disciplinary action, and wage and fringe benefit administration. Through case studies, students practice planning, organizing, communicating effectively, delegating and decision-making. 2 lec.
CAN 525 - American and Regional Cuisine  
**Credits:** 5.00  
Students apply and enhance skills in advanced aspects of a la carte cooking. Course introduces students to foods available in the United States and prepare meals for service in 180 Blue restaurant. Students are also introduced to the art of pairing foods with fine wines for special events. Prereq: CAN 401, 407, 403, 443. Majors only. 1 hour lecture/6 hour lab.

CAN 528 - Culinary Nutrition  
**Credits:** 2.00  
The study of dietary needs from a culinary perspective. The focus is on basic nutrition and health with an emphasis on healthy menu and recipe development. Students research, evaluate, plan and prepare healthy menus and recipes using healthy cooking techniques. Course will culminate in students completing a healthy cooking demonstration. Pre- or Coreq: CAN 401, CAN 407. 1hr lec/2 hr lab.

CAN 535 - International Cuisine  
**Credits:** 5.00  
International Cuisine allows students to explore different cultures and cuisines of the world. Students study a different country or region each week and learn how history, geography, and main ingredients influence the different cuisines. Students prepare multi-course international menus one evening a week in the dining room at Cole Hall. Prereq: CAN 401, 404, 403, 443. Majors only. Pre-or Coreq: CAN 544, 525. 2 hr lec/6 hr lab. Culinary Arts & Nutrition majors only.

CAN 544 - Catering and Garde Manger  
**Credits:** 4.00  
Students apply skills and techniques learned in prior courses and enhance skills in advanced aspects of culinary preparation and management such as garde manger, buffet presentation, event booking, scheduling, and buffet staging. Advanced techniques of garde manger include production of canapes, savory pastries, charcuterie, farces, and sculptured centerpieces. Prereq: CAN 401, CAN 407, CAN 403, CAN 443. CAN Major Only. 2 hours lecture, 4 hours lab.

CAN 560 - Dietetics Practicum in the Community  
**Credits:** 3.00  
A supervised practice in programs and organizations that offer nutrition services to the community with a focus on federally/state funded programs with nutrition components, food insecurity, and health and wellness promotion. Students work with a variety of target groups throughout the life cycle. Prereq: CAN 401/407, NUTR 400/476. 90 hrs. supervised practice.

CAN 565 - Community Nutrition  
**Credits:** 3.00  
A study of community programs and agencies providing food and nutrition services to age groups throughout the life cycle. Emphasis is on community nutrition assessment, health promotion and disease prevention, life cycle nutrition, and the planning and delivery of nutrition education programs.

CAN 575 - Diet Therapy and Counseling  
**Credits:** 4.00  
This is the study of clinical nutrition-diet therapy and counseling strategies to manage various diseases. The class integrates case studies to allow the student practice in planning, calculating, and counseling of commonly modified diets for individuals with health problems. Prereq: CAN 200, NUTR 400/476, ZOOL 401. lecture/2 hour lab.

CAN 576 - Dietetics Practicum in Long Term Care
**Credits:** 1.00
A supervised practice that introduces the student to nutrition services in long term care facilities. Students participate in the nutrition care process and plan and execute a special function meal. Prereq: CAN 407, NUTR 476, CAN 575. 35 hr. supervised practice. Culinary Arts & Nutrition majors only.

**CAN 590 - Dietetics Practice in Acute Care**
**Credits:** 5.00
This supervised practice introduces the student to the clinical nutrition services of medical facilities. Students participate in diet office operations, the nutrition care process, and gain management experience as it relates to clinical services. Prereq: CAN 575, NUTR 400, NUTR 476. 250 hr. supervised practice. Culinary Arts & Nutrition majors only.

**CAN 591 - Independent Studies in Culinary Arts**
**Credits:** 1.00 to 4.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research.

**CAN 592 - Independent Studies in Restaurant Management**
**Credits:** 1.00 to 4.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Independent studies may include experiences in culinary, dining room, or marketing.

**CAN 593 - Studies in Dietetic Technology**
**Credits:** 3.00 to 6.00
A Dietetic Technician Practicum. Students gain hands-on experience in one of the following: A) Food Service Management; B) Clinical Nutrition; C) Community Nutrition. Prereq: permission of instructor and student's advisor.

**CAN 594 - Studies in Dietetic Technology**
**Credits:** 3.00 to 6.00
A Dietetic Technician Practicum. Students gain hands-on experience in one of the following: A) Food Service Management; B) Clinical Nutrition; C) Community Nutrition. Prereq: permission of instructor and student's advisor.

**CAN 595 - Prof Issues for Diet Techs**
**Credits:** 1.00
Review of the professional credentialing process, skills and practice for the registration exam for dietetic technicians, completion of a professional portfolio for continuing education in the field of dietetics. Cr/F. 1hr. Culinary Arts & Nutrition majors only.

**CAN 596 - Dietetic Technician Independent Study - Dietetic Technician Practicum**
**Credits:** 3.00 to 6.00
For Dietetic Technician students who need to take practica at alternate times. There are two practica in the Dietetic Technician major: CAN 290 Clinical Nutrition Practicum 7 cr.; and CAN 260 Community Nutrition Practicum 5 cr. May be repeated for a maximum of 13 credits. Prereq: permission.
CAN 597 - Culinary Arts Internship
Credits: 5.00
Supervised internship of a minimum of 255 hours at a pre-approved property which introduces students to the culinary activities of a licensed food service establishment. Students must be available to participate on weekends and will participate in a variety of on-site activities including proper sanitation, food preparation and handling, knife skills, and line cooking. Students are required to attend a weekly lecture and complete a semester portfolio of activities and assignments. Prereq: CAN 401, 404, 403, 443, 407. Culinary Arts & Nutrition majors only.

CAN 598 - Work Experience
Credits:
This course enables students to enhance basic cooking skills and techniques learned in the first year. Students obtain industry related employment over the summer generally between the first and second year of academic course work. Documentation of the work experience is required as well as a final written paper. Prereq: CAN 401, 404, 407, 214, 443. Majors only. Cr/F. Culinary Arts & Nutrition majors only.
Decision Sciences

**DS 444 - Meaning of Entrepreneurship**  
**Credits:** 4.00  
This course explores the idea and ideals of entrepreneurship, the creating of value through individual initiative, creativity and innovation. The idea of entrepreneurship is of significant relevance in the highly dynamic and competitive 21st century global economy. It is an idea that is important for students to understand and to critically consider and apply. Encourages the development of multiple views of entrepreneurship, and uses a broad, not just business, approach to the study as it engages students in the subject matter. Open to all majors. (Also offered as MGT 444.) Writing intensive.

**DS 562 - Business Applications Development**  
**Credits:** 4.00  
The course focuses on topics related to designing and using information technology in a business setting. Students gain knowledge and skills in application design, development, deployment, and management. A hands-on approach is used, providing students with opportunities to develop and refine their knowledge and skills. The course introduces software engineering concepts using movie metaphors, and students develop fun, socially-relevant three-dimensional animations. Students also gain experience with object oriented programming using the Java programming language. Prereq: ADMN 410.

**DS 598 - Topics in Decision Sciences**  
**Credits:** 4.00  
Special topics; may be repeated.

**DS 698 - Topics**  
**Credits:** 1.00 to 4.00  
Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission.

**DS 741 - Private Equity/Venture Capital**  
**Credits:** 4.00  
This course will notably increase knowledge and understanding of the private equity financing market, develop analytical skills in evaluating private equity financing details, learn from the experience of market practitioners, and enhance oral and written presentation skills. Prereq: ADMN 570 and senior standing.

**DS 742 - Internship in Entrepreneurial and Management Practice**  
**Credits:** 4.00  
Involves working for leading companies and dynamic entrepreneurs, as well as classroom instruction. The priority experiential, real-world, and real-time learning in the high-growth environment of entrepreneurial ventures. Focus on several topic areas, including venture capital. Prereq: senior standing; permission.

**DS 766 - Business Analytics and Spreadsheet Modeling**  
**Credits:** 4.00  
The course focuses primarily on Descriptive and Prescriptive Analytics. Students gain modeling and analysis skills necessary to address a wide variety of business problems. Topics covered include general modeling and analysis principles, principles and practices of good spreadsheet model design, optimization, simulation, decision analysis, and Visual Basic for Applications. Students develop a decision support tool for a real-world problem. Prereq: ADMN 410, ADMN 420.

**DS 768 - Forecasting Analytics**
Credits: 4.00
The course focuses on Predictive Analytics. Businesses and organizations need to be able to forecast effectively in order to make decisions. Students learn the background necessary to develop forecasts for real-world business situations. An applied, hands-on approach is used in the course. Students learn and use SAS to analyze data and fit models. Topics include regression analysis in forecasting, model building, residual checking, analysis of seasonal and cyclical trends, and times series models. Prereq: ADMN 420.

DS 773 - Database Management and Systems Analysis
Credits: 4.00
Provides students with the skills necessary to understand the database environment of the firm and a background to develop moderately complex, stand-alone databases. Gives the foundation to study database development in multiuser, client/server environments. Prereq: ADMN 410 and junior standing.

DS 774 - E-Business
Credits: 4.00
Covers the concepts, tools, and strategies for understanding the challenges and exploiting the opportunities associated with e-commerce/e-business. Provides an understanding of the technology platform and its components. Additional material covers various models of e-commerce/e-business and its impacts on the firm's performance. Prereq: ADMN 410 and junior standing. DS 562 or CS 405 is strongly recommended.

DS 775 - Corporate Project Experience
Credits: 4.00
Provides real-life experience in organizations. Work in groups on information systems and/or projects identified by sponsoring organizations. Integrate concepts and skills learned in prior business and technology courses. Learn project management concepts, work with project management tools, and use presentation techniques. Prereq: senior standing, DS 773, two additional Information Systems & Business Analytics Option courses.

DS 798 - Topics
Credits: 4.00
Special topics; may be repeated.
Earth Sciences

ESCI 400 - Freshman Field Seminar
Credits: 1.00
A field introduction for new or prospective majors to New Hampshire's mountains, rivers, estuaries, and beaches. Field excursions (approximately five) are scheduled on Friday afternoons. Special fee. Cr/F.

ESCI 401 - Dynamic Earth
Credits: 4.00
In this course we study the minerals, rocks and fluids which make up the Earth; the landforms on the surface of the Earth such as mountains, flood plains and straovolcanoes; and processes such volcanism, earthquakes, erosion and glaciation that create and alter them. The rock cycle and plate tectonics are used to integrate activity at the surface of the Earth with processes in the Earth's interior. Campus field exercises. Special fee. Lab. Students may not receive credit for both ESCI 401 and ESCI 409.

ESCI 402 - Earth History
Credits: 4.00
Course provides knowledge and skills necessary to interpret, understand, and appreciate the Earth's 4.6 billion-year history. The first third of the course introduces basic principles, including geological materials, plate tectonics, geological time, fossil preservation, and biological evolution. The remainder of the course tells the story of Earth history through case studies that illustrate scientific methods used to reconstruct critical events in our planet's evolution through time. Topics include the origin of the Earth, the Cambrian explosion of life, building of the Appalachians, assembly of Pangaea, the rise and fall of dinosaurs, the formation of the Rocky Mountains, mammalian evolution, human origins, and Pleistocene glaciation. Students gain experience in making geological observations through laboratory exercises and during one afternoon field trip. Special fee. Lab.

ESCI 405 - Global Environmental Change
Credits: 4.00
Human activity rivals nature as an agent of change in the global environment. Explores evidence of environmental degradation in Earth's crust, hydrosphere, and atmosphere; considers prospects for future sustainable human health, diversity, and economic development. Problem solving through critical analysis of environmental variables. Special fee.

ESCI 409 - Geology and the Environment
Credits: 4.00
Environmental impact of geologic processes; natural hazards, landslides, earthquakes, volcanoes, flooding, erosion, and sedimentation; land exploitation and site investigations; environmental considerations of water-supply problems; the recovery of energy and mineral resources. Special fee. Lab. Students may not receive credit for both ESCI 401 and ESCI 409.

ESCI 410 - Earth Hazards
Credits: 4.00
Introductory-level physical science course concerning earth processes that impact humanity, with natural disasters as the focus. Topics include the causes and effects of earthquakes, tsunamis, volcanic eruptions, floods, and landslides. The course covers basic concepts of physical geology using hands-on-activities, small-group discussions, and in-class demonstrations and is intended for students with little or no previous experience in earth sciences. No prerequisites. Special fee.
ESCI 420 - Our Solar System  
Credits: 4.00  
Course focuses on the nature and formation of our solar system and the planets associated bodies it contains, with emphasis on the physical and chemical processes significant in the system's origin and evolutionary history. Our approach provides the basis for understanding key differences between the Earth-like terrestrial planets and those farther out in the solar system (the gas giants). We also explore recent discoveries on Mars and moons of the gas giant planets and their implications for the search for life elsewhere in our solar system. Special fee.

ESCI 444 - Water - How Much is Enough?  
Credits: 4.00  
The natural distribution of water is not adequate to sustain modern civilization. As water mining and redistribution projects continue to grow in number and size, so do the concomitant stresses on the environment. Through a detailed look at the unique properties of water and the processes that drive the earth's hydrologic cycle; this course will explore the concepts of water stress, water scarcity, and safe yield.

ESCI 444A - Philosophy of Earth Science  
Credits: 4.00  
Course provides an introduction to the discipline of Philosophy of Science, but from an Earth Science perspective. Considers various philosophical perspectives on the nature of science and scientific progress, drawing from works by thinkers such as Aristotle, Popper, Kuhn and Lakatos. Particular attention is given to the following questions: What is scientific knowledge? Is the acquisition of scientific knowledge a rational process? And, what makes some scientific discoveries "revolutionary"? These questions are considered using examples from the history of scientific progress in the Earth Sciences, focusing on groundbreaking discoveries such as the age of the earth, the evolution of organisms as observed in the fossil record, seafloor spreading, and modern-day global warming.

ESCI 451 - Earth in Film  
Credits: 4.00  
Introductory-level focusing on interactions between Earth system and its inhabitants, with special emphasis on understanding societal implications of Earth system processes. Topics include Earth's interior processes, volcanism, earthquakes, climate change, storms, tornadoes, and biological change. Students are expected to learn about Earth system processes and critique cinematic portrayal of such processes. Taken together this approach affords building a foundation in the natural sciences and provides insights into societal portrayal of scientific ideas.

ESCI 501 - Introduction to Oceanography  
Credits: 4.00  
Introduces students to the four oceanographic disciplines: the geology of the ocean basins, including the creation of oceans and continents. The physics of the seas, including the origin of the ocean currents and their effect on the Earth's climate. The chemistry of the ocean waters, including how the distribution of elements reflects circulation and biology. The life in the ocean, including animals, plants and microbes, and humanity's influence on them. Special fee. Lab.

ESCI 502 - Beaches and Coasts  
Credits: 4.00  
Introductory-level physical science course on ocean, air, and landform dynamics affecting beaches and coasts, with considerations of natural processes associated with waves and currents, wind and rain, sediments and rocks, and ecology. Emphasis is placed on impacts on ecosystem and human health, the economics of coastal industry, and consequences of pollution and engineering practices. Topics are approached via real world examples, small-group discussions, and field trips to local sites. No prerequisites. Recitation. Special fee.
ESCI 512 - Principles of Mineralogy  
**Credits:** 4.00  
Minerals record variations in chemistry, pressure, temperature, and time in the Earth. This course emphasizes minerals and mineral assemblages in rocks, sediments and soils; their identification, symmetry, chemistry, equilibria, and physical properties. Introduction to x-ray diffraction and optical techniques. Prereq: CHEM 403 or 405. Special fee for field trips. Lab.

ESCI 514 - Introduction to Climate  
**Credits:** 3.00  
The climate as a system controlled by the fluid, chemical, geological, and biological dynamics of the earth. Investigation of natural and man-made climate change over the period of 100 to 100 million years, including the greenhouse effects, tectonic climate forcing, astronomic (Milankovich) cycles, deep ocean circulation, and biological feedback. How past climate is measured. Prereq: one introductory course in Earth Sciences or permission.

ESCI 530 - Geological Field Methods  
**Credits:** 4.00  
An introduction to basic geologic field mapping of bedrock and surficial materials using pace and compass, surveying and GPS techniques. Observational data plotted on topographic maps and/or aerial photographs, accompanied with stratigraphic measurements and sampling sites where appropriate, provide the basis for interpretative maps, cross sections and written reports and a field context for more advanced Earth sciences course work and independent research. One weekend field trip to western or northern New England. Prereq: ESCI 401 or 409, 402. Special fee. Writing intensive.

ESCI 534 - Techniques in Environmental Sciences  
**Credits:** 3.00  
Elementary mapping and monitoring methods. Map interpretation, preparation of maps; survey techniques including pace and compass, leveling, and global positioning systems; environmental monitoring. Field lab. Cannot receive credit if taken after receiving credit for ESCI 530 or NR 542. Special fee.

ESCI 561 - Landscape Evolution  
**Credits:** 4.00  
Course focuses on the processes that shape the Earth's surface. Lectures discuss the development of landscapes in a wide variety of climatic and geologic settings, with an emphasis on understanding the process mechanics that create landforms and surficial deposits. Labs involve topographic map interpretation, geomorphic data analysis, and short field exercises. Course incorporates one weekend field trip that explores the landscapes of Cape Cod. Students also gain practical experience in geomorphic research by teaming up and completing a required lab- or field-based project. Prereq: ESCI 401, 402, or permission. Lab. Special fee.

ESCI 595 - Introductory Investigations  
**Credits:** 1.00 to 4.00  
Special topics by means of lectures, conferences, assigned readings, and/or field or laboratory work in the areas of geology, hydrology, or oceanography. May be repeated up to a maximum of 8 credits.

ESCI 596 - Introductory Investigations  
**Credits:** 1.00 to 4.00  
Special topics by means of lectures, conferences, assigned readings, and/or field or laboratory work in the areas of geology, hydrology, or oceanography. May be repeated up to a maximum of 8 credits.

ESCI 614 - Introduction to Petrology
ESCI 631 - Structural Geology
Credits: 4.00
Structural units of the Earth's crust and mechanics of their formation. Prereq: ESCI 530. Special fee. Lab and fieldwork.

ESCI 652 - Paleontology
Credits: 4.00
Use of the fossil record to address current problems in Earth history, paleoecology, and evolutionary biology. Examples are drawn from both vertebrates and invertebrates. Lab combines analytical paleontological methods with a systematic survey of important fossil groups. Prereq: ESCI 402 or permission. Special fee. Lab.

ESCI 654 - Fate and Transport in the Environment
Credits: 4.00
An introduction to the basic processes controlling the migration and transformation of chemicals in surface water, groundwater, and the atmosphere, including advection, diffusion, dispersion, retardation, and chemical reaction. Extensive practice with quantitative problem solving in the environmental sciences, including constructing and using box models. Prereq: CHEM 404 or 405, MATH 425 or 424B.

ESCI 701 - Quantitative Methods in Earth Sciences
Credits: 4.00
Introduces quantitative tools necessary for upper level Earth Science courses. Includes basic statistical descriptions of spatially and temporally varying data, curve fitting, and time-series analysis with emphasis on atmospheric, oceanic and terrestrial data sets. Students learn to construct simple numerical models of Earth Systems. Instruction in data and analysis and modeling in Matlab. Prereq: MATH 426, and ESCI 401, 402 or 501; or permission.

ESCI 705 - Principles of Hydrology
Credits: 4.00
Basic physical principles important in the land phase of the hydrologic cycle, including precipitation, snowmelt, infiltration and soil physics, evapotranspiration, and surface and subsurface flow to streams. Problems of measurement and aspects of statistical treatment of hydrologic data. Field trips. Prereq: ESCI 654. Special fee. Lab. Writing intensive.

ESCI 710 - Groundwater Hydrology
Credits: 4.00
Principles for fluid flow in porous media with emphasis on occurrence, location, and development of groundwater but with consideration of groundwater as a transporting medium. Major topics include well hydraulics, regional groundwater flow, exploration techniques, and groundwater modeling. Laboratory exercises involve use of fluid, electrical, and digital computer models to illustrate key concepts. Prereq: ESCI 654. Special fee. Lab.

ESCI 726 - Igneous and Metamorphic Petrology
Credits: 4.00
This course focuses on the origin and evolution of igneous and metamorphic rocks from field, petrographic, mineral chemistry, experimental, and theoretical studies. Igneous systems include volcanic and plutonic suites, with emphasis on mineralogic records of magma chamber systematics. Metamorphic systems include pelitic, mafic, and calc silicate rocks, with special emphasis on closed- and open-system reactions,

ESCI 731 - Geodynamics
Credits: 4.00
Application of quantitative methods to geologically motivated problems, focusing on lithospheric deformation, topography, and fluid flow. Students acquire geophysical and geochemical techniques used to address dynamics in the Earth system. Includes biweekly recitation sessions for working through problem sets and facilitating discussions of relevant papers from the literature. Prereq: CHEM 404 or ESCI 512 and ESCI 658 or permission.

ESCI 734 - Geophysics
Credits: 4.00
The structure of the solid Earth, including the continental and oceanic lithosphere and the deep interior as revealed by investigations of seismic waves, the Earth's gravitational and magnetic fields, heat flow, and earthquakes. Prereq: ESCI 401; one year of calculus; one year of college physics; ESCI 658; or permission. Special fee. Lab.

ESCI 735 - Earthquakes and Faulting
Credits: 4.00
This course provides an introduction to the principles of brittle faulting and earthquake mechanics. We discuss classic theory and current topics in earthquake science based on observations from laboratory experiments, seismology, geodesy, and geology. Prereq: MATH 425 and MATH 426, PHYS 407, and ESCI 631 or permission. Writing intensive.

ESCI 741 - Geochemistry
Credits: 4.00
Course focuses on the application of chemical principles to solve problems in the Earth sciences. Students learn the chemical tools of thermodynamics and kinetics, element partitioning, conservation of mass, and isotope geochemistry. Explore geochemical properties/processes in the deep Earth and the Earth surface, atmosphere and marine systems, and cosmo-chemistry and investigate the interactions between these components of the Earth system. Prereq: MATH 426; CHEM 404 or permission. Lab. Writing intensive.

ESCI 745 - Isotope Geochemistry
Credits: 4.00
Course focuses on the application of radiogenic, radioactive and stable isotopes to improve students' knowledge about the processes and timescales relevant to the formation of the planet and solar system, the evolution of the Earth system and interactions in the hydrosphere and biosphere. Topics include geochronology, tracer applications, Earth surface applications, as well as applications in the hydrosphere and biosphere. Systems discussed include the classic radiogenic systems (K-Ar, Rb-Sr, Sm-Nd, Lu-Hf and U-Th-Pb), traditional (H, C, N, O) as well as nontraditional (e.g., Mg, Ca, Fe) stable isotope systems, and radioactive isotopes (e.g., radiocarbon). Course consists of lecture, where students are exposed to these applications, and a lab section to work through any questions on the homework assignments, discuss relevant papers from the literature, and carry out a project. Prereq: MATH 426, CHEM 404. Special fee. Lab.

ESCI 747 - Aqueous Geochemistry
Credits: 4.00
The chemical processes that determine the composition of aquatic systems such as rivers, lakes, groundwater and the ocean. The goal is to quantitatively understand the behavior of inorganic species such as carbon dioxide, nutrients, trace metals and inorganic pollutants in natural waters. Topics include, acid-based equilibria, carbonate chemistry, reduction-oxidation reactions, organic complexation and mineral
ESCI 750 - Biological Oceanography  
**Credits:** 4.00  
Biological processes of the oceans, including primary and secondary production, trophodynamics, plankton diversity, zooplankton ecology, ecosystems and global ocean dynamics. Field trips on R/V Gulf Challenger and to the Jackson Estuarine Laboratory. Prereq: one year of biology or permission of the instructor. (Also offered as ZOOL 750.) Special fee. Lab. (Not offered every year.)

ESCI 752 - Chemical Oceanography  
**Credits:** 3.00  
This course investigates the physical and biogeochemical processes that determine the composition of seawater. Topics include biological effects on chemistry, ocean nutrient cycles, air-sea gas exchange, radiogenic and stable isotopes as tracers of ocean processes, sediment and trace-metal chemistry. Prereq: MATH 426 and CHEM 404.

ESCI 754 - Sedimentology  
**Credits:** 4.00  
This course focuses on modern sedimentary processes and ancient sedimentary records through the examination, identification, and interpretation of sediments and sedimentary rocks. Topics such as sediment transport mechanisms, depositional environments, and time in sedimentary records will provide a strong framework for any student studying Earth processes and sedimentary systems. Prereq: ESCI 401 or 402 or 501, and 512; or permission. Special fee. Lab and field trips.

ESCI 756 - Geotectonics  
**Credits:** 3.00  
The geological record of plate tectonics past and present. The first part of the course focuses on modern tectonic settings with an emphasis on plate geometries, geodynamical processes, and sedimentary products. The second part of the course focuses on reconstructing ancient tectonic settings with an emphasis on methodology (paleomagnetism, basin analysis, provenance) and case studies (e.g. India-Asia collision). Field trip. Prereq: ESCI 614 or ESCI 631 or permission. Special fee. Writing intensive.

ESCI 758 - Introductory Physical Oceanography  
**Credits:** 3.00  
Descriptive treatment of atmosphere-ocean interaction; general wind-driven and thermo-haline ocean circulation; waves and tides; continental shelf and near-shore processes; instrumentation and methods used in ocean research. Simplified conceptual models demonstrate the important principles. Prereq: PHYS 407; ESCI 501; or permission.

ESCI 759 - Geological Oceanography  
**Credits:** 4.00  
Major geological features and processes of the ocean floor; geological and geophysical methods; composition of the earth, sedimentary processes, plate tectonics and paleoceanography. Prereq: Senior standing in Earth Science major or permission. Writing intensive.

ESCI 762 - Glacial Geology  
**Credits:** 4.00  
Course provides a survey of glacier dynamics and processes, with an emphasis on understanding the origin and significance of glacial deposits and landforms. The first half of the course examines the physics of glaciers, and the second half focuses on glacial geologic processes. Lectures discuss glaciers and ice sheets as key agents of large-scale geomorphic change, as well as their central role in the Earth's past and
present climate system. Labs involve analysis of glaciological data, glacial-geologic map interpretation, and short field exercises. Course incorporates one mandatory weekend field trip that explores the glacial landscapes of New England. Prereq: ESCI 561 or permission. Special fee. Lab. Writing intensive.

**ESCI #764 - Data Analysis in Earth System Science**

**Credits:** 4.00

Analytical and numerical methods used to understand geospatial and time series data sets encountered in Earth system science research. Students develop skills in data analysis, primarily through writing and modifying their own computer programs, focused on particular aspects of real data sets. Understanding various data types, formats, and projections, and how to handle them, are also covered. Prereq: one year calculus, one year chemistry, basic statistics;/or permission. Special fee.

**ESCI 765 - Paleoclimatology**

**Credits:** 3.00

Course reviews the study of past changes in the Earth's climate system. Main discussion topics include astronomical theories of ice ages, Quaternary dating methods, Antarctic and Greenland ice core records, greenhouse gases, marine-based climate proxies, glacial mega-floods, and linkages between ocean circulation and abrupt climate change. Emphasis on climate variability during the Quaternary period (the last approximately 1.8 million years), a time interval dominated by cycles of global glaciation. Lectures include discussion of recent and emerging scientific papers in order to keep pace with the latest findings in paleoclimatic research. Writing intensive.

**ESCI 766 - Volcanology**

**Credits:** 4.00

Provides a comprehensive overview of volcanic processes and their influences on planetary evolution and modern-day Earth systems. Lectures discuss the generation and properties of magma, tectonic setting of volcanism, eruption styles, volcanic landforms and products, monitoring of active volcanoes, volcanic hazards, and volcanism on other planets. Laboratory topics include modeling volcanic processes, hand-sample observation, topographic map interpretation, volcanographical data analysis, and two afternoon field trips. As volcanology is a rapidly developing field of active research, the course incorporates discussions of recent and emerging scientific papers from the literature and student-led updates of ongoing volcanic activity. Prereq: one year of calculus and one ESCI course or permission. Special fee. Lab.

**ESCI 771 - Geodesy and Positioning for Ocean Mapping**

**Credits:** 4.00

The science and technology of acquiring, managing, and displaying geographically-referenced information; the size and shape of the earth, datums and projections; determination of precise positioning of points on the earth and the sea, including classical terrestrial-based methods and satellite-based methods; shoreline mapping, nautical charting and electronic charts. Prereq: MATH 426, PHYS 408. (Also listed as OE 771.)

**ESCI 795 - Topics**

**Credits:** 1.00 to 4.00

Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; earth systems. Also, senior synthesis and earth science teaching methods. May be repeated a maximum of 3 times for no more than four credits.

**ESCI 796 - Topics**

**Credits:** 1.00 to 4.00
Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; earth systems. Also, senior synthesis and earth science teaching methods. Special fee on some topics.

**ESCI 797 - Colloquium**
**Credits:**
Presentation of recent research in the earth sciences by guest speakers and department faculty. May be taken four times. Cr/F.

**ESCI 799 - Senior Thesis**
**Credits:** 1.00 to 4.00
Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in an oral presentation and a written thesis. Research projects should include the development of a research question; collection analysis, and synthesis of data; and interpretation and presentation of results. A copy of the written thesis must be submitted to the Chair of the Department of Earth Sciences prior to graduation. A total of 4 credits is required and may be completed over multiple semesters. Writing intensive.
Ecogastronomy

ECOG 401 - Introduction to Ecogastronomy
Credits: 4.00
This interdisciplinary course introduces students to the principles and practices of EcoGastronomy. It provides students with a foundation for understanding the connections among food production, ecology, ethics, cuisine, nutrition and health within the framework of sustainability. The course includes guest lectures, class discussion, film reviews, activities, and food tastings.

ECOG 685 - EcoGastronomy Study Abroad
Credits: 20.00
Open to students studying abroad in the discipline as approved by the EcoGastronomy program director and the student's college dean. Special fee. Cr/F.
Co-requisites: INCO 588

ECOG 695 - Independent Analysis
Credits: 1.00 to 4.00
Study and research project for students to advance knowledge in EcoGastronomy fields. Course may be repeated up to a maximum of 8 credits. Prereq: At least Junior standing and permission.

ECOG 696 - Supervised Student Teaching Experience
Credits: 4.00
Participants are expected to perform such functions as attending classes, leading discussion groups, assisting faculty, presenting information in undergraduate courses that they have successfully completed, holding office hours, grading papers and exams. Enrollment is limited to juniors and seniors who have had above average GPAs. Prereq: permission of instructor, program director, director of advising and ECOG 401.

ECOG 698 - Topics
Credits: 1.00 to 4.00
Special topics and developments in EcoGastronomy. Prereq: junior standing and permission. Course may be repeated when topics change up to a maximum of 8 credits.

ECOG 701 - EcoGastronomy Capstone
Credits: 2.00 to 4.00
This is a one to two-semester course in which students will synthesize their EcoGastronomy experience with their undergraduate education, including their primary major, and will explore an integrated outlook on their professional future. Filed trips, guest lecturers, experimental activities, and related readings and research will provide the foundation for the completion of a portfolio. A research paper is presented at the Undergraduate Research Conference in the spring. Prereq: ECOG 401 & Study Abroad. Writing intensive.
ECN 410 - History of Literary Economics
Credits: 4.00
An examination of the contributions of fiction writers to the history of economic thought. Novels and short stories are analyzed in conjunction with studying influential and heterodox schools of economic thought. Fiction writers will vary by semester (e.g., Mark Twain, Edith Wharton, Charlotte Perkins Gilman, Theodore Dreiser, Jack London, Ayn Rand, F. Scott Fitzgerald and Louisa May Alcott). Schools of economic thought examined include critics as well as advocates of free market capitalism. Writing intensive.

ECN 411 - Introduction to Macroeconomic Principles
Credits: 4.00
Studies how an economy functions. Develops measures and theories of economic performance to study such issues as unemployment, inflation, international trade and finance, and the level of national production. Examines government policies designed to correct for unemployment and inflation with close attention to the use of fiscal and monetary policies in the U.S. No credit for students who have received credit for ECON 401.

ECN 411W - Introduction to Macroeconomic Principles
Credits: 4.00
Studies how an economy functions. Develops measures and theories of economic performance to study such issues as unemployment, inflation, international trade and finance, and the level of national production. Examines government policies designed to correct for unemployment and inflation with close attention to the use of fiscal and monetary policies in the U.S. No credit for students who have received credit for ECON 401. Writing Intensive.

ECN 412 - Introduction to Microeconomic Principles
Credits: 4.00
Studies the behavior and interaction of fundamental decision-making units in an economy, especially consumers and business firms. Applies such economic principles as scarcity, supply and demand, and elasticity to a variety of social issues. Topics include the resource allocation problems of households and business firms, economic theories of social problems (such as crime, divorce, and discrimination), and the economic implications of government policies affecting the environment, the workplace, and industrial organization. No credit for students who have received credit for ECON 402.

ECN 412W - Introduction to Microeconomic Principles
Credits: 4.00
Studies the behavior and interaction of fundamental decision-making units in an economy, especially consumers and business firms. Applies such economic principles as scarcity, supply and demand, and elasticity to a variety of social issues. Topics include the resource allocation problems of households and business firms, economic theories of social problems (such as crime, divorce, and discrimination), and the economic implications of government policies affecting the environment, the workplace, and industrial organization. No credit for students who have received credit for ECON 402. Writing Intensive.

ECN 635 - Money, Banking and Macroeconomic Activity
Credits: 4.00
A study of the financial sector of the economy including commercial banks, thrifts, and other depository institutions. Examines the meaning and determinants of the money supply, credit and interest rates. Close attention paid to the role of the Federal Reserve and the economic effects of its monetary policy. Prereq:
ECN 411, ECN 412.

ECN 640 - Business Law and Economics
Credits: 4.00
A study of the legal environment of business. Emphasis is on using economic analysis to examine laws of property, contract, and tort affecting business. Includes the ethical foundations of law and ethical issues involving business. Specific topics may include commercial free speech, white collar crime and managerial responsibility, product liability, cyberlaw, copyright, trademark and patent law. Prereq: ADM 400, ECN 412, and sophomore standing or permission of the instructor. Writing intensive.

ECN 650 - Economics for Managers
Credits: 4.00
Examines how economic principles can be applied to resource allocation problems confronted by managers in a variety of industry settings. Emphasis on both theory and application. Topics include cost analysis, production decisions, and pricing policies of business managers within perfectly competitive, monopolistic, oligopolistic, and monopolistically competitive environments. Prereq: ADM 400, ECN 412 and sophomore standing or permission of instructor.
Economics

ECON 401 - Principles of Economics (Macro)
Credits: 4.00
Basic functions of the United States economy viewed as a whole; policies designed to affect its performance. Economic scarcity, supply and demand, the causes of unemployment and inflation, the nature of money and monetary policy, the impact of government taxation and spending, the federal debt, and international money matters. ECON 401A emphasizes applications to the international economy. ECON 401H is open to students in the Honors Program. No credit for students who have received credit for ECON 401A, ECON 401H, ECN 411, or equivalent.

ECON 401A - Principles of Economics (Macro) International
Credits: 4.00
Basic functions of the United States economy viewed as a whole; policies designed to affect its performance. Economic scarcity, supply and demand, the causes of unemployment and inflation, the nature of money and monetary policy, the impact of government taxation and spending, the federal debt, and international money matters. ECON 401A emphasizes applications to the international economy. ECON 401H is open to students in the Honors Program. No credit for students who have received credit for ECON 401, ECON 401A, ECN 411, or equivalent.

ECON 401H - Honors/Principles of Economics (Macro)
Credits: 4.00
Basic functions of the United States economy viewed as a whole; policies designed to affect its performance. Economic scarcity, supply and demand, the causes of unemployment and inflation, the nature of money and monetary policy, the impact of government taxation and spending, the federal debt, and international money matters. ECON 401A emphasizes applications to the international economy. ECON 401H is open to students in the Honors Program. No credit for students who have received credit for ECON 401, ECON 401A, ECN 411, or equivalent.

ECON 402 - Principles of Economics (Micro)
Credits: 4.00
Functions of component units of the economy and their interrelations. Units of analysis are the individual consumer, the firm, and the industry. Theory of consumer demand and elasticity, supply and costs of production, theory of the firm under conditions of perfect and imperfect competition, demand for and allocation of economic resources, general equilibrium, and basic principles and institutions of international trade. ECON 402A emphasizes applications to the international economy. ECON 402H is open to students in the Honors Program. No credit for students who have received credit for ECON 402A, ECON 402H, EREC 411, ECN 412, or equivalent.

ECON 402A - Principles of Economics (Micro) International
Credits: 4.00
Functions of component units of the economy and their interrelations. Units of analysis are the individual consumer, the firm, and the industry. Theory of consumer demand and elasticity, supply and costs of production, theory of the firm under conditions of perfect and imperfect competition, demand for and allocation of economic resources, general equilibrium, and basic principles and institutions of international trade. ECON 402A emphasizes applications to the international economy. ECON 402H is open to students in the Honors Program. No credit for students who have received credit for ECON 402, ECON 402H, EREC 411, ECN 412, or equivalent.
ECON 402H - Honors/Principles of Economics (Micro)
Credits: 4.00
Functions of component units of the economy and their interrelations. Units of analysis are the individual consumer, the firm, and the industry. Theory of consumer demand and elasticity, supply and costs of production, theory of the firm under conditions of perfect and imperfect competition, demand for and allocation of economic resources, general equilibrium, and basic principles and institutions of international trade. ECON 402A emphasizes applications to the international economy. ECON 402H is open to students in the Honors Program. Writing intensive. No credit for students who have received credit for ECON 402, ECON 402A, EREC 411, ECN 412, or equivalent.

ECON 501 - Business and Economic History
Credits: 4.00
This course studies the historical influence of business enterprises on the development of capitalist economies, with an emphasis on the United States. Topics include the rise of manufacturing, development of financial institutions and markets, innovation and new markets, the role of the entrepreneur, and the impact of government policy on business development. Because this is an Inquiry course, each student will pursue a major research project. Does not satisfy Economics Major requirements. DISC: HP and INQ.

ECON 551 - Careers in Economics - Seminar
Credits: 2.00
This career seminar is designed to provide economics majors with an opportunity to learn more about potential careers in the field. Students take a number of self-assessments and are exposed to the full depth of career opportunities. Prereq: ECON 401, ECON 402. Does not satisfy Economics Major requirements. Economics majors only. Cr/F.

ECON 552 - Careers in Economics - Field Experience
Credits: 2.00
This career seminar is the second course in the ECON 551/552 sequence. It is designed to give students an opportunity to observe real work environments and then share those experiences with other students enrolled in the course. Does not satisfy Economics Major requirements. Economics majors only. Prereq: ECON 401, ECON 402, ECON 551.

ECON 605 - Intermediate Microeconomic Analysis
Credits: 4.00

ECON 605W - Intermediate Microeconomic Analysis
Credits: 4.00

ECON 611 - Intermediate Macroeconomic Analysis
Credits: 4.00
Macroeconomic measurement, theory, and public policy determination. Prereq: ECON 401 and 402.

ECON 625 - Economic History of the United States
Credits: 4.00
This course studies the development of the U.S. economy from colonial times to the 21st century. The role that institutions, innovations and government policy play in economic development is a central theme of the course. Western settlement, slavery and abolition, the rise of manufacturing and the corporate business,
emergence of affluence and consumer society, and the Great Depression are some of the topics addressed. Prereq: ECON 401 or 402;/or permission.

**ECON 635 - Money and Banking**  
**Credits:** 4.00  
Study of how the financial sectors of globally interconnected economies impact real economic activity. It includes interrelationships of interest rates, exchange rates, expectations, financial markets, financial institutions, central banks, systemic crises, the supply and demand for money and other financial instruments, and an introduction to monetary theory, policy and regulation. Prereq: ECON 401 and ECON 402.

**ECON 642 - Health Economics**  
**Credits:** 4.00  
Theoretical and empirical analysis of the U.S. health care delivery sector. While topics evolve from year-to-year, in recent years they included errors policy makers have made because they didn't understand basic demand and supply analyses, cost-effectiveness analyses of new medical technologies, overlooked causes of rising health care expenditures, and explanations of our highest -in-the-world prescription drug prices. Prereq: ECON 402. (Also listed as HMP 642).

**ECON 645 - International Economics**  
**Credits:** 4.00  
Covers both international trade theory and open-economy macroeconomics. Some of the major issues include whether free trade is always preferred to restricted trade, the controversy over industrial policy and how best to structure the international financial system. Students gain an understanding of topics including currency exchange rate movements, and trade policy, among others. Prereq: ECON 401 and 402.

**ECON 651 - Governmental Regulation of Business**  
**Credits:** 4.00  
Mergers, competition, monopoly, and the regulated industries. Prereq: ECON 402.

**ECON 653 - Law and Economics**  
**Credits:** 4.00  
Introduces the field of Law and Economics. Focuses on the legal system and the economic consequences of property, contract, tort, criminal law and mediation. Prereq: ECON 402. Writing intensive.

**ECON 655 - Innovation in the Global Economy**  
**Credits:** 4.00  
This course will provide students with a survey of economic models in international trade, applied to innovation-related issues. The course is divided into three sections. In the first one, we look at the role that industry, universites, and the government play in the national innovation system. In the second part, we look at innovation from an international perspective. In particular, we delve into the relationship between globalization and innovation. Finally, we analyze the role of externalities in the knowledge economy and particularly network effects in the diffusion of new technologies. Prereq: ECON 401 and ECON 402.

**ECON 656 - Labor Economics**  
**Credits:** 4.00  
Functioning of labor markets from theoretical and policy perspectives. Labor demand and supply, wages and employment. Welfare programs, human capital, discrimination in the labor market, unions, wage differentials. Prereq: ECON 401; ECON 402; ECON 605 recommended.

**ECON 668 - Economic Development**  
**Credits:** 4.00
An exploration of the theorizing (ways of seeing) and resulting policies (ways of doing) in Third World development. How the 'West' constructed the 'Rest'. Theories of development and underdevelopment. Development as industrialization with its urban bias. A planet of slums? The ambivalent effects of technological change in the Third World. An examination of agriculture (famines, green revolution, case study of opium cultivation in Afghanistan). International institutions' versus NGO's approaches to development. Grassroots development, participation and post-development. Prereq: ECON 401; ECON 402; or permission. Writing intensive.

**ECON 669 - Women and Economic Development**

**Credits:** 4.00

Examines the position, roles, and contributions of women in economic development as interpreted through different discourses (feminisms, modernity, post modernity) and in theoretical conceptualizations (neoclassical integrationist, liberal feminism, class and gender, feminist ecology). Applied analyses on Africa, South Asia and Latin America. Writing intensive.

**ECON 685 - Study Abroad**

**Credits:** 1.00 to 16.00

Open to students studying abroad in the discipline as approved by the economics program director. Cr/F.

**ECON 686 - Study Abroad**

**Credits:** 1.00 to 16.00

Open to students studying abroad in the discipline as approved by the economics program director. Cr/F.

**ECON 695 - Independent Study**

**CEUs:** 1.00 to 4.00

Individual research projects that are student designed. Initial sponsorship of an economics faculty member must be obtained followed by approval of PAUL advisor and dean.'s office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors in with 3.0 or better cumulative GPA.

**ECON 695W - Independent Study**

**Credits:** 1.00 to 4.00

Individual research projects that are student designed. Initial sponsorship of an economics faculty member must be obtained followed by approval of PAUL advisor and dean.'s office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors in with 3.0 or better cumulative GPA. Writing intensive.

**ECON 696 - Supervised Student Teaching Experience**

**Credits:** 1.00 to 8.00

Participants are expected to perform such functions as leading discussion groups, assisting faculty in undergraduate courses that they have successfully completed, or working as peer advisers in the advising center. Enrollment is limited to juniors and seniors who have above-average G.P.A.s. Reflective final paper is required. Prereq: permission of instructor, department chair, and director of undergraduate programs. No more than 4 credits may be earned as a teaching assistant in any one course. May be repeated to a maximum of 8 credits. Cr/F.

**ECON 698 - Topics**

**Credits:** 4.00

Special topics. May be repeated. Writing intensive.

**ECON 706 - Economics of Climate Change**

**Credits:** 4.00
Explores the economics and public policy of global climate change and develops the economic theory including the concepts of externalities, stock pollutant models, the social discount rate, and complicating factors such as information, uncertainty, technological progress, and risk. Students use economic analysis to compare different policy instruments such as administrative regulation, marketable permits, tax incentives, and direct subsidies. Also covers the political economy of international environmental agreements, including an analysis of the Kyoto Protocol. Prereq: ECON 401, ECON 605. Writing intensive.

**ECON #715 - Marxian Economic Analysis**  
**Credits:** 4.00

**ECON 726 - Introduction to Econometrics**  
**Credits:** 4.00
Introduces regression techniques as used in economics and management; estimation and statistical inference in the context of the general linear model; discussion of problems encountered and their solutions; extensions of the general linear model. Prereq: ADMN 420 or equivalent.

**ECON 736 - Seminar in Monetary Theory and Policy**  
**Credits:** 4.00
Contemporary developments in monetary theory and the evaluation of policy measures. Prereq: ECON 635. Writing intensive.

**ECON 746 - International Finance**  
**Credits:** 4.00
International monetary mechanism; balance of payments, international investment, exchange rates, adjustment systems, international liquidity, foreign aid, multinational corporations. Prereq: ECON 611; ECON 645. Writing intensive.

**ECON 747 - Multinational Enterprises**  
**Credits:** 4.00
Internationalization of economies. Growth and implications of multinational corporations at the level of systems. Theories of imperialism, international unity/rivalry; theories of direct investment, exercise of influence and conflict, technology transfer, bargaining with host country; effects on U.S. economy. Prereq: permission. Writing intensive.

**ECON 768 - Seminar in Economic Development**  
**Credits:** 4.00
Advanced reading seminar. Topics include methodologies underlying economic development theory, industrialization and post-import substitution, state capitalist development, stabilization policies, appropriate technologies, the capital goods sector, agricultural modernization schemes, and attempts at transition to socialism.

**ECON 774 - Senior Economics Seminar**  
**Credits:** 4.00
Capstone experience for students enrolled in the Economics B.A. program. Topics and format of the class depends on the interests and expertise of the faculty member and students of the course. The course is organized around a "big" idea and focuses on an important topic that has broad interest and social consequences. Prereq: ECON 605, ECON 611. Writing intensive.

**ECON 775 - Applied Research Skills for Economists**  
**Credits:** 4.00
Capstone course for students enrolled in B.S. in economics. Asks students to conduct economic research
by bringing their understanding of economic theory and empirical/analytical skills to investigate contemporary economic problems, issues, and phenomena. The actual topics covered, including the emphasis on microeconomics vs. macroeconomics, and design of the course varies depending on the professor. Prereq: ECON 605, 611, 726; MATH 424A or equivalent. Writing intensive.

**ECON 790 - Honors/The Workshop**
**Credits:** 1.00
open to students enrolled in the Paul Honors Program, this workshop is specifically designed for honors students starting the program in their junior year. It is designed to enable students to share the work they are doing for the honors designated course. The workshop will also include guest speakers and other programming of interest to Paul Honors Students. Permission required. Cr/F.

**ECON 792 - Honors/The Consulting Project**
**Credits:** 2.00
Open to students enrolled in the Paul Honors Program, this course is designed to broaden perspectives and build bridges to the external business community. Students will work across all of the disciplines offered by Paul College on consulting projects developed in conjunction with the NH SBDC (Small Business Development Center). Permission required. Cr/F.

**ECON 794 - Honors/The Research Process**
**Credits:** 2.00
Open to students enrolled in the Paul Honors Program, this course is designed to help students formulate a thesis topic, learn the skills needed to write a thesis and serve as a mechanism for pairing students with a faculty thesis advisor. In addition, students will be expected to attend several research seminars. Permission required. Cr/F.

**ECON 795 - Internship**
**Credits:** 1.00 to 16.00
On-the-job skill development through fieldwork in an organization (business, industry, health, public service, etc.). Normally, supervision is provided by a qualified individual in the organization, with frequent consultation by a faculty sponsor. Written report required. Internships may be part or full time, with course credits assigned accordingly. May not be used as a major elective. Cr/F.

**ECON 798 - Economic Problems**
**Credits:** 2.00 or 4.00
Special topics; may be repeated. Prereq: permission of adviser and instructor. Writing intensive.

**ECON 799 - Honors Thesis**
**Credits:** 4.00 to 8.00
Supervised research leading to the completion of an honors thesis; required for graduation from the honors program in economics. Writing intensive.
EDUC 400 - Careers in Education: Exploring Professional Contexts  
Credits: 1.00  
This survey course explores current issues in education through multiple professional lenses. Students will consider the relationship between their career pathways and key issues impacting educational settings including social media, poverty, curriculum, assessment and evaluation. Cr/F.

EDUC 401 - Current Issues in Education  
Credits: 2.00  
This survey course explores current issues in education through multiple professional lenses. Students will consider the relationship between their career pathways and key issues impacting educational settings including social media, poverty, curriculum, assessment and evaluation. Cr/F.

EDUC 444B - Be the Change You Want to See: Active Citizenship in a Multicultural World  
Credits: 4.00  
This is a first-year inquiry course intended primarily for students participating in the Common Purposes residential living program. The course offers multidisciplinary content focused on active citizenship in a pluralistic democracy. The primary organizing concept of the course is community; assignments focus on deliberative dialogue, public reasoning, collective action, and social justice. The course is taught as a seminar and includes on-campus and off-campus applied projects.

EDUC 500 - Exploring Teaching  
Credits: 4.00  
For students considering a teaching career. In-school experiences to develop introductory skills in teaching. On-site seminars for analysis and evaluation. Assessment and advising related to teaching as a career. Prerequisite for further work toward teacher licensure. Minimum of 7 hours a week, plus travel time, required. Repeatable up to a maximum of 8 credits. Prereq: permission. Special fee. Cr/F.

EDUC 506 - Literacy Tutoring at the Elementary School Level  
Credits: 2.00  
Supports students volunteering as reading and writing tutors in local elementary schools. Explores student-tutor relationships, student engagement, mentoring, literacy best-practices, and lesson-planning. Includes a weekly tutoring commitment through Seacoast Reads. May be repeated up to 3 times (6 credits).

EDUC #507 - Mentoring Adolescents  
Credits: 2.00  
This seminar is intended for undergraduate men and women who are mentoring local middle-school students on a weekly basis. The mentoring involves minimally tutoring the mentees once a week at their schools. The seminar meets twice a month for two hours. Additionally, one tutoring session a month is reserved for a focus group discussion involving the mentors and their mentees at the school site. May be repeated for a maximum of 12 credits.

EDUC 520 - Education, Poverty, and Development  
Credits: 4.00  
An examination of the human and institutional relationships among education, poverty, and social development. This course will emphasize the ways in which access to universal, effective education is correlated with the incidence of childhood poverty and its reduction in the US and selected countries in the developed and developing world. Interactive, discussion-based classes. Prior coursework in social or
political sciences, economics, international affairs, health sciences, or related fields suggested. Not open to freshmen. 4 credits.

EDUC 525 - Teaching Race  
**Credits:** 4.00  
This course examines the idea of race from the perspective of science, history, and lived experience to help the student properly evaluate inequalities of treatment (on the basis of race or any other marker) in various sectors of life in the United States. The course aims at helping the student a) perceive what is taught about race and what is communicated in our schools and colleges about the meaning of racial ascription, of color, and whiteness and b) to figure out how the power of educational institutions can best be used to promote equality and racial justice in society.

EDUC 550 - Language and Linguistic Diversity in Schools  
**Credits:** 4.00  
The course offers a broad examination of language and linguistic diversity, drawing from education, sociolinguistics, anthropology, child development, and related fields. Through the critical examination of the language environments of schools, assumptions of linguistic diversity are examined. Various educational system interventions, presenting successes, challenges, limitations, and controversies are considered. A minimum of 20 hrs of fieldwork beyond classroom time is required. Students have the opportunity to identify age group preference for field placement. Prereq: permission.

EDUC 556 - Mentoring Adolescents with Disabilities in the Transition to Work  
**Credits:** 2.00  
This course introduces undergraduates to a mentoring experience with an adolescent with a disability in a supportive setting. Students develop a beginning understanding of disabilities and the impact those disabilities might have on learning; the development of work related skills; and the importance of natural supports within the work environment. Each mentor/mentee relationship will be individualized based on the needs of the participants. May be repeated to a maximum of 12 credits.

EDUC 625 - Anthropological Thinking on Education  
**Credits:** 4.00  
Education is about, by, and for human beings. It takes place in a sociocultural context. It involves learning and, in many societies of the world, schooling. Education should, therefore, be understood from the viewpoint of what is known about human beings, i.e., from the viewpoint of anthropology. This course introduces the student to five key ideas in anthropology that help us think about education. The ideas are: Evolution, Culture, Structure, Function, and Relativism. The course is organized that the introduction of each idea is followed by select readings that illustrate how the idea bears on education. It is hoped that the course will provide the student with conceptual framework for analyzing educational policies and practices.

EDUC 694 - Courses in Supervised Teaching  
**Credits:** 8.00  

EDUC 694D - Courses in Supervised Teaching  
**Credits:** 4.00  
Supervised teaching of Kinesiology. Kinesiology majors only. Special fee. Cr/F.

EDUC 700 - Educational Structure and Change  
**Credits:** 4.00  
To assume leadership roles, beginning teachers need to develop an informed understanding of how they can operate effectively as decision-makers and agents of change within educational institutions. Such
understanding entails knowledge of the politics, history, organization, and function of schools from a variety of viewpoints: historical, sociological, political, and cross-cultural. This course focuses on the structure of public education, on the nature of educational change, and the teacher's role in the change process.

EDUC 701 - Human Development and Learning: Educational Psychology  
**Credits:** 4.00  
Child development through adolescence, theories of learning (including Piaget, information processing, and Vygotsky), conceptions of intelligence, moral education, research in teaching and teacher effectiveness, cross-cultural variability, gender and sexual orientation, management and discipline, and assessment and grading -- all applied to problems of classroom and individual teaching and learning. Junior and Senior status. Writing intensive.

EDUC 703 - Alternative Teaching Models  
**Credits:** 2.00 or 4.00  
Basic teaching models, techniques of implementation, and relationships to curricula. A) Alternative Teaching Models; B) Curriculum Planning for Teachers; G) Language Arts for Elementary Teachers; H) Experiential Curriculum; I) Children with Special Needs; Teaching Strategies for the Classroom Teacher; K) Writing across the Curriculum; L) Learning and LOGO; EDUC 791 is required for science candidates. For all other secondary education candidates, the appropriate methods course in the department of major is required. See the Schoolhouse Book for specific course listings. Prerequisite for teacher licensure: EDUC 500 and junior status. Prerequisite for students not seeking teacher licensure: instructor permission and junior status.

EDUC 703C - Classroom Management: Creating Positive Learning Environments  
**Credits:** 4.00  
This course is designed to help prospective and current teachers create and maintain caring, respectful classroom communities in which learners feel safe, valued, cared for, valued, and empowered. The course includes a strong emphasis on developing knowledge about the culture and backgrounds of children and families in order to establish positive interactions within the classroom community. The course addresses the challenges and opportunities in creating community in the increasingly diverse student populations in US schools. We will consider what it means to be culturally responsive in order to establish a classroom in which all students can succeed academically and socially.

EDUC 703D - Social Studies Methods for Middle and High School Teachers  
**Credits:** 4.00  
The social studies theory and methods course begins with an overview of the varied and, at times, competing goals and visions of the profession. Students examine these goals and their underlying rationales, and then develop their own philosophy of social studies teaching and learning. Students also examine state and national scope and sequence frameworks for the social studies, as well as the language arts Common Core standards. A variety of classroom strategies and methods are explored during the remainder of the course, including unit design, leading class discussions, how to approach controversial issues, teaching concepts and generalizations, increasing student engagement and empathy with the past, incorporating technology and the arts, management and discipline, and formats for assessment and grading.

EDUC 703F - Teaching Elementary School Science  
**Credits:** 2.00  
This course is designed to increase pre-service teachers' pedagogical content knowledge and enthusiasm with respect to teaching science at the elementary level. Throughout this course, students will familiarize themselves with reform-based approaches to elementary science instruction through inquiry, readings, and class discussions. Science will be explored not only as an important element of elementary education, but
also as a means by which to support a diverse class of elementary students in literacy and mathematics learning. 703F has a special fee when taught in Manchester.

EDUC 703M - Teaching Elementary Social Studies  
**Credits:** 2.00  
Social Studies Methods explores practical teaching models, techniques of implementation, and relationships to curricula in elementary classroom instruction. The New Hampshire Social Studies Frameworks and Common Core Curriculum Standards for instruction are identified and implemented in creating lesson plans for a mini unit.

EDUC 705 - Contemporary Educational Perspectives  
**Credits:** 4.00  
Students formulate, develop, and evaluate their own educational principles, standards, and priorities. Writing intensive.

EDUC 706 - Introduction to Reading in the Elementary School  
**Credits:** 4.00  
Methods in reading and writing instruction; current procedures and materials; diagnostic techniques. Course satisfies reading/language arts requirement for prospective elementary teachers in the five-year teacher education program. Special fee.

EDUC 707 - Teaching Reading through the Content Areas  
**Credits:** 2.00  
Approaches and methods for teaching reading through content materials; coursework includes practical applications through development of instructional strategies and materials. Required for candidates seeking certification in art, biology, chemistry, earth science, general science, physical science, physics, or social science.

EDUC 710E - Workshop in Adult and Occupational Education  
**Credits:** 1.00 to 4.00  
Modularized instruction of in-service education. Focus varies with the needs of the student. May be repeated for up to 8 credits.

EDUC 710F - Investigations  
**Credits:** 1.00 to 4.00  
Topics may include career education, secondary education, post-secondary education, adult education, extension education, exemplary education, cooperative education, disadvantaged and handicapped education, international agriculture, or teaching experience. Student-selected in one of the areas listed. Elective after consultation with instructor. Hours arranged. May be repeated.

EDUC 710H - Field Experience  
**Credits:** 2.00 to 16.00  
Work with an agency, institution, or organization to gain technical and/or professional competence not otherwise available. Student plans experience with departmental adviser. Credit approval subject to recommendation of faculty members and performance of student. Prereq: permission.

EDUC 712 - Teaching Multilingual Learners  
**Credits:** 4.00  
This course is for people interested in teaching English to speakers of other languages (ESOL) in schools and communities in NH and the U.S. Topics include: theories of first and second language acquisition, policies and laws affecting language minority students, strategies for teaching academic content in the mainstream classroom, creating classroom/school cultures that invite all students into learning, and the role
of advocacy and professional collaboration in ESOL.

**EDUC 717 - Growing up Male in America**  
**Credits:** 4.00  
An integrative view of growing up male in the American culture from birth through adulthood. Analysis of major perspectives on male development and the implications in parenting with specific emphasis on male education. Participants are expected to develop awareness of their own development as a male or alongside males, using current male development perspectives as a guide. They also create an awareness of how this will affect their behavior toward boys in their classrooms.

**EDUC 718 - Critical Social Justice in and Beyond Education**  
**Credits:** 4.00  
Students will become familiar with key concepts and principles of critical theory, critical pedagogy, and social justice education so that they may use this body of work to inform their teaching, leadership, and scholarship. We will examine the role of a) schools in providing equity of educational access and outcomes, b) teacher agency to change unjust conditions, and c) micro experiences within schools and the macro layer of context (i.e., history, politics, economics, culture).

**EDUC 720 - Integrating Technology into Classroom**  
**Credits:** 4.00  
Participants gain practical experience that takes specific advantage of technology to enhance and extend student learning. State academic standards and national technology standards are used to make decisions about curriculum content and to plan technology-based activities. Participants use electronic management tools such as iMovie, Powerpoint, podcast, webcast, Comic Life, Audacity, and Garage Band are featured in this hands-on course.

**EDUC 733 - Teaching Writing in the 21st Century**  
**Credits:** 4.00  
An examination of the challenges to teaching writing in the present age of high stakes testing and audit culture. Course questions include 'best practices' for teaching writing in a complex society that values a range of expressive forms, including digital technologies, social media, film and video. Special emphasis on multi-modal literacies in K-12 classrooms. Exploration of language diversity, the relationship between reading, writing, and literacy development in content-specific areas, student centered assessments, and integrating the arts into the reading and writing workshop.

**EDUC 734 - Children's Literature**  
**Credits:** 4.00  
Interpretive and critical study of literature for children in preschool and elementary settings. Methods of using literature with children.

**EDUC 741 - Exploring Mathematics with Young Children**  
**Credits:** 4.00  
A laboratory course offering those who teach young children mathematics, and who are interested in children's discovery learning and creative thinking, offers a chance to experience exploratory activities with concrete materials, as well as mathematical investigations, on an adult level, that develop the ability to provide children a mathematically rich environment, to ask problem-posing questions, and to establish a rationale for doing so. Prereq: MATH 601.

**EDUC 745 - Math with Technology in Early Education**  
**Credits:** 2.00  
The primary goal of this course is that students gain knowledge of learning standards and teaching methods for the instruction of mathematics in early education settings with infants through 3rd grade. In
addition, participants gain experience in applying their newfound knowledge in the areas of mathematics with technology through a combination of teaching and digital experiences. On-line course; no campus visits required. Please note the minimal technical requirements for a UNH e-course.

**EDUC 750 - Introduction to Exceptionality**  
**Credits:** 4.00  
A life span perspective of the social, psychological, and physical characteristics of individuals with exceptionalities including intellectual, sensory, motor, health, and communication impairments. Includes implications for educational and human service delivery.

**EDUC 751A - Educating Exceptional Learners: Elementary**  
**Credits:** 4.00  
Foundations of special education and an introduction to a variety of service delivery models with an emphasis on educating all learners in heterogeneous classrooms. Instructional strategies and supports for all students, particularly those with mild and moderate disabilities, will be the primary focus.

**EDUC 751B - Educating Exceptional Learners: Secondary**  
**Credits:** 4.00  
Foundations of special education and an introduction to a variety of service delivery models with an emphasis on educating all learners in heterogeneous classrooms. Instructional strategies and supports for all students, particularly those with mild and moderate disabilities, is the primary focus. Preparation for students' transitions to post-secondary life is included.

**EDUC 751C - Educating Exceptional Learners: Related Services**  
**Credits:** 4.00  
An overview of special education and related services in an educational setting. Focus on support services provided to general education and special education teachers, including laws relating to special populations, how related services interact with classroom and special educators, IEPs, and other topics that impact services provided to students with special needs.

**EDUC 752 - Contemporary Issues in Learning Disabilities**  
**Credits:** 4.00  
Critical analysis of current and historical conceptions of learning disability in the areas of definition, supporting theories, assessment practice, and teaching methodologies. Focus on contemporary issues in the field that relate to working with students labeled as learning disabled at both elementary and secondary levels.

**EDUC 753 - Contemporary Issues in Behavioral Disabilities**  
**Credits:** 4.00  
Nature and scope of emotional and behavioral disabilities in students for elementary through secondary levels. Theoretical perspectives, characteristics, assessment and educational intervention strategies are included.

**EDUC 754 - Contemporary Issues in Developmental Disabilities**  
**Credits:** 4.00  
The causal factors, physical and psychological characteristics, and educational and therapeutic implications of mental retardation, cerebral palsy, epilepsy, autism, and related conditions. A life span perspective is included, with major emphasis on the school-age population.

**EDUC 756 - Supporting Families of Individuals with Exceptionalities**  
**Credits:** 4.00  
An introduction to family system theory and the implications for families having members with
Exceptionalities. Issues addressed include diagnosis and prognosis, coping strategies, communication and team collaboration, cross-cultural competence, and agency and school delivery of services. Emphasis is on proactive collaboration with family members.

**EDUC 757 - Contemporary Issues in Autism Spectrum Disorders**  
**Credits:** 4.00  
The goal of this course is to enhance students' understanding of contemporary issues related to educating students with autism spectrum disorders (ASD). The course is grounded in a theoretical foundation that values the perspectives of individuals with ASD in academic, research, policy, and clinical endeavors. Learning outcomes focus on strategies for identifying opportunities for learning, communication, literacy, and social relationships in a variety of inclusive environments.

**EDUC 760 - Introduction to Young Children with Special Needs**  
**Credits:** 4.00  
Needs of children (birth to eight years) with developmental delays or who are at risk for disabilities. Strengths and special needs of such children; causes, identification, and treatment; current legislation; parent and family concerns; program models.

**EDUC 761 - Inclusive Curriculum for Young Children with Special Needs**  
**Credits:** 4.00  
Classroom applications of constructivist theory. Curriculum planning and implementation; overview of research and theory related to teaching and learning of specific content areas, with emphasis on integrated approach to early childhood curriculum. Stresses the reciprocal nature of student-teacher relationship.  
Prereq: permission.

**EDUC 762 - Curriculum for Young Children with Special Needs: Evaluation and Program Design**  
**Credits:** 4.00  
Overview of evaluation and intervention issues relevant to early childhood special education, focusing on ages three through eight. Norm-referenced and criterion-referenced assessment tools. Judgment-based evaluation and observation skills. Translation of evaluation information into goals and objectives for individual education programs. Developing appropriate programs in inclusive settings.

**EDUC 767 - Students, Teachers, and the Law**  
**Credits:** 4.00  
Our public schools play a vital role in our society. What shall be taught and who shall teach our children are perennial questions. This course explores how the law impacts the educational lives of students and teachers, including issues of church-state relations, free speech, dress codes, and search and seizure.  
(Also offered as JUST 767.)

**EDUC 776 - Reading for Learners with Special Needs**  
**Credits:** 4.00  
Techniques and procedures for teaching reading to learners with special needs. Emphasis on providing reading instruction in the least restrictive alternative.

**EDUC 780 - Belize/New Hampshire Teacher Program**  
**Credits:** 4.00  
International course involving teams of teachers from Belize and New England. The program offers teachers in both countries the opportunity to work collaboratively on developing effective teaching practices, develop an understanding of each other's cultural and educational perspectives, extend the experience to other teachers and students upon return. Special fee.  
**Co-requisites:** INCO 589
EDUC 784 - Educators as Researchers  
**Credits:** 4.00  
This course addresses the twofold aim of (a) preparing educational practitioners to conduct systematic inquiry in their classrooms and/or schools and (b) introducing strategies and criteria for understanding, evaluating, and applying educational research.

EDUC #785 - Educational Assessment  
**Credits:** 4.00  
Theory and practice of educational evaluation; uses of test results in classroom teaching and student counseling; introductory statistical techniques.

EDUC 791 - Methods of Teaching Secondary Science  
**Credits:** 4.00  
This course is designed to provide experiences and resources that will support individuals who are planning to teach middle or high school science. Through interactive activities, readings, and class discussions, the class explores key elements and challenges of secondary science teaching and provide a foundation for continued growth and reflection throughout the students' teaching careers. Some of the main topics discussed in this course are national and state science standards, reform-based approaches to instruction, the use of technology in science teaching, laboratory safety, curriculum evaluation, and assessment.

EDUC 795 - Independent Study  
**Credits:** 2.00 or 4.00  
Juniors and seniors only, with approval by appropriate faculty member. Neither course may be repeated.

EDUC 796 - Independent Study  
**Credits:** 2.00 or 4.00  
Juniors and seniors only, with approval by appropriate faculty member. Neither course may be repeated.

EDUC 797 - Special Topics in Education  
**Credits:** 1.00 to 4.00  
An experimental course for the purpose of introducing a new course or teaching a special topics for a semester in an area of specialization in Education.
Electrical & Computer Engineering

ECE 401 - Perspectives in Electrical and Computer Engineering
Credits: 4.00
An introductory course for electrical and computer engineering majors that introduces incoming students to the fundamental concepts of analysis and design. Concepts are presented through an examination of real-world problems. Students are introduced to electrical and computer engineering problem solving and design through active learning techniques in lecture and in a laboratory setting. Provides a context for the electrical engineering and computer engineering curriculum and introduces the profession and activities of electrical and computer engineering. Lab.

ECE 444 - Bionics: Technology from Nature
Credits: 4.00
Bionics is the study of living systems with the intention of applying their principles to the design of useful technology for mankind. Students learn strategies to discover bio-inspired technology. The student investigates the fields of bio-inspired cyborgs, defense and attack mechanisms in biology leading to military applications including non-lethal weapons, bio-inspired sensors including brain-computer interfaces, bio-inspired robots, and animal and plants that generate energy for technology. Writing Intensive. Lab.

ECE 537 - Introduction to Electrical Engineering
Credits: 4.00
Fundamentals of electrical engineering. Topics are circuit elements; signal waveforms; circuit laws and theorems; transfer functions; free, forced, and steady state responses; power calculations; amplifiers; and magnetic circuits. Non-ECE majors only. Prereq: PHYS 408. Pre- or Coreq: MATH 527. Lab.

Co-requisites:

ECE 541 - Electric Circuits
Credits: 4.00
Linear passive circuits beginning with resistive circuits, power and energy relations, mesh and node analysis. Transient and steady-state behavior of simple circuits containing energy storage elements (capacitors, inductors). Introduction to linear active circuits using dependent source models and ideal op amps. Introduction to transfer function and frequency response concepts. For ECE majors only. Pre- or Coreq: MATH 426; PHYS 408. Lab.

ECE 543 - Introduction to Digital Systems
Credits: 4.00
Fundamental analysis and design principles. Number systems, codes, Boolean algebra, and combinational and sequential digital circuits. Lab: student-built systems using modern integrated circuit technology and an introductory design session on a CAD workstation. Lab.

ECE 548 - Electronic Design I
Credits: 4.00
Introduction to electronic design for analog signal processing. Linear op amp circuits for amplification and filtering. Use of Laplace techniques for filter specification; simple passive and op amp filter realizations. Discrete active devices (FET and BJT): operating characteristics, biasing considerations, canonical amplifier configurations including differential amplifiers. Prereq: ECE 541. Lab.

ECE 562 - Computer Organization
Credits: 4.00
Basic computer structure, including arithmetic, memory, control, and input/output units; the trade-offs between hardware, instruction sets, speed, and cost. Laboratory experiments involving machine language programming and I/O interfacing using microcomputers. Prereq: CS 410 or CS 415; ECE 543. Lab.

**ECE 583 - Designing with Programmable Logic**  
**Credits:** 4.00  
Design methodologies for implementing digital systems in programmable logic. Covers topics related to the design, implementation, and testing of programmable logic devices. Students are introduced to the Very-High-Speed Hardware Description Language (VHDL) entry language and simulation procedures, along with common logic synthesis tools. Programmable logic families, device architectures, and testing procedures are covered in detail. Laboratory exercises lead the student through the complete programmable logic design cycle. Each student is required to prototype a digital system starting with VHDL entry, functional and timing simulations, logic synthesis, device programming, logic probing, and systems verification. Prereq: ECE 562. Lab.

**ECE 602 - Engineering Analysis**  
**Credits:** 4.00  

**ECE 603 - Electromagnetic Fields and Waves I**  
**Credits:** 4.00  
Maxwell's equations in integral and differential form with applications to static and dynamic fields. Uniform plane waves in free space and material media. Boundary conditions; simple transmission line theory; parallel plate and rectangular waveguides; simple radiating systems. Prereq: PHYS 408; ECE 602.

**ECE 617 - Junior Laboratory I**  
**Credits:** 4.00  
Application of laboratory instrumentation to the investigation of active and passive circuit characteristics; introduction to computer-aided design, analysis, and testing; development of report writing and oral presentation skills. Pre- or Coreq: ECE 633; ECE 651. Writing intensive.

**Co-requisites:**

**ECE 618 - Junior Laboratory II**  
**Credits:** 4.00  
Laboratory exercises in the design and analysis of active circuits, techniques of signal processing, and the properties of distributed circuits. Continued development of report writing and oral presentation skills. Prereq: ECE 617. Pre- or Coreq: ECE 603. Writing intensive.

**Co-requisites:**

**ECE 633 - Signals and Systems I**  
**Credits:** 3.00  

**Co-requisites:**

**ECE 633H - Signals and Systems I/Honors**
Credits: 4.00
Mathematical characterization of continuous-time systems using time- and frequency-domain concepts. Properties of linear systems described by ordinary differential equations. Fourier analysis of signals and system frequency response functions. Applications to communication and control systems. Introduction to system simulation using computer methods. Honors students will attend an additional one-hour meeting each week. Prereq: MATH 527, permission required.

Co-requisites:

ECE 634 - Signals and Systems II
Credits: 3.00
Transient response analysis of linear systems using Laplace transforms, application to feedback control systems. Introduction to discrete-time linear systems; system response determination using Z-transform; elementary design of digital filters and controllers. State variable formulation of dynamical systems. Prereq: ECE 633.

ECE 647 - Random Processes and Signals in Engineering
Credits: 3.00
Emphasis on applied engineering concepts such as component failure, quality control, noise propagation. Topics include random variables, probability distributions, mean and variance, conditional probability, correlation, power spectral density. Prereq: MATH 426; ECE 602.

ECE 647H - Random Processes and Signals/Honors
Credits: 4.00
Emphasis on applied engineering concepts such as component failure, quality control, noise propagation. Topics include random variables, probability distributions, mean and variance, conditional probability, correlation, power spectral density. Honors students attend an additional one-hour meeting each week. Prereq: MATH 426; ECE 602, permission required.

ECE 649 - Embedded Microcomputer Based Design
Credits: 4.00
An in-depth treatment of the design of embedded microcomputer systems. Topics include advanced architectures for embedded processors, hardware and software aspects of interfacing, handling interrupts, advanced programming including debugging of real time systems, embedded application implementations. Laboratory studies are required to reinforce theoretical and applied concepts in an actual embedded architecture. Prereq: ECE 562. Lab.

ECE 651 - Electronic Design II
Credits: 4.00
Design of fundamental circuit blocks in electronic systems. Multistage amplifiers; feedback systems and stability; power amplifiers. Nonlinear electronic circuits: oscillators, function generators; clippers and peak detectors; A/D and D/A conversion. Switching mode and logic circuits. Prereq: ECE 548.

ECE 681 - Teaching Experience
Credits: 1.00
Credit for assisting in the instruction of undergraduate laboratories. Available on a limited basis to students selected by the department chairperson. May be repeated for credit up to a total of 4 credits.

ECE 694 - Professional Principles of Engineering
Credits: 1.00
Provides background for the capstone design experience (ECE 791/792). Topics include creativity, design methodology, specification development, project management, ethics, safety, reliability and preparation for oral and written reports. Includes initial capstone project selection. Prereq: ECE junior standing. Cr/F.
ECE 704 - Electromagnetic Fields and Waves II
Credits: 4.00
Loop antennas; aperture and cylindrical antennas; self and mutual impedance; receiving antennas and antenna arrays; bounded plane waves; rectangular and cylindrical waveguides; waveguide discontinuities and impedance matching; solid state microwave sources. Prereq: ECE 603.

ECE 711 - Digital Systems
Credits: 4.00
Principles, procedures and tools related to the design, implementation and testing of microprocessor-based embedded systems. Students prototype a complete embedded system using CAD tools, application specific integrated circuits, printed circuit board technology, and modern diagnostic/testing procedures and tools. Projects are designed to introduce diverse digital technologies. Lab.

ECE 714 - Introduction to Digital Signal Processing
Credits: 4.00
Introduction to digital signal processing theory and practice, including coverage of discrete time signals and systems, frequency domain transforms and practical spectral analysis, digital filter terminology and design, and sampling and reconstruction of continuous time signals. Laboratory component providing an introduction to DSP design tools and real-time algorithm implementation. Prereq: ECE 633. Lab.

ECE 715 - Introduction to VLSI
Credits: 4.00
Principles of VLSI (Very Large Scale Integration) systems at the physical level. CMOS circuit and logic design, CAD tools, CMOS system case studies. Students exercise the whole development cycle of a VLSI chip: design and layout performed during semester I. The chips are fabricated off campus and returned during semester II, when they are tested by students. An IA (continuous grading) grade is given at the end of semester I. Lab.

ECE 717 - Introduction to Digital Image Processing
Credits: 4.00
Digital image representation; elements of digital processing systems; multidimensional sampling and quantization; image perception by humans, image transformations including the Fourier, the Walsh, and the Hough Transforms; image enhancement techniques including image smoothing, sharpening, histogram equalization, and pseudo color processing; image restoration fundamentals; image compression techniques, image segmentation and use of descriptors for image representation and classification. Prereq: ECE 633; ECE 647. Lab.

ECE 724 - Ubiquitous Computing Fundamentals
Credits: 4.00
Ubiquitous computing, or ubicomp, explores embedded, interconnected computing devices that are part of everyday objects and activities. This course takes an interdisciplinary look at the foundations of ubiquitous computing. Topics include software and hardware for ubicomp, human-computer interaction in ubicomp, and issues related to privacy and security in ubicomp. Students undertake a research project inspired by the material. Registration by permission only.

ECE #734 - Network Data Communications
Credits: 4.00
Introduces basic concepts related to data transmission equipment and physical interfaces, data communication protocols, and the Open System Interconnection (OSI) Reference Model. Includes physical layer hardware, signaling schemes, protocol packets, computer interfaces, error detection, signal integrity, and data transmission protocols relative to both wired and wireless networks. Introduces both logical and
wide-area networks, and how a networking system is constructed, tested, and managed. Network design and testing exercises. Prereq: ECE 633; ECE 649. Lab. Electrical Engineering majors only.

**ECE 757 - Fundamentals of Communication Systems**  
**Credits**: 4.00  
Spectra of deterministic and random signals; baseband and bandpass digital and analog signaling techniques; transmitter and receiver architectures; performance analysis of digital and analog signaling in additive noise channels; carrier and symbol timing synchronization methods. Prereq: ECE 633; ECE 647. Lab.

**ECE 758 - Communication System Design**  
**Credits**: 4.00  
System- and circuit-level design and implementation of communication hardware including: mixers, RF amplifiers, filters, oscillators and frequency synthesizers, modulators and detectors, carrier and symbol timing recovery subsystems. Issues in software-defined radio transmitter and receiver implementation. Communication link engineering including antenna selection and channel impairment effects. Prereq: ECE 651; ECE 757. Lab.

**ECE 760 - Introduction to Fiber Optics**  
**Credits**: 4.00  
Basic physical and geometric optics; solution of Maxwell's equations for slab waveguides and cylindrical waveguides, of both step index and graded index profiles; modes of propagation and cutoff; polarization effects; ground and phase velocity; ray analysis; losses; fabrication; sources; detectors; couplers; splicing; cabling; applications; system design. Prereq: ECE 603. Lab.

**ECE 772 - Control Systems**  
**Credits**: 4.00  
Development of advanced control system design concepts such as Nyquist analysis; lead-lag compensation; state feedback; parameter sensitivity; controllability; observability; introduction to non-linear and modern control. Includes interactive computer-aided design and real-time digital control. Prereq: ECE 634. Lab. (Also offered as ME 772.)

**ECE 775 - Applications of Integrated Circuits**  
**Credits**: 4.00  

**ECE 777 - Collaborative Engineering**  
**Credits**: 4.00  
Study of processes in which engineers from diverse disciplines cooperate to specify, design, manufacture, test, market, and maintain a product. Classes are organized in both technical and nontechnical flexible modules. Technical topics are advanced and relevant to project being developed, such as related research, technology, design methodology, and CAD tools. Nontechnical topics include ISO 9000 quality system, engineering management, budget considerations, building, communication and leadership skills, and concurrent engineering principles. The course utilizes collaborative engineering by team development of an engineering project, often a research oriented proof-of-concept prototype. Prereq: permission. Lab. Also listed as TECH 750.

**ECE 784 - Biomedical Instrumentation**  
**Credits**: 4.00  
Principles of physiological and biological instrumentation design including transducers, signal conditioning,
recording equipment, and patient safety. Laboratory includes the design and use of instrumentation for monitoring of electrocardiogram, electromyogram, electroencephalogram, pulse, and temperature. Current research topics, such as biotelemetry, ultrasonic diagnosis, and computer applications. Prereq: ECE 651. Lab.

**ECE 791 - Senior Project I**  
**Credits:** 2.00  
First semester of the capstone design experience. Students develop project plans, and prepare and present written and oral project proposals. The project plans must include aspects of design, implementation and evaluation. At the end of the semester, students prepare a written progress report. Prereq: ECE 694; ECE senior standing. Writing intensive.

**ECE 791H - Senior Honors Project I**  
**Credits:** 4.00  
First semester of the capstone honors senior thesis research. Students develop research plans, prepare and present written and oral research proposals. The research plans must include aspects of design, implementation and evaluation, similar to ECE 791. However, honors thesis research must also include independent research beyond the normal scope of ECE 791. At the end of the semester students prepare a written progress report. Prereq: ECE 694; ECE senior standing, permission required. Writing intensive.

**ECE 792 - Senior Project II**  
**Credits:** 2.00  
This course requires the completion of the capstone design experience begun in ECE 791. At the end of the semester students prepare written final project reports, and present their results in a research poster session. Prereq: ECE 791. Writing intensive.

**ECE 792H - Senior Honors Project II**  
**Credits:** 4.00  
This course requires the completion of the capstone honors thesis research begun in ECE 791H. At the end of the semester students prepare honors theses, and present their research results in a research poster session. ECE 791H/792H fulfills the requirement of one professional elective. Prereq: ECE 791H, permission required. Writing intensive.

**ECE 795 - Electrical and Computer Engineering Projects**  
**Credits:** 1.00 to 4.00  
Laboratory course. Student undertakes a project of mutual interest with an ECE faculty advisor. A written final report must be filed with the ECE Department. Prereq: permission.

**ECE 796 - Special Topics**  
**Credits:** 1.00 to 4.00  
New or specialized courses and/or independent study. Prereq: permission. 1 to 4 credits some sections may use credit/fail grading.
Engineering Technology

ET 601 - Data Structures and Data Bases
Credits: 4.00
A brief review of fundamental container classes; stacks, queues and link lists followed by more advanced data structures and concepts using search algorithms, iterators, and efficiency indicators. The second part of the course will include the development and use of relational databases using a commercial database engine. Java console applications and minimal Graphic User Interface applications will be used throughout the course to develop and test concepts.

ET 625 - Technical Communications
Credits: 4.00
Designed to improve students' capabilities to prepare and present technical information in written and oral form and through electronic means. ET majors should take this course early in their program of study so that proficiencies developed can be utilized in later courses. (Also listed as ENGL 502.) Writing intensive.

ET 630 - Analytical Methods in Engineering Technology
Credits: 4.00
Review of college-level mathematics including differential and integral calculus with applications and advanced topics, e.g., Fourier analysis, Laplace transform technique, and probability and statistics. Prereq: engineering technology majors only.

ET 635 - Fluid Technology and Heat Transfer
Credits: 4.00
Fundamental principles of fluid technology and basic principles of heat transfer, with applications in solving practical problems, and how these concepts are used in the HVAC area. Prereq: Thermodynamics; Mechanical Engineering Tech majors.

ET 639 - Heating, Ventilation and Air Conditioning I
Credits: 4.00
First in a two course sequence designed to familiarize the student with the design and operation of fluid thermal systems with specific applications in the heating, ventilating, and air conditioning of occupied spaces and some reference to industrial process control. Prereq: thermodynamics, calculus, or permission. Lab. Special fee.

ET 640 - Heating, Ventilation and Air Conditioning II
Credits: 4.00
Second in a two course series designed to acquaint the student with the fundamentals of fluid thermal system design with specific topics in solar loads on buildings, air conditioning system requirements, pump and fan selection, piping and duct system design, and an introduction to controls. Prereq: ET 639 or permission. Lab. Special fee.

ET 641 - Production Systems
Credits: 4.00
Market forecasting; waiting line theory; manufacturing inventories and their control; production scheduling; quality control. Prereq: differential and integral calculus.

ET 644 - Mechanical Engineering Technology Concepts in Analysis and Design
Credits: 4.00
Kinematics, kinetics, work and energy, fluids, heat transfer; application of these concepts to problems in mechanical design. Prereq: strength of materials and dynamics and ET 637.

**ET 647 - Advanced Perspectives on Programming**  
*Credits: 4.00*  
Several programming languages will be selected for study and analysis. Students will gain knowledge regarding the languages studied and conduct analysis related to comparisons and divergence in capabilities. Prereq: intermediate programming skills in three or more programming languages. Major suggested languages of interest are: Java, C++, Visual Basic, Visual C++ Windows, Visual Basic.Net and C# or permission.

**ET 655 - Engineering Tech Seminar Series**  
*Credits: 1.00*  
Five talks will be given that introduce the ET student to the softer issues of technology. Talks will be given in the areas of Ethics, Diversity, Lifelong Learning, Functioning in technical teams, and the importance of timeliness, scheduling and product improvement. For the most part talks are given by outside industrial personnel dealing in these specific areas. Students are required to write a short paper on three of the five topic areas. Class discussion of each talk takes place during regular class time. No prerequisites.

**ET 671 - Digital Systems**  
*Credits: 4.00*  
Digital systems design and application using TTL and CMOS devices, design of systems, and interfacing. Digital design project required. Prereq: introductory digital design. Special fee. Lab.

**ET 674 - Control Systems and Components**  
*Credits: 4.00*  
Topics include linear systems analysis, the Laplace transform and its properties, controllers, root locus technique, transient response analysis, first- and second-order systems, error analysis, and control system design. Prereq: differential and integral calculus. Lab.

**ET 675 - Electrical Technology**  
*Credits: 4.00*  
Electrical circuits: DC and AC network analysis, power factors, transformers, power supplies. Electronic circuits--diodes, transistors and operational amplifiers. Digital circuits and introduction to computer-aided engineering. Prereq: differential and integral calculus. Lab

**ET 677 - Analog Systems**  
*Credits: 4.00*  

**ET 680 - Communications and Fields**  
*Credits: 4.00*  
Topics include Fourier series analysis; the Fourier transform and its properties; convolution; correlation including PN sequences; modulation theory; encoding and decoding of digital data (NRZ-M, NRZ-S, RZ, Biphase-L, and Manchester); antennas and antenna pattern; Radar Range Equation; and an introduction to information theory. Prereq: differential and integral calculus. Lab.

**ET 695 - Independent Study**  
*Credits: 1.00 to 4.00*  
Individual reading, writing, or laboratory work carried out under the tutelage of a faculty member. Prereq:
approval of the adviser. May be repeated up to a maximum of 4 credits.

**ET 696 - Topics in Mechanical Engineering**
**Credits:** 1.00 to 4.00
New or specialized courses not covered in regular course offerings. Prereq: permission. May be repeated to a maximum of 4 credits.

**ET 697 - Topics in Electrical Engineering Technology**
**Credits:** 1.00 to 4.00
New or specialized courses not covered in regular course offerings. Prereq: permission. May be repeated for a maximum of 4 credits.

**ET 706 - Internship**
**Credits:** 1.00 to 4.00
On-the-job skill development through fieldwork in industry. Normally, supervision is provided by a qualified individual in the organization with consultation by a faculty sponsor. Written report required. Internships may be part or full time, with course credits assigned accordingly. May be repeated to a maximum of 4 credits. Credit/Fail.

**ET 707 - Object Oriented Design and Documentation**
**Credits:** 4.00
Current design techniques and strategies, including State Transition Diagrams (STD) and United Modeling Language (UML), provide the core of the course. Case studies of large programming projects will be developed. Group programming projects will be completed based upon case studies. Prereq: intermediate programming skills in one or more of the following OOP language: Java, C_, Visual C++ Windows, Visual Basic.Net and C# or by permission.

**ET 717 - Network Security**
**Credits:** 4.00
The technical, operational, and managerial issues of computer systems and network security in an operational environment. Addresses the threats to computer security including schemes for breaking security, and techniques for detecting and preventing security violations. Emphasis on instituting safeguards, examining different types of of security systems, and applying the appropriate level of security for the perceived risk. Prereq: Java programming.

**ET 727 - CT Software Development Project**
**Credits:** 4.00
This course requires the development of a real world project that responds to an engineering focused organizational need. The project is undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing a prototype of the software engineering solution to the original problem. Electrical Engineering Tech and EET: Computer Technology majors only.

**ET 733 - Business Organization and Law**
**Credits:** 4.00
Corporations; proprietorships; product liability; contracts; federal agencies; commercial paper; conditions of employment; business ethics; bankruptcy; U.C.C. Special fee. Writing intensive.

**ET 734 - Economics of Business Activities**
**Credits:** 4.00
Elementary financial accounting; compound interest and time value of money; sources of capital; cost estimating; depreciation; risk and insurance; personal finance. Prereq: differential and integral calculus. Special fee.
ET 747 - User Interface Design  
**Credits:** 4.00  
This course familiarizes students with Human Computer Interaction and the significant role it plays in product design and development. The principles of HCI, examples of good and bad applications, and factors that determine a design's effectiveness are covered. Stages of the product development life cycle are discussed to understand the progression of a project from conception to delivery and the impact it has on HCI. (Also listed as COMP 640.) Electrical Engineering Technology majors only.

ET 751 - Mechanical Engineering Technology Project  
**Credits:** 4.00 or 8.00  
Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.

ET 781 - Introduction to Automation Engineering  
**Credits:** 4.00  
Students are introduced to the topics needed to develop a good understanding of the basic principles of Automation Engineering. This introductory course covers a wide variety of topics such as performance of sensors, actuators, motors and drives, PLC's and HMI, environmental controls, robots, machine vision systems, and controls and system integration. Prereq: ET 674 Control Systems and Components. Open to Electrical Engineering, Mechanical Engineering, Electrical Engineering Technology, EET: Computer Technology, and Mechanical Engineering Technology majors only.

ET 788 - Introduction to Digital Signal Processing  
**Credits:** 4.00  
This course will deal with the topics of spectral representation of periodic and non-periodic analog signals followed by discrete sampling and aliasing and how it relates to Nyquist sampling theorem. The z-transform will be introduced as the required mathematical tool along with an introduction to MATLAB and its associated DSP tool box. Spectral analysis of digital signal will be accomplished using these tools. Convolution and digital filtering will also be covered. Lab. Prereq: ET 680 Communications and Fields or equivalent.

ET 790 - Microcomputer Technology  
**Credits:** 4.00  
Microcomputer systems design, including assembly language, interfacing, processor timing and loading, and inter-processor communications via local area networks. Hardware, software, and architecture of both Intel 80X86 and Motorola 68XX0 microprocessors. Microcomputer applications with emphasis on lab work using Motorola HCII microcontroller. Prereq: ET 671. Special fee. Lab.

ET 791 - Electrical Engineering Technology Project  
**Credits:** 4.00 or 8.00  
Students are required to find solutions to actual technological problems in design, fabrication, and testing, as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. Special fee. A year-long course: an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.
UNHM Associate Degree English

ENG 301 - Introduction to College Composition and Reading
Credits: 4.00
Introduces students to academic standards of writing and reading at the college level through a variety of reading and writing tasks utilizing reflection, review and revision. Designed as a preparatory course for ENGL 401. Students are required to meet individually with instructors outside of class. May not be taken for credit toward a Bachelor's Degree. Special fee.

ENG #301A - Introduction to College Composition and Reading for ESL Students
Credits: 4.00
Introduces ESL/ESOL students to standards of academic English in listening, speaking, reading, and writing. Strengthens vocabulary and grammar skills. Designed as a preparatory course for ENGL 400. May not be taken for credit toward a Bachelor's Degree.
ENGL 400 - English for International Students
Credits: 1.00 to 4.00
Designed for international students to provide additional support in course work. Students continue to develop skills in listening comprehension, speaking, reading, and writing in English. This is a variable credit course and may be repeated up to a total of 4 credits. No letter grades. Course graded. Prereq: permission from ESL Institute. Cr/F. Writing intensive.

ENGL 400A - Academic English for ESL
Credits: 4.00
Preparation for the reading, writing, and speaking assignments that students encounter in academic courses. Students complete reading, writing, and speaking assignments every week, with close guidance from the instructor. In addition to the time they spend in class, students also have frequent individual conferences with the instructor. No more than 16 combined credits for ENGL 400 and ENGL 400A may be counted toward a UNH degree. Special fee. Writing intensive.

ENGL 401 - First-Year Writing
Credits: 4.00
Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student. Special fee. Writing intensive.

ENGL 401A - First Year Writing for Multi-Lingual Students
Credits: 4.00
A special section of first-year writing for students whose native language is not English. Training to write more skillfully and to read with more appreciation and discernment, with special attention to the challenges of non-native speakers of English. Supplemental work on listening and speaking as necessary. Frequent individual conferences for every student. Students may not take both ENGL 401 and ENGL 401A for credit. Special fee. Writing intensive.

ENGL 401H - Honors/First-Year Writing
Credits: 4.00
Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student. Special fee. Writing intensive.

ENGL 402 - Introduction to Literature for International Students
Credits: 4.00
The art of thoughtfully enjoying major literary works. This course is intended for students who are participating in the ESL program. Permission required from ESL Institute.

ENGL 403 - Exploring Literature
Credits: 4.00
The art of thoughtfully enjoying major literary works.

ENGL 403W - Exploring Literature
Credits: 4.00
The art of thoughtfully enjoying major literary works. Writing intensive.

ENGL 405 - Introduction to Linguistics
Credits: 4.00
Overview of the study of language: universal properties of human language, Chomsky's innateness of hypothesis, language acquisition in children, dialects and language variation, language change. Includes introduction to modern grammar (phonology, syntax, semantics) and to scientific linguistic methodology. (Also offered as LING 405.)

**ENGL 405H - Honors/Introduction to Linguistics**  
**Credits:** 4.00  
Overview of the study of language: universal properties of human language, Chomsky's innateness of hypothesis, language acquisition in children, dialects and language variation, language change. Includes introduction to modern grammar (phonology, syntax, semantics) and to scientific linguistic methodology. (Also offered as LING 405.)

**ENGL 415A - Literature and Law**  
**Credits:** 4.00  
From the gritty mean streets to the marble columned courthouse, 'Literature and Law' addresses issues of interpretation and moral judgement. Students will examine the literary explorations of various facets of the legal system and criminality and address fundamental questions raised by the law. Writing intensive. Ideal for students interested in: Justice Studies, Sociology, Political Science, and Psychology. Prereq: ENGL 401 (B or better). Writing intensive.

**ENGL 415B - Literature and Business**  
**Credits:** 4.00  
Reading literature provides fresh ways to consider the purposes, benefits, strategies, ethics, and risks of business. Using a variety of literary forms (poetry, short fiction, novels, plays, and essays) this course serves as a reflective study of business practices and how they affect individuals and groups. This course asks students to consider how literature can help us think more broadly about the function business. Ideal for students interested in Business Administration, Marketing, and Economics. Prereq: ENGL 401 (with a B or better). Writing intensive.

**ENGL 415C - Literature and Medicine**  
**Credits:** 4.00  
Literary representations of medical practice are used to prompt discussion of broad issues concerning medical philosophy and medical ethics, the image of the medical professional in the media, differing conceptions of healing in various social contexts worldwide, and changes in biological science and medicine on the larger society. Ideal for students interested in: Health Care, Biomedical Sciences, Physical therapy, and Nutrition. Prereq: ENGL 401 (with a B or better). Writing intensive.

**ENGL 415D - Literature and the Animal World**  
**Credits:** 4.00  
Our ability to define what it is to be human, what essential struggles and dilemmas humans face, depends on out understanding of the relationship between human and animal identity. In this course students address questions fundamental for those engaged in animal-related professions. Ideal for students interested in: Equine Studies, Pre-Vet, Biology, and Zoology. Prereq: ENGL 401 (with a B or better). Writing intensive.

**ENGL 415E - Literature and Cyberculture**  
**Credits:** 4.00  
What is "cyberculture" and how has it been portrayed in various forms of literature? This course explores the very nature of what cyberculture is, and looks at various aspects of this culture - computers, coders and hackers, online communities, cyber-commerce, digitization, e-mail, and so on. Students study how essayists, novelists, and dramatists have raised fundamental questions about the nature and effects of digitization upon our society. Ideal for students interested in: Business, Communications, and Computer
Science. Prereq: ENGL 401 (with a B or better). Writing intensive.

**ENGL 415F - Literature and the Psyche**  
**Credits:** 4.00  
Literature has long been fascinated with the inner lives of characters, with altered states of mind, madness and recovery, the development of a sense of selfhood and the place of mental deviance in society. This course will examine how literary texts have portrayed the psychological dimensions of human life and the personal, social and therapeutic challenges such portrayals raise. Ideal for students interested in: Psychology and Gender Studies. Prereq: ENGL 401 (with a B or better). Writing intensive.

**ENGL 415G - Literature and the Visual Arts**  
**Credits:** 4.00  
This course considers how the sister arts communicate with each other, how writers -- sometimes sassy, sometimes ecstatic -- talk back to paintings, and how painters -- and artists in other mediums -- find inspiration in myth, poetry, and the written word. Students discuss a range of questions that result from such an investigation. Ideal for students interested in: Art, Humanities, Communications, and Theater and Dance. Prereq: ENGL 401 (with a B or better). Writing intensive.

**ENGL 415J - Literature and Religion**  
**Credits:** 4.00  
Most major religions are founded on basic literary principles of "word" or "text", such as the Hebrew Torah, the Christian Bible, the Koran of Islam or the Vedas of Hinduism. While many people in our own time see literature as a "secular scripture" others see literature as a natural conduit for channeling the divine. Ideal for students interested in: Philosophy, Anthropology, Sociology, and History. Prereq: ENGL 401 (with a B or better). Writing intensive.

**ENGL 419 - Introduction to Literary Analysis**  
**Credits:** 4.00  
Critical analysis of fiction, poetry, and drama. Frequent short papers. This course is a prerequisite with a minimum grade of C for those intending to declare one of the four majors offered in the English Department. Writing intensive.

**ENGL 419H - Honors/Introduction to Literary Analysis**  
**Credits:** 4.00  
Critical analysis of fiction, poetry, and drama. Frequent short papers. This course is a prerequisite with a minimum grade of C for those intending to declare one of the four majors offered in the English Department. Writing intensive.

**ENGL 440A - On Race in Culture and Society**  
**Credits:** 4.00  
Of our special concern will be the claim that race is a culturally or socially, not biologically, constructed category. The reading list will include literary texts (Toni Morrison's "Recitatif"), works of African American comedians (Bill Cosby, Richard Pryor, Eddie Murphy, etc.), philosophical texts (Immanuel Kant, W.E.B. DuBois, K.A. Appiah, etc.) as well as some legal documents (recent U.S. Supreme Court decisions concerning affirmative action). We will also do two case studies, one on the name of Redskins and one the Whitness Project. The general goal of the course is to improve the student's ability to speak and think critically about race and race relations in the U.S. Writing intensive.  
**Co-requisites:**

**ENGL 441 - On Race and Culture in Society**  
**Credits:** 4.00  
Of our special concern will be the claim that race is a culturally or socially, not biologically, constructed
category. The reading list will include literary texts (Toni Morrison's "Recitatif"), works of African American comedians (Bill Cosby, Richard Pryor, Eddie Murphy, etc.), philosophical text (Immanuel Kant, W.E.B. DuBois, K.A. Applah, etc) as well as some legal documents (recent U.S. Supreme Court decisions concerning affirmative action). We will also do two case studies, one on the name of the Redskins and one on the Whiteness Project. The general goal of the course is to improve the student's ability to speak and think critically about race and race relations in the U.S. Writing intensive.

**ENGL 444D - Irish Identity**
**Credits:** 4.00
Explores the historical causes and literary effects of emigration from Ireland to other regions in the North and South Atlantic. Considers the political and economic conditions of Ireland itself and asks how Irish identities are first formed dialectically through contact with indigenous others and then nostalgically constituted through the experience of migration. Writing intensive.

**ENGL 444G - Ethnic America: Readings in African American, Asian American, NativeAmerican and Latino/a Literatu**
**Credits:** 4.00
This course introduces students to literature by and about African Americans, Asian Americans, Natives, and Latino/as. It introduces approaches in American Studies that will guide students in understanding and appreciating what we call ethnic literature. Secondary sources might include readings in and about ideological criticism, historical analysis, race and ethnic studies, multicultural education, formal narrative, and genre analysis. Writing intensive.

**ENGL 444K - People Stories: Investigating Identity as Literary Construction**
**Credits:** 4.00
Plato's Republic, Shakespeare's As You Like It, Thoreau's Walden, Narrative of Frederick Douglass, Austen's Mansfield Park, Palahniuk's Fight Club, Eugenides' Middlesex, Satrapi's Persepolis, Hall's Without a Map, poetry, and seminar texts in criticism are read as we complicate our notions of what shapes identity across time, race, cultures, genders, economic statuses, and through the media of dialogue, novel, drama, poetry, graphic novel, and memoir. Writing intensive.

**ENGL 444M - Food and Class: America's Food Industry and the (Im)migrant Worker**
**Credits:** 4.00
Students explore the implications of food production and labor in the US through the stories artists and writers have given us, specifically, those of migrant and immigrant food workers. Texts include Fast Food Nation, The Jungle, The Grapes of Wrath and Diary of an Undocumented Immigrant. Through writing, close reading, and collaboration, students map a path of inquiry for their study, culminating in one research and one multi-media project. Field trips to a local farm, the Dreams of Freedom Museum, and New York over spring break. Writing intensive.

**ENGL 501 - Introduction to Creative Nonfiction**
**Credits:** 4.00
A writing course that explores types of creative nonfiction such as nature writing, the profile, the memoir, and the personal essay. Extensive reading of contemporary authors to study the sources and techniques used in creative nonfiction. Regular papers, conferences, and workshops. Prereq: ENGL 401. Special fee. Writing intensive.

**ENGL 501H - Honors/Introduction to Creative Nonfiction**
**Credits:** 4.00
A writing course that explores types of creative nonfiction such as nature writing, the profile, the memoir, and the personal essay. Extensive reading of contemporary authors to study the sources and techniques used in creative nonfiction. Regular papers, conferences, and workshops. Special fee. Writing intensive.
ENGL 502 - Professional and Technical Writing  
**Credits:** 4.00  
A writing course introducing students to the effective communication of technical information through various workplace documents including resumes, memos, business letters, reports, brochures, etc. Special emphasis on an introduction to professional conventions and genres and to the transferable skills of rhetorical and audience analysis, document design and collaborative work. Prereq: ENGL 401. Special fee (no fee for students taking ENGL 502 at UNHM). Writing intensive.

ENGL 502H - Honors/Technical Writing  
**Credits:** 4.00  
A writing course introducing students to the effective communication of technical information through various workplace documents including resumes, memos, business letters, reports, brochures, etc. Special emphasis on an introduction to professional conventions and genres and to the transferable skills of rhetorical and audience analysis, document design and collaborative work. Special fee. Prereq: permission. Writing intensive.

ENGL 503 - Persuasive Writing  
**Credits:** 4.00  
Writing of all types of persuasive nonfiction prose, including argumentative essays and position papers. Special attention to argumentative structures and analysis of audiences. Weekly papers of varying lengths and formats, frequent conferences. Prereq: ENGL 401. Special fee. Writing intensive.

ENGL 504 - Resume Writing  
**Credits:** 2.00  
Write your resume now! Readings from recruiters, scholars, and managers reveal what employers want in resumes and cover letters, and what they don't want. Topics include: understanding ATS (applicant tracking systems); analyzing purpose and audience; learning cutting-edge designs; writing detailed and efficient content; tailoring your resume to the job advertisement; writing persuasive cover letters; and formatting and editing tips. Students will identify two job advertisements and write a resume and letter for each. Cr/F.

ENGL 511 - Major Writers in English  
**Credits:** 4.00  
In-depth study and discussion of a few American and/or British writers. Topics and approaches vary depending on instructors. May be repeated for credit, barring duplication of topic. Writing intensive.

ENGL 512 - Survey of British Literature I  
**Credits:** 4.00  
Selected works in poetry and prose considered in chronological order and historical context. Attention to the works and to the ideas and tastes of their periods. Anglo-Saxons to the Elizabethans. Writing intensive.

ENGL 513 - Survey of British Literature II  
**Credits:** 4.00  
Selected works in poetry and prose considered in chronological order and historical context. Attention to the works and to the ideas and tastes of their periods. The Stuart Monarchy to the Age of Enlightenment.

ENGL 513H - Honors/Survey of British Literature II  
**Credits:** 4.00  
Selected works in poetry and prose considered in chronological order and historical context. Attention to the works and to the ideas and tastes of their periods. The Stuart Monarchy to the Age of Enlightenment. Writing intensive.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 513W</td>
<td>Survey of British Literature II</td>
<td>4.00</td>
<td>Selected works in poetry and prose considered in chronological order and historical context. The Stuart Monarchy to the Age of Enlightenment. Writing intensive.</td>
</tr>
<tr>
<td>ENGL 514</td>
<td>Survey of British Literature</td>
<td>4.00</td>
<td>Selected works in poetry and prose considered in chronological order and historical context. Attention to the works and to the ideas and tastes of their periods. 1800 to the present.</td>
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<tr>
<td>ENGL 514H</td>
<td>Honors/Survey of British Literature</td>
<td>4.00</td>
<td>Selected works in poetry and prose considered in chronological order and historical context. Attention to the works and to the ideas and tastes of their periods. 1800 to the present. Writing intensive.</td>
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<tr>
<td>ENGL 514W</td>
<td>Survey of British Literature</td>
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<td>Selected works in poetry and prose considered in chronological order and historical context. Attention to the works and to the ideas and tastes of their periods. 1800 to the present. Writing intensive.</td>
</tr>
<tr>
<td>ENGL 515</td>
<td>Survey of American Literature</td>
<td>4.00</td>
<td>From the beginning of American literature to the Civil War.</td>
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<tr>
<td>ENGL 515H</td>
<td>Honors/Survey of American Literature</td>
<td>4.00</td>
<td>From the beginning of American literature to the Civil War. Writing intensive.</td>
</tr>
<tr>
<td>ENGL 515W</td>
<td>Survey of American Literature</td>
<td>4.00</td>
<td>From the beginning of American literature to the Civil War. Writing intensive.</td>
</tr>
<tr>
<td>ENGL 516</td>
<td>Survey of American Literature</td>
<td>4.00</td>
<td>From the Civil War to the present. Writing intensive.</td>
</tr>
<tr>
<td>ENGL 516H</td>
<td>Honors/Survey of American Literature</td>
<td>4.00</td>
<td>From the Civil War to the present. Writing intensive.</td>
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<tr>
<td>ENGL 517</td>
<td>Introduction to African American Literature and Culture</td>
<td>4.00</td>
<td>An introduction to African American literature in the context of a variety of cultural perspectives. Course topics may include major writers, literary genres, historical periods, Harlem Renaissance, Black Arts Movement, fine and folk arts, religion, music, and film. (Also offered as AMST 502.) Writing intensive.</td>
</tr>
<tr>
<td>ENGL 517H</td>
<td>Honors/Introduction to African American Literature and Culture</td>
<td>4.00</td>
<td>An introduction to African American literature in the context of a variety of cultural perspectives. Course topics may include major writers, literary genres, historical periods, Harlem Renaissance, Black Arts Movement, fine and folk arts, religion, music, and film. (Also offered as AMST 502.) Writing intensive.</td>
</tr>
</tbody>
</table>
ENGL 518 - Bible as Literature  
Credits: 4.00  
Literature of the Old and New Testaments and the Apocrypha, primarily in the King James version.

ENGL 518H - Honors/Bible as Literature  
Credits: 4.00  
Literature of the Old and New Testaments and the Apocrypha, primarily in the King James version. Writing intensive.

ENGL #518W - Bible as Literature  
Credits: 4.00  
Literature of the Old and New Testaments and the Apocrypha, primarily in the King James version. Writing intensive.

ENGL 520 - Literature and the History of Ideas: Dystopian and Post Apocalyptic Fiction  
Credits: 4.00  
Our survey of short stories and novellas spans historical periods and national literatures. Together these stories offer a context for literary terms, subgenres, and historical contexts, as well as diverse opportunities for close-reading. Writing assignments (blog posts and a range of analytical and creative writing options) will enable further investigations of these perennial and new classics.

ENGL 521 - Nature Writers  
Credits: 4.00  
Fiction, poetry, and nonfiction books on the natural environment. Such books as Thoreau's Walden or Maine Woods, Leopold's Sand County Almanac, Boston's Outermost House, Dillard's Pilgrim at Tinker Creek--books by naturalists who observe nature vividly and knowingly and who write out of their concern for the environment. Writing intensive.

ENGL 521H - Honors/Nature Writers  
Credits: 4.00  
Fiction, poetry, and nonfiction books on the natural environment. Such books as Thoreau's Walden or Maine Woods, Leopold's Sand County Almanac, Boston's Outermost House, Dillard's Pilgrim at Tinker Creek--books by naturalists who observe nature vividly and knowingly and who write out of their concern for the environment. Writing intensive.

ENGL 526 - Introduction to Fiction Writing  
Credits: 4.00  
Writing fiction asks us to say: who am I? What's happening in the world around me? Awakening to the story in your life, and thus to your own imagination, will change your life. Repeatedly, we see fiction writers find their power as creative people. You might become the head of a major corporation! You might just write a great novel or short story. Or just be happier. Join us: write stories, change your life. Prereq: ENGL 401. Special fee. Writing intensive.

ENGL 527 - Introduction to Poetry Writing  
Credits: 4.00  
Writing poetry is training for life - its practice deepens both the liveliness and rigor of the mind. This course is run in a workshop/discussion format - it uses innovative exercises, guided prompts, language games, and readings that teach the basics of craft, while showing you how to think like a writer, opening up to the pleasures and surprises of the creative process. No prior experience necessary. Prereq: ENGL 401. Special fee. Writing intensive.

ENGL 530 - Introduction to Poetry
Credits: 4.00
American and British poetry. Various poetic techniques and their demonstration. See course descriptions available in department office for further information. (Not offered each semester.) Writing intensive.

ENGL 531 - Introduction to Drama
Credits: 4.00
Introduction to the art of drama, through study of British and American plays, as well as plays translated from other languages. How to read a play. Live and filmed performances studied as available. See course descriptions available in department office for further information. (Not offered each semester.) Writing intensive.

ENGL 533 - Introduction to Film Studies
Credits: 4.00
A survey of the international development of the motion picture from the silent period to the present, emphasizing film's narrative practices. Introduces students to the study of the art, history, technology, economics, and theory of cinema. Films and film makers of various nations, periods, movements, and genres examined. Mandatory weekly screenings in addition to class. Students cannot receive credit for both ENGL 533 and CMN 550. Special fee.

ENGL 533H - Honors/Introduction to Film Studies
Credits: 4.00
A survey of the international development of the motion picture from the silent period to the present, emphasizing film's narrative practices. Introduces students to the study of the art, history, technology, economics, and theory of cinema. Films and film makers of various nations, periods, movements, and genres examined. Mandatory weekly screenings in addition to class. Students cannot receive credit for both ENGL 533 and CMN 550. Special fee. Writing intensive.

ENGL 533W - Introduction to Film Studies
Credits: 4.00
A survey of the international development of the motion picture from the silent period to the present, emphasizing film's narrative practices. Introduces students to the study of the art, history, technology, economics, and theory of cinema. Films and film makers of various nations, periods, movements, and genres examined. Mandatory weekly screenings in addition to class. Students cannot receive credit for both ENGL 533 and CMN 550. Special fee. Writing intensive.

ENGL 534 - 21st Century Journalism: How the News Works
Credits: 4.00
This class explores ways new technology, including social media, has affected the practice of journalism, and examines journalism past and present. Students discuss libel law, ethics and how to define plagiarism in the digital age. This survey is meant not only to lay a foundation for prospective journalists, but also to provide a broad understanding of the news media for those interested in how the news works.

ENGL 549 - In the Groove: African American Music as Literature
Credits: 4.00
This is a music appreciation course that focuses on getting students into, behind, and under "the groove" of African American music and its intellectual traditions of black pride, power, and cultural expressivty. This course will contain a broad introduction to African American music origins but it will also consifer the impact of cultural contexts such as slavery and Euro-American musical influences on African American culture. Students will gain new appreciation for the multi-faceted and wide-ranging ways in which African American music is performed how this music has helped unite one nation under its soulful groove.

ENGL 550 - Introduction to the Literature and Culture of Race
This course introduces students to readings across the field of ethnic literature and culture in order to form their capacity to speak and think critically about race relations in America. Readings will include those in race theory, racial construction and authenticity, histories of raced subjects in America, the rise of ethnic studies, white ignorance and whiteness studies, the intersectionality of race with gender, sexual orientation, economic class, religion, and faith. Includes Asian American, African American, Native, and Latino/a literature. Writing intensive.

ENGL 555 - Science Fiction
Credits: 4.00
This course examines stories, novels, and film from the popular genre of science fiction. A variety of literary critical approaches are deployed to discuss a number of key authors and texts from the nineteenth century to the present.

ENGL 557 - Crime and Espionage
Credits: 4.00
This course examines stories, novels, and film from the popular genre of Crime Fiction and Espionage. A variety of literary critical approaches are deployed to discuss a number of key authors and texts from the nineteenth century to the present.

ENGL 575 - Sex and Sensibility: The Rise of Chick Lit from Jane Austen to Bridget Jones
Credits: 4.00
This course focuses on the novel of manners, a literary tradition that began in the nineteenth century, but enjoys widespread popularity in the contemporary phenomenon dubbed as "chick lit". We will survey how this qualitative sociology negotiates the interplay between romantic and economic concerns. Texts may include works by major writers of this subgenre, e.g. Jane Austen, Edith Wharton, and Evelyn Waugh, as well as new incarnations like 'Bridget Jones Diary' and 'Sex and the City'.

ENGL 581 - Introduction to Postcolonial Literatures in English
Credits: 4.00
Survey of contemporary Asian, African, and Caribbean fiction, drama, travelogues, essays, and poetry from the 1950s to the present. Introduces political, historical, and cultural contexts within which these forms are produced. Writing intensive.

ENGL 581H - Honors/Introduction to Postcolonial Literatures in English
Credits: 4.00
Survey of contemporary Asian, African, and Caribbean fiction, drama, travelogues, essays, and poetry from the 1950s to the present. Introduces political, historical, and cultural contexts within which these forms are produced. Writing intensive.

ENGL 585 - Introduction to Women in Literature
Credits: 4.00
Survey of images of women in literature. Context and approach vary depending on instructor. Writing intensive.

ENGL #585H - Honors/Introduction to Women in Literature
Credits: 4.00
Survey of images of women in literature. Context and approach vary depending on instructor. Writing intensive.

ENGL 595 - Literary Topics
Credits: 1.00 to 4.00
Various faculty members investigate topics of special interest at a level appropriate for non-majors. Past topics have included Irish literature, animals in literature, and literature of the Vietnam War. See department for details of current offerings. May be repeated for credit, barring duplication of topic.

**ENGL 595H - Honors/Literary Topics**  
**Credits:** 1.00 to 4.00  
Various faculty members investigate topics of special interest at a level appropriate for non-majors. Past topics have included Irish literature, animals in literature, and literature of the Vietnam War. See department for details of current offerings. May be repeated for credit, barring duplication of topic. Writing intensive.

**ENGL 595W - Literary Topics**  
**Credits:** 1.00 to 4.00  
Various faculty members investigate topics of special interest at a level appropriate for non-majors. Past topics have included Irish literature, animals in literature, and literature of the Vietnam War. See department for details of current offerings. May be repeated for credit, barring duplication of topic. Writing intensive.

**ENGL 600 - English for International Students**  
**Credits:** 1.00 to 4.00  
Designed for international students to provide additional support in course work. Students continue to develop skills in listening comprehension, speaking, reading, and writing in English. This is a variable credit course and may be repeated up to a total of 4 credits. No letter grades. Prereq: permission from ESL Institute. Cr/F. Writing intensive. Credits received for this course can help satisfy the requirements for student visa, but they will normally not count towards a graduate degree. Students are encouraged to check with their individual academic advisors.

**ENGL 602 - Advanced Professional and Technical Writing**  
**Credits:** 4.00  
An advanced writing course focusing on writing in a global and technological workplace. In addition to fluency in the documents of the workplace, students focus on visual rhetoric in a technological environment through web design and usability while studying the issues of globalism, ethics, and the environment that affect all professional writing today. Writing intensive.

**ENGL 605 - Intermediate Linguistic Analysis**  
**Credits:** 4.00  
Introduces analysis methods and problem solving in phonology, morphology, and syntax using data from many languages. Emphasis will be both practical (learning how to describe the grammar and sound system of a language) and theoretical (understanding languages' behavior). Prereq: ENGL/LING 405, or permission. (Also offered as LING 605.)

**ENGL 606 - Languages of the World**  
**Credits:** 4.00  
A survey of the languages of the world from genetic, areal, and typological perspectives. Students learn about the geographic and demographic distribution of language families and language isolates, as well as about structural characteristics of languages, language families and language areas. Additional topics include language endangerment and the question of linguistic universals. Students work collaboratively on a project investigating a particular language family, giving in class presentations and writing up a final project report. Some prior knowledge of phonetics, phonology, morphology, and syntax is necessary. Prereq: ENGL/LING 605 or ENGL/LING 405 and permission of the instructor.

**ENGL 609 - Ethnicity in America: The African American Experience in the 20th Century**
Credits: 4.00
Investigation of the music, literature, and social history of African American America in the period of the Harlem Renaissance, in the Great Depression, World War II, and in the 1960s. Special attention to the theme of accommodation with and rejection of dominant white culture. (Also offered as AMST 609, HUMA 609.) Writing intensive.

ENGL 616A - Studies in Film/Genre
Credits: 4.00
Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

ENGL 616B - Studies in Film/Authorship
Credits: 4.00
Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

ENGL 616C - Studies in Film/Culture and Ideology
Credits: 4.00
Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

ENGL 616D - Studies in Film/Narrative and Style
Credits: 4.00
Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

ENGL 618 - Film Theory
Credits: 4.00
Examines basic theories of film and their relationship to the practice of close analysis of film. Theories are meant to provide students with a vocabulary for critical analysis and stress the many ways of seeing film.

ENGL 619 - Critical Approaches to Literature
Credits: 4.00
Selected methods of literary criticism applied to fiction, poetry, and/or drama with critical approaches varying from year to year. A follow-up of 419 (previously 519), course provides a second semester of training in critical reading and writing, and examining such major modern strategies as formalist, biographical, archetypal, psychological, sociological, historical, feminist, and structuralist criticism. Prereq: ENGL 419 (previously 519) or equivalent. Writing intensive.

ENGL 620 - English Major Internship
Credits: 1.00 to 4.00
Open to all English majors. Internships allow students to use skills learned in the major in a supervised work setting. In addition to the job experience, the English major internship requires research and writing assignments overseen by a faculty sponsor. These supplementary assignments must be outlined in a written proposal describing the work involved in the internship and how it relates to the student's academic training. Registration requires permission from the employer, faculty sponsor, major advisor, and department chairperson. The employer must be an established organization approved by Career Services. This course does not count toward the English major or substitute for English 720, the Journalism Internship. May be repeated for a maximum of 8 credits. Cr/F

ENGL 621 - Writing and Reporting the News I
Credits: 4.00
Students get a strong journalistic foundation with hands-on experience reporting and writing compelling news stories for print and digital platforms. Skills taught include finding news stories and tracking down sources; conducting interviews and verifying facts; and drafting and revising stories. Prereq: ENGL 401, ENGL 534 and permission of the instructor. ENGL 621 may be taken more than once for credit with the approval of the Journalism Program Director, up to a maximum of 8.00 credits. Students must fill out a Permission to Repeat an English Course For Credit form, available in the department office. Special fee. Writing intensive.

ENGL 622 - Writing and Reporting the News II
Credits: 4.00
An intermediate workshop that asks students to report in greater depth and experiment with different storytelling methods. Students delve into feature writing as well as newswriting. Prereq: B or better in ENGL 621 and written permission of instructor. Special fee. Writing intensive.

ENGL 623 - Creative Nonfiction
Credits: 4.00
Intensive writing course emphasizing the blend of basic elements that constitute creative nonfiction: research, observation, and personal experience. Also readings and discussion of some of the best published creative nonfiction. Prereq: ENGL 501. May be taken more than once for credit, recommended with two different instructors. Students may repeat ENGL 623 up to a maximum of 8 credits. Special fee. Writing intensive.

ENGL 625 - Intermediate Fiction Writing Workshop
Credits: 4.00
Students continue to explore the aspects of fiction writing. Through short exercises students learn to create visual scenes, integrate exposition with dramatic scene, and construct convincing characters in believable situations. We'll continue to explore the basic elements of what makes a short story, such as point of view, dialogue, dramatization, voice, meaning, language. Students write short stories and significantly revise them. Through discussion of student writing in a workshop format, as well as reading and responding to short stories by published authors, we'll address the questions: What is a short story? How do we create a world in which the reader is fully involved? Where does the story evoke emotion or meaning? Prereq: ENGL 526 or ENGL 501. ENGL 625 may be taken more than once for credit, recommended with two
different instructors. Students may repeat ENGL 625 up to a maximum of 8 credits. Special fee. Writing intensive.

**ENGL 627 - Intermediate Poetry Writing Workshop**  
**Credits:** 4.00  
Workshop discussion of poems written by students, with focus on more complex techniques and forms. Individual conferences with instructor. Prereq: ENGL 527 or 501. ENGL 627 may be taken more than once for credit, recommended with two different instructors. Students may repeat ENGL 627 up to a maximum of 8 credits. Special fee. Writing intensive.

**ENGL 631 - Introduction to Digital Reporting**  
**Credits:** 4.00  
This course immerses students in the digital news landscape and teach them to report across multiple platforms. Students learn reporting tools and strategies for producing dynamic digital journalism. Prereq: ENGL 534, ENGL 621 with a 'B' or better. Writing intensive.

**ENGL 636 - Literature and the Environment**  
**Credits:** 4.00  
Literary and geographical approaches to place and space; readings and other materials exploring how cultures or authors represent nature. Writing intensive. May be repeated for credit if topic differs.

**ENGL 649 - Studies in British Literature and Culture**  
**Credits:** 4.00  
Special topics in British studies, varying from year to year. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

**ENGL 650 - Studies in American Literature and Culture**  
**Credits:** 4.00  
Special topics in American studies, varying from year to year. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

**ENGL 651 - Comparative Literature**  
**Credits:** 4.00  
Comparative studies of major authors representative of important periods of world literary achievement. Homer to Dante; common themes and the development of the epic tradition in early Western literature. Topics and approaches vary from semester to semester. Writing intensive.

**ENGL 657 - Shakespeare**  
**Credits:** 4.00  
Ten major plays representative of the main periods of Shakespeare's career and the main types of drama which he wrote (tragedy, comedy, history). Live and filmed performances included as available. Restricted to undergraduates and designed for both English majors and students majoring in other fields. Writing intensive.

**ENGL 657H - Honors/Shakespeare**  
**Credits:** 4.00  
Ten major plays representative of the main periods of Shakespeare's career and the main types of drama which he wrote (tragedy, comedy, history). Live and filmed performances included as available. Restricted to undergraduates and designed for both English majors and students majoring in other fields. Writing intensive.

**ENGL 680 - Early British Drama**
Credits: 4.00
A survey of the development of British drama from the Middle Ages to the closing of the theatres in 1642.

ENGL 681 - Introduction to African Literatures in English
Credits: 4.00
In-depth study of writers, literary movements, political contexts, and historical pressures that have shaped and continue to shape African literatures in the colonial and postcolonial periods. Primary focus on Anglophone texts but possibly some literature in translation. Writing intensive.

ENGL #685 - Women's Literary Traditions
Credits: 4.00
Intensive study of themes, topics, and techniques in women's literature. Topics vary from year to year. May be repeated for credit, barring duplication of topic.

ENGL 685W - Women's Literary Traditions
Credits: 4.00
Intensive study of themes, topics, and techniques in women's literature. Topics vary from year to year. May be repeated for credit, barring duplication of topic. Writing intensive.

ENGL 690 - Introduction to African American Literature in America
Credits: 4.00
Selected prose, fiction, drama, and poetry. Individual works and historical-cultural background. Course varies from year to year. Writing intensive.

ENGL 693 - Special Topics in Literature
Credits: 4.00

ENGL 694 - Special Topics in Creative Writing
Credits: 4.00
Courses offered under this number feature a variety of topics having to do with creative writing. Barring duplication of subject, course may be repeated for credit. For details, see the course descriptions available in the English Department. Writing intensive.

ENGL 701 - Advanced Fiction Writing Workshop
Credits: 4.00
Students come to this course with a firm grasp of all the elements of fiction, ready to write short stories that construct convincing characters in believable situations. In a workshop format, students give and receive critiques on classmate's work. Significant revisions of short stories and thorough discussions of work by published authors will round out the course as students continue to explore the art of writing the short story. Students are responsible for leading discussion of published stories. Prereq: ENGL 625 with a grade of B or better. ENGL 701 may be taken more than once for credit, recommended with two different instructors. Students may repeat ENGL 701 up to a maximum of 8 credits. Special fee. Writing intensive.

ENGL 703 - Travel Writing
Credits: 4.00
A Workshop devoted to reading and writing and writing narratives of place. Travel writing requires the
author to research and reflect, exploring both the external--the place--and the internal--the author's experience. Students write multiple travel pieces and read widely essays of place by writers such as John Steinbeck, Joan Didion, Pico Iyer and Eliza Griswold. Permission of instructor required. Prereq: ENGL 501, 621 or 623. Writing intensive.

Co-requisites:

**ENGL 703T - Travel Writing**
**Credits:** 4.00
A Workshop devoted to reading and writing and writing narratives of place. Travel writing requires the author to research and reflect, exploring both the external--the place--and the internal--the author's experience. Students write multiple travel pieces and read widely essays of place by writers such as John Steinbeck, Joan Didion, Pico Iyer and Eliza Griswold. Permission of instructor required. Prereq: ENGL 501, ENGL 621 or ENGL 623. Writing intensive.

Co-requisites: INCO 589

**ENGL 705 - Advanced Poetry Writing Workshop**
**Credits:** 4.00
Workshop discussion of advanced writing problems and submitted poems. Individual conferences with instructor. Prereq: ENGL 627 with a grade of B or better. ENGL 705 may be taken more than once for credit, especially with two different instructors. Student may be repeat ENGL 705 up to a maximum of 8 credits. Special fee. Writing intensive.

**ENGL 708 - Nonfiction: Form and Technique**
**Credits:** 4.00
A writer's view of contemporary nonfiction, emphasizing the choices the writer faces in the process of research writing. (Not offered every year.) Writing intensive.

**ENGL #709 - Poetry: Form and Technique**
**Credits:** 4.00
A writer's view of the problems, traditions, and structures of poetry. Writing intensive.

**ENGL 710 - Teaching Writing**
**Credits:** 4.00
This course will introduce you both to the theories and practices of teaching writing in middle and high school at a time of increased accountability. The course is designed for students who are interested in exploring teaching as a possible career. In the course we will try out varied literacy activities and study teaching writing using a process approach. We discuss different approaches to planning instruction and various forms of writing assessment, including state-wide tests. Open to juniors and seniors only. Writing intensive.

**ENGL 711 - Editing**
**Credits:** 4.00
Emphasis on newspaper editing but principles applicable to magazine and book editing are also covered. Prereq: B or better in ENGL 621 and written permission of instructor. Special fee. Writing intensive.

**ENGL 712 - Multimedia Storytelling**
**Credits:** 4.00
In this course, students explore the theory and practice of visual storytelling -- including composition, lighting, editing and more -- to produce short yet vibrant journalistic video documentaries. Students learn to shoot and edit audio and video. They explore narrative techniques and structure. They broaden their reportorial range, bringing visual sensitivity to storytelling. Prereq: ENGL 621 and ENGL 631 and permission of the instructor. Writing intensive.
ENGL 715 - Teaching English as a Second Language: Theory and Methods
Credits: 4.00
How linguistic, psychological, sociological, and neurological theory influence or even determine the choice of methods of language teaching. Research on second language acquisition and bilingualism, language aptitude, and the cultural context of language acquisition. Introduction to standard and exotic methods of language teaching. Writing intensive.

ENGL 716 - Curriculum, Materials and Assessment in English as a Second Language
Credits: 4.00
Study of the problems in designing an effective teaching program for various types of ESL students. Competence and aptitude testing; choosing and adapting materials for ESL classes. Writing intensive.

ENGL 719 - Sociolinguistics Survey
Credits: 4.00
How language varies according to the characteristics of its speakers: age, sex, ethnicity, attitude, time, and class. Quantitative analysis methods; relationship to theoretical linguistics. Focus is on English, but some other languages are examined. Prereq: ENGL or LING 405 (previously numbered 505) or permission.

ENGL 720 - Journalism Internship
Credits: 1.00 to 16.00
Students intending to pursue careers in journalism spend a semester working full or part time for a daily newspaper under close supervision of editors. Reporting is stressed, but students may do some editing as well. The number of internships is very limited. Prereq: ENGL 622 required; ENGL 722 recommended; permission. Writing intensive.

ENGL 721 - Advanced Reporting
Credits: 4.00
While the theme of this course is teaching students advanced techniques of writing and reporting, each semester the course is offered it focuses on different areas of journalism. One semester, students may learn multimedia reporting - storytelling across multiple platforms, including video and audio - and in other semesters the course may focus on sportswriting. Yet in others, students will develop their news reporting skills. The course may be taken multiple times for credit with the approval of the Journalism Program Director. Prereq: 'B' or better in ENGL 621 and written permission of instructor. Special fee. Writing intensive.

ENGL 723 - Issues in Journalism
Credits: 4.00
This upper-level seminar focuses on the shifts in technology and public perception that are changing the definition of excellence in journalism. Special attention to legal and ethical issues reshaping journalism's public service role. Prereq: Grade of B in ENGL 621 and written permission. May be repeated once for credit with permission of the journalism director. Special fee. Writing intensive.

ENGL 724 - Sports Writing
Credits: 4.00
This class immerses students in all aspects of professional sports writing. Using in-class and real-world assignments, the class exposes students to such practical applications as covering live events; feature writing; covering breaking news; column writing/blogging; and writing a running game story on a real-time deadline. Prereq: ENGL 621 Newswriting with a 'B' or better.

ENGL 725 - Seminar in English Teaching
Credits: 4.00
In this seminar on teaching English at the middle- and secondary-school levels, students meet the requirements for both English 710, Teaching Writing and English 792, Teaching Secondary School English. The two-semester course integrates the teaching of reading, writing, speaking, and listening, addressing both theoretical and practical issues. Through the study of different approaches, students develop their own philosophies of instruction. Writing intensive.

**ENGL 726 - Seminar in English Teaching**  
**Credits:** 4.00  
In this seminar on teaching English at the middle- and secondary-school levels, students meet the requirements for both English 710, Teaching Writing and English 792, Teaching Secondary School English. The two-semester course integrates the teaching of reading, writing, speaking, and listening, addressing both theoretical and practical issues. Through the study of different approaches, students develop their own philosophies of instruction. Writing intensive.

**ENGL 727 - Issues in Second Language Writing**  
**Credits:** 4.00  
Study of various issues in second language writing theory, research, instruction and administration. Topics include the characteristics and needs of second language writers, second language writing processes, contrastive rhetoric, grammar instruction, teacher and peer feedback, assessment, course design and placement. Writing intensive.

**ENGL 729 - Special Topics in Composition Studies**  
**Credits:** 4.00  
Advanced course on a topic chosen by the instructor. Precise topics and methods of each section vary. Possible topics include alternative discourses and rhetorics, contrastive rhetoric, electronic discourse and digital rhetoric, women's rhetorics and feminist pedagogies, Montaigne and the essay tradition, theories of literacy, theories of persuasive writing, theories of transactional writing, and written discourse analysis. Barring duplication of subject, may be repeated for credit. For details see descriptions available in the English Department. Writing intensive when topic is studies in rhetoric and composition.

**ENGL 730 - Practicum in Teaching English and the Language Arts**  
**Credits:** 1.00 to 6.00  
A site-based course for practicing teachers that features in-class observations and demonstrations, individual consultation, and group meetings in the schools. Prereq: permission. May be repeated to a maximum of 8 credits.

**ENGL #732 - Folklore and Folklife**  
**Credits:** 4.00  
Examines the materials and methods used to study folklife, emphasizing the historical context and development of folklore studies in North America and Europe, field research, performance theory, and other topics. (Also offered as ANTH 698.) Writing intensive.

**ENGL 733 - Special Studies in Film**  
**Credits:** 4.00  
Specialized and advanced study in film and cinema studies. Topics vary and may include literature and film, Asian-American film, film genres, and advanced film theory. May be repeated once for credit as long as topics are different. Special fee.

**ENGL 733W - Special Studies in Film**  
**Credits:** 4.00  
Specialized and advanced study in film and cinema studies. Topics vary and may include literature and film, Asian-American film, film genres, and advanced film theory. May be repeated once for credit as long
as topics are different. Special fee. Writing intensive.

**ENGL 734 - Special Topics in Literary Theory**
**Credits: 4.00**
Covers various topics dealing with diverse issues in literary and cultural theory. Prerequisite ENGL 619 or equivalent theory/philosophy class. Offered irregularly. For a specific description see English course offerings. Only open to English majors.

**ENGL 735 - Entrepreneurial Journalism**
**Credits: 4.00**
This course teaches journalism students to think like business people so they can compete in the exploding world of online publishing. Students work on ways to monetize good journalism practices by studying opportunities available and applying what they learn to a publishing project. Those who prefer print will find the course valuable as they learn to balance business objectives with quality journalism. Prereq: ENGL 621 with a B or better. Writing intensive.

**ENGL 736 - Environmental Theory**
**Credits: 4.00**
Theoretical approaches to nature writing. Topics vary but may include eco-memoirs, environmental rhetoric, native peoples and the land, land and national identity, animals in literature, and environmental activist non-fiction. Writing intensive. May be repeated for credit if topic differs.

**ENGL 738 - Topics in Asian American Studies**
**Credits: 4.00**
Study of the literature, history, scholarship, and current thought by and about Asian America. Representative works from among Japanese Americans, Chinese Americans, Korean Americans, Southeast Asian Americans, and South Asian Americans. (Also listed as AMST 615.) Writing intensive.

**ENGL 739 - American Indian Literature**
**Credits: 4.00**
Close study of traditional and/or contemporary American Indian literature and folklore with historical and cultural background. Writing intensive.

**ENGL #740 - Indigenous New England**
**Credits: 4.00**
An interdisciplinary introduction to the literatures, histories, and cultures of indigenous people located in what is now called New England. Course topics may include U.S. American Indian policy, tribal government structures and resistance, the history and forms of indigenous literacy, contemporary sovereignty struggles, popular culture, and film. Curricular activity with regional Native people required such as a visit to a Native community, work with tribal guest speakers, participation in a lecture or film series. (Also offered as AMST 611.) Writing intensive.

**ENGL 741 - Literature of Early America**
**Credits: 4.00**
Prose and poetry of the periods of exploration, colonization, early nationalism, Puritanism, Enlightenment. Individual works and historical-cultural background. (Not offered every year.) Writing intensive.

**ENGL 742 - American Literature, 1815-1865**
**Credits: 4.00**
Fiction, nonfiction, and poetry in the period of romanticism, transcendentalism, nationalism. Individual works and cultural background. (Not offered every year.) Writing intensive.
ENGL 743 - American Literature, 1865-1915  
Credits: 4.00
Fiction, nonfiction, and poetry in the period of realism, naturalism, industrialism, big money. Individual works and background. Writing intensive.

ENGL 744 - American Literature, 1915-1945  
Credits: 4.00
Fiction, poetry, and drama in the period of avant-garde and leftism, jazz age, and Depression. Individual works and cultural background. Writing intensive.

ENGL 745 - Contemporary American Literature  
Credits: 4.00
A gathering of forms, figures, and movements since 1945. Individual works and cultural background. Writing intensive.

ENGL 746 - Studies in American Drama  
Credits: 4.00
Topics vary from year to year. Examples: 20th-century American drama; contemporary playwrights; theatricality in American life. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

ENGL 747 - Studies in American Poetry  
Credits: 4.00
Topics vary from year to year. Examples: poets of the open road, Pound and his followers, major American poets, contemporary American poetry. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

ENGL 748 - Studies in American Fiction  
Credits: 4.00
Topics vary from year to year. Examples: the romance in America, the short story, realism and naturalism, the city novel, fiction of the thirties. May be repeated for credit, barring duplication of topic. Writing intensive.

ENGL 749 - Major American Authors  
Credits: 4.00
Intensive study of two or three writers. Examples: Melville and Faulkner; Fuller, Emerson, and Thoreau; James and Wharton; Dickinson and Frost. May be repeated for credit, barring duplication of topic. Writing intensive.

ENGL 750 - Special Studies in American Literature  
Credits: 4.00
Topics vary from year to year. Examples: the Puritan heritage, ethnic literatures in America, landscape in American literature, five American lives, pragmatism, American humor, transcendentalism, women regionalists. May be repeated for credit, barring duplication of topic. Writing intensive.

ENGL 751 - Medieval Epic and Romance  
Credits: 4.00
The two major types of medieval narrative; comparative study of works from England, France, Germany, and Iceland, including Beowulf, Song of Roland, the Nibelungenlied, Njal's Saga, and Malory's Morte d'Arthur. All works read in modern English translations. (Not offered every year.) Writing intensive.

ENGL 752 - History of the English Language
Credits: 4.00
Evolution of English from the Anglo-Saxon period to the present day. Relations between linguistic change and literary style. (Not offered every year.) Writing intensive.

**ENGL 753 - Old English**
Credits: 4.00
Introduction to Old English language and literature through the reading of selected poetry and prose.

**ENGL 756 - Chaucer**
Credits: 4.00
The Canterbury Tales in its original language. Writing intensive.

**ENGL 758 - Shakespeare**
Credits: 4.00
A few plays studied intensively. Live and filmed performances included as available. Special fee. Writing intensive.

**ENGL 759 - Milton**
Credits: 4.00
Milton and his age. Generous selection of Milton's prose and poetry, with secondary readings of his sources and contemporaries. (Not offered every year.) Writing intensive.

**ENGL 767 - Literature of the Restoration and Early 18th Century**
Credits: 4.00
Poetry, drama, fiction, letters, journals, and essays from the period following the restoration of Charles II to the throne of England after the English Civil War. Works by such figures as John Dryden, Aphra Behn, Daniel Defoe, Jonathan Swift, Alexander Pope, and Lady Mary Wortley Montagu studied in the historical context. Examples from the colonial world and the continent (in translation) when appropriate. Writing intensive.

**ENGL 768 - Literature of the Later 18th Century**
Credits: 4.00
Poetry, drama, fiction, letters, journals, essays, and biography from the period that culminated in the American and French Revolutions. Works by such figures as Henry Fielding, Samuel Johnson, Frances Burney, Laurence Sterne, William Blake, and Mary Wallstonecraft studied in historical context. Examples from the colonial world and the continent (in translation) when appropriate. Writing intensive.

**ENGL 769 - English Romantic Period**
Credits: 4.00
Major literary trends and authors, 1798 to 1832. Focus on poetry but attention also to prose works and critical theories. Wordsworth, Coleridge, Lamb, Hazlitt, DeQuincey. (Not offered every year.) Writing intensive.

**ENGL 771 - English Victorian Period**
Credits: 4.00
Fiction, nonfiction, and poetry from 1832-1870. The growth of the city and middle-class life, with particular emphasis on money and love. Authors include Charlotte and Emily Bronte, Charles Dickens, E.B. Browning, A.L. Tennyson. (Not offered every year.) Writing intensive.

**ENGL 772 - English Victorian Period**
Credits: 4.00
Fiction, nonfiction, and poetry from 1870-1900. The social conflicts created by gender politics and imperial
expansion, with particular emphasis on aesthetics and gothic horror. Thomas Hardy, Oscar Wilde, R.L. Stevenson, Bram Stoker. (Not offered every year.) Writing intensive.

**ENGL 773 - British Literature of the 20th Century**
**Credits:** 4.00

**ENGL 774 - British Literature of the 20th Century**
**Credits:** 4.00
Poets and novelists of the modernist and postmodernist periods. A selection of postmodernist or contemporary writers, such as William Golding, Doris Lessing, John Fowles, Philip Larkin, Seamus Heaney, Margaret Drabble, and others. Writing intensive.

**ENGL 775 - Irish Literature**
**Credits:** 4.00
Survey from the beginnings to present; works in Irish (read in translation) such as The Cattle Raid of Cooley, medieval lyrics, and Mad Sweeney; and works in English from Swift to the present. 20th-century authors: Joyce, Yeats, Synge, O'Casey, Beckett, and Flann O'Brien. (Not offered every year.)

**ENGL 777 - Postcolonial Novel**
**Credits:** 4.00
Representative novels from writers such as Salman Rushdie, Amitava Ghosh, Bapsi Sidhwa, R. K. Narayan, Raja Rao, Romesh Gunasekara, Arundati Roy, Mahasweta Devi, U.R. Anantamoorthy, and others. Study of the development of the novel in English in South Asia from the mid-nineteenth century to the present day, Focus is on novels originally written in English; English translations from other South Asian languages when appropriate. Writing intensive.

**ENGL 778 - Race and Gender in Film and Popular Culture**
**Credits:** 4.00
This course explores representations of race and gender in American cinema and popular culture and features weekly readings in contemporary race and gender theories. Topics include the black women's gaze; woman as object; the action hero and hyper-masculinity; hybridity; race/ethnicity and hypersexuality; the crisis of white masculinity; white privilege; sexual orientation; transsexual and transgender performance. This course is reading and Blackboard intensive, requiring weekly writing assignments and papers. It is NOT writing intensive.

**ENGL 779 - Linguistic Field Methods**
**Credits:** 4.00
Study of a non-Indo-European language by eliciting examples from an informant, rather than from written descriptions of the language. Students learn how to figure out the grammar of a language from raw data. Prereq: ENGL/LING 405. (Also offered as LING 779.) Special fee. (Not offered every semester) Writing intensive.

**ENGL 780 - Drama of Shakespeare's Contemporaries**
**Credits:** 4.00
Study of the drama of Renaissance England, emphasizing Tudor and Stuart drama. Special attention to dramatic forms, acting conventions, theatre architecture, women as patrons, writers, and subjects of drama, and the politics and social significance of theatre in the period. Writing intensive.

**ENGL 781 - English Drama, 1660-1800**
**Credits:** 4.00
Study of the selected plays, their performance and their publication. Works by such figures as William Wycherley, Thomas Otway, Mary Pix, George Lillo, Susanna Centlivre, Richard Sheridan, and Elizabeth Inchbald. Special attention to the new prominence of women in the drama of this period, changes in theatre architecture, forms of non-dramatic spectacle, and the political and social significance of drama. Writing intensive.

**ENGL 782 - Modern Drama**  
**Credits:** 4.00  
Major English, American, and (translated) European plays of the modern period by such playwrights as Shaw, Ibsen, Chekhov, Strindberg, Pirandello, O'Neill, Brecht, Beckett, Williams, Miller, Pinter. Live and filmed performances studied as available. (Not offered every year.) Writing intensive.

**ENGL 783 - English Novel of the 18th Century**  
**Credits:** 4.00  
Study of the rise and development of the novel in the eighteenth century. Works by such figures as Daniel Defoe, Eliza Haywood, Samuel Richardson, Henry Fielding, Charlotte Lennox, Laurence Sterne, Frances Burney, and Jane Austen. Focus on writers who published their work in England but with examples from the colonial world and the continent (in translation) when appropriate. Writing intensive.

**ENGL 784 - English Novel of the 19th Century**  
**Credits:** 4.00  
Representative novels from among Austen, Scott, Dickens, Thackeray, Emily Bronte, Charlotte Bronte, Trollope, George Eliot, Hardy, and Conrad. Writing intensive.

**ENGL 785 - Major Women Writers**  
**Credits:** 4.00  
Intensive study of one or more women writers. Selections vary from year to year. May be repeated for credit, barring duplication of topic. Writing intensive.

**ENGL 787 - English Major Seminar**  
**Credits:** 4.00  
Intensive study of specialized topics that vary from year to year. Enrollment in each seminar is limited to 15 so that all students can take an active part in discussion and work closely with the instructor on their papers. For details, see course description available in the department office. Prereq: ENGL 419 with a grade of B or better. This course may be repeated for credit (up to a maximum of 8 credits) with the approval of the English Department. Writing intensive.

**ENGL 788 - Senior Honors**  
**Credits:** 4.00  
Open to senior English majors who, in the opinion of the department, have demonstrated the capacity to do superior work; permission required. An honors project consists of supervised research leading to a substantial thesis or writing of poetry or fiction portfolio. Required of students in the honors in major program. (Not offered every year.) Writing intensive.

**ENGL 789 - Special Topics in English Teaching**  
**Credits:** 4.00  
Advanced theories and practices course on English Teaching. Topics such as A) Teaching Young Adult Literature, C) Teaching English in Diverse Contexts, D) Teaching Drama, N) Teaching Nonfiction, R) English Teachers as Researchers, and T) Alternate Literacies and Teaching Technologies. Barring duplication of subject, course may be repeated for credit. For details see course descriptions available in the English department. Writing intensive.
ENGL 790 - Special Topics in Linguistics  
Credits: 4.00  
Advanced course on a topic chosen by the instructor. Inquire at the English department office for a full course description each time the course is offered. Topics such as word formation, dialectology, linguistic theory and language acquisition, history of linguistics, language and culture, cross-disciplinary studies relating to linguistics. Barring duplication of subject, may be repeated for credit. (Also offered as LING 790.) Writing intensive.

ENGL 791 - English Grammar  
Credits: 4.00  
Survey of the grammar of English (pronunciation, vocabulary, sentence structure, punctuation, dialect variation, historical change) with special attention to the distinction between descriptive and prescriptive grammar and to the problems students have with formal expository writing. Writing intensive.

ENGL 792 - Teaching Literature and Literacy  
Credits: 4.00  
This course introduces theories and practices of teaching literature and literacy, including teaching reading and writing as well as teaching literary analysis at the secondary level. Students also learn to plan lessons, choose texts, and create learning activities for speaking, listening, and viewing in grade five through twelve. The course is designed for students who are interested in teaching as a possible career.

ENGL 793 - Phonetics and Phonology  
Credits: 4.00  
The sound system of English and other languages as viewed from the standpoint of modern linguistic theory, including the following topics: the acoustic and articulatory properties of speech sounds, the phonemic repertories of particular languages, phonological derivations, and prosodic phenomena such as stress and intonation. (Also offered as LING 793.) Prereq: a basic linguistics course or permission.

ENGL 794 - Syntax and Semantic Theory  
Credits: 4.00  
Relationship of grammar and meaning as viewed from the standpoint of modern linguistic theory. Emphasizes the syntax and semantics of English, with special attention to the construction of arguments for or against particular analyses. (Also offered as LING 794.) Prereq: a basic linguistics course or permission. Writing intensive.

ENGL 795 - Independent Study  
Credits: 1.00 to 4.00  
Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit up to a maximum of 8 credits. Writing intensive.

ENGL 797 - Special Studies in Literature  
Credits: 4.00  

ENGL 799 - Study Abroad in Cambridge England  
Credits:
UNH Cambridge Summer Program at Gonville & Caius College of Cambridge University in Cambridge, England. This course number is a place-holder. Students register for both this administrative course number and two of the courses being offered through the program. These courses will vary from year to year. To view the courses offered visit http://www.unh.edu/cambridge. Permission required. Special fee. Cr/F.

Co-requisites: INCO 589

ENGL 799A - Study Abroad in Cambridge England Bonus Weekend

Credits:
UNH Cambridge Summer Program Bonus Weekend excursion. This course is a place-holder. Location may change from year to year. To view Bonus Weekend description and location visit http://www.unh.edu/cambridge. Permission required. Special fee.

Co-requisites: ENGL 799
BUS 115 - Financial Accounting  
Credits: 4.00

BUS 400 - Introduction to Business  
Credits: 4.00
Introduces the study of business: examines the origins and development of American business, its place in a global economy, and its legal and ethical roles in modern society. Includes an overview of the functional areas of business such as finance, marketing, and organizational behavior. Designed for business majors as well as for students considering a major in business.

BUS 410 - Introduction to Entrepreneurship  
Credits: 4.00
This course explores the structure and framework of entrepreneurial endeavors, both inside and outside of the business world. Questions to be addressed include: What is entrepreneurship? What is opportunity recognition and selection? How can you create and define competitive advantage? How can you think about people in the entrepreneurial context? How can you garner support (financial and other) for an entrepreneurial venture? What do you do when nothing works as planned?

BUS 413 - Business Communication  
Credits: 2.00
The principles of business communication relate to people in business or students planning a career in business. The course includes the study of the mechanics, form, style, and content of business letters, memos, e-mails, reports, proposals, and presentations.

BUS 430 - Introduction to Business Statistics  
Credits: 4.00
The use of statistical methods for managerial decision making. Emphasis is on understanding concepts, including inferences from sample data and model formulation, as aids in decision-making. Lab: Using class-focused statistics problems, designed to provide opportunity to develop course-specific problem solving strategies; to adapt from mathematical to statistical thinking; to analyze and communicate significance and meaning of numerical outcomes; to develop course-specific test taking prowess. No credit for students who have received credit for BIOL 528; ADMN 420; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

BUS 453 - Leadership for Managers  
Credits: 4.00
This course provides the critical element of analytical and intellectual examination and reflection of certain core issues in the practice of leadership. These objectives are achieved through open discussion, honest self-assessment, experiential exercises, and observation of real-life leadership practice. What is valued in this course are honest relationships and dialogue, risk-taking, dedication to the topic of leadership, initiative, and exploring the confusion and gray areas involved in these topics. Prereq: BUS 400. Only open to Business Admin majors.

BUS 455 - Management of Human Resources Management  
Credits: 4.00
This course emphasizes the development of skills for dealing with selected aspects of human resource management. It aims to enhance the students' ability to apply theoretical concepts and alternative
approaches for dealing with common issues concerning the human side of the enterprise. The course is
gardened to serve the needs of line and staff administrators in supervisory positions. Thus, it strives to train
students and facilitate the development of better understanding of human resources issues as they relate
to other managerial functions, organizational behavior, and the ability of managers and the organization to
achieve prescribed goals. Prereq: ADMN 400 or permission of instructor.

BUS 492 - American Business History
Credits: 4.00
This course explores the historical development of American business institutions from the colonial era to
the present. Thematic units organize the material focusing in turn on the most significant developments in
the American business environment. The goal is a cumulative understanding of the development of the
system. A great deal of our discussion and reading centers on the interaction of market operations and
social values and how these interactions influenced the business environment at different times. It is the
study of business in the context of past times that makes this course different from a course in business
methods or institutions. Through the study of the past students develop their critical thinking and writing
skills.

BUS 511 - Human Relations
Credits: 3.00
Through readings and involvement in experimentally oriented activities, the student will gain an
understanding of the principles of human relations and organizational psychology. Topics to be
considered include organization socialization, decision-making, motivation, perception, group process and
leadership. Prereq: BUS 342 or permission of the instructor.

BUS 512 - Financial Analysis and Decision Making
Credits: 3.00
Use of financial tools to examine various alternatives and make relevant decisions. The case study
approach is used and the students are encouraged to relate to their own applications where possible.
Prereq: BUS 115 and BUS 226 or permission of the instructor.

BUS 517 - Coll Barg & Ind Relations
Credits: 3.00
The development of unions, employment legislation and the main issues confronting our industrial relations
system. Through use of the case method, an examination of employee right to organize and employer
response, NLRB elections and certification and the duty to bargain. Special attention is placed on the
strategies and tactics of collective bargaining: preparing for negotiations, actual dynamics at the bargaining
table, dispute resolution and administration of the agreement.

BUS 520 - Training and Development
Credits: 4.00
Students interested in career options in training and development of human resources development learn
some of the theoretical bases, core practices, competencies, and issues of this professional field, as well
as considerations for global training and development. They are exposed to research and discoveries on
skills and knowledge related to training and adult learning, and models for effective training. They learn the
most current trends and issues in international training and development, including the push for
management and leadership training for intercultural understanding. Prereq: BUS 400, BUS 455, or
permission from instructor.

BUS 521 - Managerial Economics
Credits: 3.00
A survey of economic principles and their relationship to business cycles in our economy so as to aid
managerial planning. The fundamentals of incremental concepts, marginalism, time, discounting,
opportunity costs and the equi-marginal principle will be explored with respect to demand, cost analysis, pricing, risk and budgeting. Prereq: ECON 255, ECON 256 and MATH 230 or permission of the instructor.

BUS 522 - Legal Environ of Business  
Credits: 3.00  
A basic understanding of legal problems is expanded, analytical ability is developed and an awareness of the presence of legal problems which surround the businessman is explored. Freedom of Choice, Taxation, Stockholder Status, Acquisitions and Divisions, Antitrust, Employment, Administrative Law and Bankruptcy are covered as time will allow.

BUS 524 - Sem in Org Communication  
Credits: 3.00  
An in-depth study of the variables which affect the transmission of internal and external organizational communication. While focusing on audience analysis, message transmission, and business/media relations, critical skills such as listening, speaking, writing analysis and an understanding of non-verbal, visual and mass communication will be developed. Practical topics will include: organizational systems, conference organization, metacommunications, public relations, improved listening skills and presentational speaking.

BUS 532 - Introduction to Financial Accounting  
Credits: 4.00  
Fundamental concepts of accounting and their impact on the business world and society as a whole. Emphasis on the recording of economic transactions, and preparation and analysis of financial statements. No credit for students who have had ACFI 501, 502, ADMN 502.

BUS 533 - Introduction to Managerial Accounting  
Credits: 4.00  
Emphasizes how organizational managers use accounting information to support their functions of planning, control, and decision making. Examples taken from corporations, small business, and not-for-profit organizations. No credit for students who have received credit for ACFI 503, ADMN 503. Prereq: BUS 532.

BUS 550 - Business Law  
Credits: 4.00  
This course explores the legal environment in which businesses operate and studies the interaction between business and the legal system. Students examine various areas of the law which are integral to operating a business enterprise. Topics include contracts, torts, agency, Uniform Commerical Code, ethical and criminal implications of business actions, property laws, and the legal aspects of different business entities. Business owners, managers, accountants, paralegals, and all those seeking to gain or broaden their general understanding of the legal system should benefit from this course. Prereq: BUS 400. Business Admin majors only.

BUS 551 - Operations Management  
Credits: 3.00  
Examination of the nature and structure of decision-making under uncertainty. Formal techniques for measurement of risks and rewards are applied to case studies based chiefly on production systems. The course concludes with a survey of current techniques for operations analysis, planning and control.

BUS 558 - Real Estate Entrepreneurship  
Credits: 3.00

BUS 562 - Auditing Perspectives
Credits: 3.00
Theory and procedures underlying auditors' responsibilities in examining and reporting on financial statements of a business enterprise. Includes professional ethics, auditing standards, reports, internal control and the selection, scope and application of auditing procedures.

**BUS 563 - Pol Topic: Public Relat**

Credits: 3.00
Contemporary management policy in the business or economics discipline is defined and explored. The topics to be discussed will be announced prior to offering and will focus on issues not normally covered in cataloged courses. Students may repeat this course when offered under a different topic title. Instructor permission required. Offered upon demand.

**BUS 565 - Selling and Sales Management**

Credits: 4.00
The sales and selling management (SSM) course covers both the strategies, and the tactics, of selling, from the wide-ranging perspectives of sales people and customers. Management topics include: motivation and behavior, sales methodologies, channel optimization, recruiting and selecting representatives, training, compensation, and evaluation. Class also covers in-depth through the class practice sales tactics such as: prospecitng and sales call planning, communicating the sales message, neogitating for win-win situations, overcoming objections, closing the sale, and follow-up management. Reflecting the nature of practice selling, the SSM course is offered in a short series of longer days. Prereq: none, but BUS 400 or 610 is encouraged. No credit earned if credit earned for BUS 675 if listed as Selling and Sales Management.

**BUS 567 - Cases in Mktg Strategy**

Credits: 3.00
The course has three primary objectives. First, to assist students in integrating ideas, techniques, concepts and strategies acquired in more specialized courses taken previously with "real world" problems facing the marketing manager. Second, to gain experience in detecting problems, making decisions and formulating marketing strategy at a policy level under conditions of uncertainty and time constraints. Third, to develop skills in effectively communicating and persuasively presenting innovative marketing plans.

**BUS 569 - Behav Persp in Marketing**

Credits: 3.00
The objective of this course is to provide an understanding of consumer behavior and its relationship to marketing management. Applications of concepts from psychology, social psychology, cultural anthropology, sociology and economics will be emphasized. The course interprets current studies in consumer research and illustrates their marketing implications. Areas of concentration include image management, brand loyalty, product positioning, attitude measurement, market segmentation and the consumer decision-making process. The course is an applied orientation of behavioral science to marketing management. Prereq: BUS 570.

**BUS 570 - Marketing Techniques**

Credits: 3.00
The objective of this course is to help the student develop a broad understanding of marketing techniques, strategies, and tactics employed by the marketing manager. The course will cover the use of the "marketing mix" elements as they pertain to the planning and implementation of the marketing plan.

**BUS 572 - Sem in Exec Management**

Credits: 3.00
From a decision-maker's point of view, students will participate in a seminar involving middle and upper-level managerial responsibilities, as well as discussions concerning "state-of-the-art" methodologies appropriate to all levels of management. Case studies and group projects will be combined with informal
lectures and discussions involving such areas as strategic planning, action planning techniques, policy-making, managerial ethics, decision-making methods, control systems and the integration of all resources for optimum performance. Course offering contingent upon adequate demand. Prereq: Basic Management core courses and/or commensurate work experience.

**BUS 574 - Adv & Prom Policy Formul**  
**Credits:** 3.00  
Designed to provide a broad perspective of advertising as it relates to the marketing mix, its role in promotional planning, the goals it can achieve, the creative process, media selection and the concepts applied in the production of campaign development. The forum is on how advertising is planned, created, executed and evaluated. Emphasis also includes other elements of the promotional mix such as sales promotion, publicity, publications and preconditioning.

**BUS 576 - Consumer Law**  
**Credits:** 3.00  
Uniform commercial code sections 1,2,3, parts of 4 and 9. Comparison of common law remedies and those under the Code. Based on the case study concept. Moot Court included. Security devices, sales, commercial paper, consumer legislation.

**BUS 600 - New Venture Creation**  
**Credits:** 4.00  
An opportunity for students to identify and create a new business venture via a business plan. Elements of a business plan are examined as well as review of the other entrepreneurial course that move up the minor. Prereq: BUS 410, BUS 453, BUS 550, BUS 565.

**BUS 601 - Financial Management**  
**Credits:** 4.00  
Study of investment, finance, and dividend decisions of the business firm. Topics include capital budgeting, designing and issuing securities, management of working capital and evaluating manager performance. Prereq: completion of Introductory Business Core or permission.

**BUS 603 - Intermediate Financial Accounting I**  
**Credits:** 4.00  
The first of two in-depth financial accounting courses. Course provides student with the in-depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external uses. Topics include the income statement, the statement of cash flows and balance sheet with an emphasis on asset accounts. Prereq: BUS 532 and BUS 533. No credit if credit received for BUS 675 Intermediate Accounting I.

**BUS 610 - Marketing Principles and Applications**  
**Credits:** 4.00  
Studies the process of planning and distributing goods and services to the marketplace. Topics include product planning, pricing, promotion, and distribution. Emphasis on the application of marketing principles to real world business cases. Prereq: BUS 400, ECN 412.

**BUS 615 - Intermediate Financial Accounting II**  
**Credits:** 4.00  
The second of two in-depth financial accounting courses. Course provides students with an in depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external users. Topics include time value of money, current and non-current
liabilities, leases, deferred taxes, retirement benefits, stockholders equity, earning per share, accounting changes and errors, and statement of cash flows. No credit if credit received for BUS 675 Intermediate Accounting. Prereq: BUS 532, BUS 533, BUS 603.

BUS 620 - Organizational Behavior
Credits: 4.00
Applications of behavioral science concepts to work settings. Topics include worker incentives and perceptions toward work, group versus individual decision making, conflict resolution, interpersonal and leadership skills, and the study of other behaviors relevant to effective managing of a business organization. Prereq: Completion of Introductory Business Core or permission. Writing intensive

BUS 629 - Adv Managerial Accounting
Credits: 4.00
Further develop the basic managerial accounting knowledge base and skill set. Emphasis on the cost accounting concepts and techniques used to produce the information needed to make both planning and control decisions as well as cost analysis, overhead allocation, transfer pricing, and decision making. Prereq: BUS 532; BUS 533. No credit if received for BUS 675 Intermediate Accounting.

BUS 630 - International Management
Credits: 4.00
This course introduces students to the world of international business and management by studying cultural influences, government, and business structures in our global economy. Students also learn about trade relations, international finance and legal and labor agreements. Also covered are topics on information needs, production systems, marketing and promotion, and career planning. Prereq: an international business course. Only open to Business Administration majors.

BUS 635 - Entrepreneurial Application through Enactus
Credits: 2.00
This is a two credit project driven course aimed at teaching students an understanding of free enterprise through the application of economic activities within the community. In addition, students will have special topic sessions on leadership, time management, public speaking, project management, and fundraising. Emphasis on teamwork. Course is open to all students who have junior or senior level standing, in and out of the business program. Prereq: junior or senior level standing. Special fee. Course may be repeated to a maximum of 12 credits.

BUS 640 - Business Communication and Conflict
Credits: 4.00
This course is designed to give students a comprehensive view of communication, its scope and impotence in business, and the role of communication in establishing a favorable outside the firm environment as well as an affective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication. Prereq: Completion of Introduction to Business Core and BUS 455; or Approval by instructor.

BUS 650 - Operations Management
Credits: 4.00
Studies the operational issues and problems related to the design and implementation of an organization's production process. Topics include production planning and analysis, inventory and quality control, scheduling, and methods for evaluating production performance in both the goods and service sectors of the economy. Prereq: Completion of Introductory Business Core or permission.

BUS 660 - Employment and Labor Law
Credits: 4.00
This course includes a study of the organizational rights of employees and unions and the governance of the use of economic force by employers and unions. Also studied is the duty to bargain collectively, the manner in which collective bargaining is conducted, and the subjects to which it extends, as well as the manner in which collective bargaining agreements are administered and enforced. The relationship between a union and its members is also treated. Prereq: Completion of Introduction to Business Core and BUS 455.

BUS 661 - Integrated Marketing Communication
Credits: 4.00
Integrated Marketing Communications (IMC) is a fast evolving field in business and marketing. This course covers the full spectrum of planning, budgeting, data collection and analysis, creative tools and models, including perspectives on both Business to Consumer and Business to Business, IMC. Special emphasis for: cultural, lifestyle and ethnic sensitivity, global versus individual country tactics, and the fast evolving techniques of social and mobile marketing. All of the above are in the context of building brands and customer loyalty. Prereq: BUS 400 and BUS 610. No credit earned if credit earned for BUS 675 or BUS 685 if listed as Marketing Communication.

BUS 663 - Services Marketing and Operations Management
Credits: 4.00
This course is designed to prepare students for NH business and marketing careers by understanding the issues, challenges, and terminology inherent in industries as diverse as health care, construction, education, professional and technical offices, transportation, information and publishing, tourism, retailing, etc. Case studies are used throughout the term. We study many of these sectors, both as academicians and as consumers, to build a portfolio of understanding across divergent sectors. Students learn about services marketing strategies and management models that: increase customer satisfaction, improve customer retention and create dominant service brands that can create a competitive advantage for firms in any given industry. Prereq: BUS 400; BUS 610. No credit if credit earned for BUS 675 or BUS 685 if listed as Services Marketing.

BUS 665 - International Marketing Strategy Management
Credits: 4.00
The primary missions of the International Marketing Strategy Management (IMSM) course are to help students to: (1) develop understanding and knowledge of the important role International marketing plays in business (2) develop and improve global thinking, problem solving and integrative skills in a case based context (3) learn and apply the varying tools and models for evaluating when, where and how international marketing investments should be made. (4) understand and implement special approaches for cultural and ethnic differences in taste and attitudes, including trade legalities and regulations. Prereq: BUS 400 and BUS 610. No credit if credit earned for BUS 675 or BUS 685 if listed as International Marketing.

BUS 675 - Special Topics in Business Administration
Credits: 1.00 to 4.00
Provides students with an opportunity to explore a topic in business administration such as marketing, management, finance, or accounting. Topics will vary. Barring duplication of subject, may be repeated for credit. Prereq: Completion of Introductory Business Core or permission.

BUS 685 - Applications in Business Management
Credits: 4.00
Selected topics. Topics will vary. Barring duplication of subject, may be repeated for credit.

BUS 690 - Business Program Internship
Credits: 1.00 to 4.00
Supervised internship practicum within the private, public or non-profit sector. Focus is for the student to gain valuable insights into both professional and managerial positions, applying their college knowledge to a variety of roles and projects, influencing their career trajectory through 'real world' experience. Can be taken multiple times for credit, with credit varying from 1-4 hours based on time spent on the internship. For the 16 credit concentration, up to 4 BUS 690 credits can be applied. Credits beyond will be applied to general credits. Does not substitute for the internship required as part of the Business Capstone Course BUS 750 - Business Internship Senior Seminar. Offered, Fall, Spring and Summer. Cr/ff.

**BUS 695 - Independent Study in Business**
**Credits:** 1.00 to 4.00
Independent study exploring a special topic emphasizing the managerial, organizational, strategic, political or economic context(s) within which business decisions are made. Prereq: ADM 400 and permission of instructor. May be repeated for a maximum of 8 credits.

**BUS 701 - Business, Government and Society**
**Credits:** 4.00
Examines relationships between business and its broader social, political and economic contexts. Topics include business ethics, social responsibilities, the impact of globalization, the impact of government policies, and how business influences government. Prereq: BUS 620 or permission. Writing intensive.

**BUS 705 - Business Ethics**
**Credits:** 4.00
Analysis of ethical issues that arise in contemporary business practice, both domestically and locally. Topics will include ethical issues concerning labor practices, marketing, financial services, environmental practices, human rights, and emerging technologies. Students will be taught to recognize, analyze, and address ethical challenges as they arise in their careers. Consideration will also be given to public policies and global ethics codes that inform business decision-making. Writing intensive.

**BUS 710 - Federal Taxation**
**Credits:** 4.00
Introduction to the basics of the federal income tax rules for individuals. Basic concepts in federal taxation include gross income, exclusions, adjusted gross income, deductions, exemptions, and credits. Additional tax concepts included are cash and accrual methods, passive loss rules, and like-kind exchange. Prereq: BUS 532, BUS 533, BUS 603, BUS 615, and BUS 629. No credit if received for BUS 675 Taxation.

**BUS 715 - Forensic Accounting**
**Credits:** 4.00
This course will develop the students' understanding of what forensic accounting is and how it pertains to both civil and criminal matters. The participant in this course will gain a basic understanding of the characteristics of forensic accounting, the tools used in this area and the applications in the business world today, including financial statement and tax fraud, bankruptcy, divorce, identity theft, organized crime and litigation services. Pre- or Coreq: BUS 720.

**BUS 720 - Auditing**
**Credits:** 4.00
Introduction to the basics of auditing and other assurance services theory and practice. It provides an overview and understanding of the public accounting profession and the professional auditing standards. The class also integrates auditing material with previous financial and managerial accounting course. Prereq: BUS 532, BUS 533, BUS 603, BUS 615, BUS 629. No credit if credit received for BUS 675 Auditing.

**BUS 725 - Financial Statement Analysis**
Credits: 4.00
This course will examine: financial reporting, the quality of accounting information, and US GAPP and IFRS. The flexibility which is built into GAAP will be examined, noting how firms may take advantage of this flexibility to manipulate financial information while staying within the bounds of the rules for proper reporting. Also examined will be the relationships found within the reported numbers by comparing various elements of the financial statements. Prereq: BUS 720.

BUS 750 - Business Internship Seminar
Credits: 4.00
A seminar course in which students report on and discuss their business internship experiences. Selected group readings and written and oral student presentations. Prereq: ADM 620 and senior standing or permission. Special fee.

BUS 755 - Co-op Program
Credits: 1.00
This is a program that enables students to integrate classroom learning with practical, professional, experience in their field of study. Students majoring in professional and liberal arts programs experience the working world through an educationally managed agreement between the employer, the student, and the institution. Students need to have a minimum 3.0 cumulative GPA and have junior or senior level status.

BUS 760 - Applied Senior Project
Credits: 4.00
An independent study research project involving an in-depth exploration into a business topic chosen in consultation with a faculty member. Designed for students with extensive prior work experience. Prereq: BUS 620 and senior standing or permission. Special fee.

BUS 770 - Special Topics Senior Seminar
Credits: 4.00
In-depth exploration into the theoretical and applied aspects of a special business topic. Topics vary according to instructor. Prereq: ADM 620 and senior standing or permission. Special fee.
Environmental & Resource Econ

ERECC #409 - Catastrophe and Terrorism
Credits: 4.00
Impacts of terrorism and natural and non-natural catastrophes on infrastructure, public and private policy, and the economy. Analysis of case studies and research data is emphasized. Invited speakers complement lectures and assignments.

ERECC 411 - Environmental and Resource Economics Perspectives
Credits: 4.00
Microeconomic theory and analysis in resource management and use decisions. Survey of significant resource problems from an economic perspective and the application of economic analysis. Cannot be taken for credit after ECON 402 or equivalent.

ERECC 444 - The New Pirates of the Caribbean
Credits: 4.00
Inquiry into many facets of tourism from the standpoint of tourists and tour destination. Economic and institutional factors affecting human well-being from the use of land and water resources; discussions of distributional aspects of benefits from tourism activities; environmental impacts; ownership patterns and uses; cultural attributes; and local economies in small Caribbean island nations. Cruise ships, time-shares, all-inclusive resorts, hurricanes, casinos, bars, rum, sex, and drugs are investigated through extensive readings and web surfing. Writing intensive.

ERECC 525 - Statistical Methods and Applications
Credits: 4.00
Applications of elementary statistical concepts and methods including probability, descriptive techniques, statistical inference and bivariate and multivariate statistical analysis. Orientation is toward analysis and interpretation of data commonly encountered in social science disciplines. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; HHS 540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

ERECC 535 - Being a Locavore
Credits: 4.00
Explores the growth of the Locavore movement in the United States, starting with the evolution of the mainstream agricultural system. Topics such as the Agricultural Adjustment Act, farm subsidies, the development of mono-culture large scale farms, as well as the Magnusen-Stevens Act and the current state of fisheries. Ethical, economic, and social phenomenon will be discussed, followed by nutrition, and environmental impacts. Students will keep a food journal, which will be used as a basis to source, budget, and plan for years of eating local food. The class concludes with an investigation into the growing trend of local farmers' markets, CSAs, and on farm sales. How and why more and more people are going local and perhaps becoming "Locavores".

ERECC 572 - Introduction to Natural Resource Economics
Credits: 4.00
Introduces theory, methods of analysis, and current literature of natural resource economics and policy. Topics include multiple use, taxation, optimal harvest scheduling, market failure, property rights, public goods, benefit-cost analysis, amenity values, non-market resource services and natural resource policy. Topics applied to forests and forestry, wildlife management, outdoor recreation, public lands, agriculture, fisheries, water, energy and mining/nonrenewable resources.
EREC 595 - Problems in Natural and Agricultural Resources  
**Credits:** 2.00 to 4.00  
Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission.

EREC 595W - Problems in Natural and Agricultural Resources  
**Credits:** 2.00 to 4.00  
Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission. Writing intensive.

EREC 596 - Problems in Natural and Agricultural Resources  
**Credits:** 2.00 to 4.00  
Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission.

EREC 596W - Problems in Natural and Agricultural Resources  
**Credits:** 2.00 to 4.00  
Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission. Writing intensive.

EREC 600 - Field Experience  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

EREC 600W - Field Experience  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F. Writing intensive.

EREC 601 - Agribusiness Economics and Management  
**Credits:** 4.00  
Applications of economic and management principles in production, marketing, finance, and other operational decisions facing small agribusiness firms. Prereq: EREC 411 or ECON 402 or equivalent.

EREC 606 - Land Economics Perspectives: Uses, Policies, and Taxes
Credits: 4.00
Economic and institutional perspectives affecting human use of land resources; discussion of land ownership patterns and uses; land rent, location, and resource use; institutional constraints; partial ownership policies; and local planning for more efficient use of land. Real estate markets, transfers, valuation, and taxation. Prereq: EREC 411 or equivalent or permission. Special fee.

EREC #608 - Environmental Economics for Non-Economists
Credits: 4.00
This course will examine different aspects of natural resource allocation and protection of environmental quality from an economic standpoint. The course will examine the economic factors which lead to environmental problems such as air and water pollution, the common property problem, and other areas where existing markets do a less than satisfactory job of resource allocation. Economic incentives for alleviating these environmental problems will also be surveyed. Specific topics covered will include benefit cost analysis, valuation of "nonmarket" goods, policy tools which have economic bases, and sustainable development. Where possible, guest lecturers from other disciplines and selected films will be used to present alternative viewpoints and stimulate discussion. Class participation is encouraged and expected. Students completing this course will gain an overview of key issues in environmental economics, and how economics can be used as an aid in policy decisions regarding natural resources. Prereq: EREC 411, ECON 401 or their equivalents or permission. Does not count toward major requirements for EREC electives.

EREC 627 - Community Economics
Credits: 4.00
Economic factors affecting community and local government decisions. Emphasizes use of economic theory for decision making and community problem solving. Prereq: EREC 411 or equivalent.

EREC 680 - Agricultural and Food Policy
Credits: 4.00
Analysis of issues that led to government involvement in the agricultural and food sector. Application of economic concepts and tools to the evaluation of public policies affecting agriculture and food. Prereq: EREC 411 or equivalent.

EREC 708 - Environmental Economics
Credits: 4.00
Environmental pollution, the market economy, and optimal resource allocation; alternative control procedures; levels of environmental protection and public policy; property right issues. Prereq: intermediate microeconomic theory; permission. Writing intensive.

EREC 710 - Seminar
Credits: 2.00 to 4.00

EREC #711 - Marine Resource Economics
Credits: 4.00
Economic overview of the marine environment; interactions/conflicts surrounding this multiple-use resource. Economics of fisheries; marine recreation; aquaculture; endangered species; non-market ecosystem services. Prereq: EREC 411, ECON 401 or ECON 402 or equivalent or permission. (Offered every other semester.)
EREC 756 - Rural and Regional Economic Development
Credits: 4.00

EREC 760 - Ecological-Economic Modeling for Decision Making
Credits: 4.00
In this course, students will develop ecological-economic models and use them to inform economic decision making related to the management of natural resources. These models range from analytical models using algebra and calculus, to computational models using coding and simulations. The course will focus on spatial-dynamic computational bio-economic models because of their ability to capture economic decision making and ecological processes over time and space. Prereq: ECON 605 or equivalent; MATH 420, or equivalent.

EREC 775 - Research Methods
Credits: 4.00
Study of the process, methods, and techniques of conducting scientific research in the social sciences. Includes problem identification, data collection and management, qualitative quantitative data analyses, and communicating scientific research. Prereq: EREC 411 or equivalent; EREC 525 or equivalent; junior/senior standing.

EREC 795 - Investigations
Credits: 2.00 to 4.00
Special assignments in readings, investigations, or field problems. Topics may include agricultural marketing, agricultural production and farm management, community development, economics of human resources, economics of population and food, land economics, marine economics, rural economic development, regional economics, water economics, or teaching experience. Prereq: permission. May be repeated.

EREC 795W - Investigations
Credits: 2.00 to 4.00
Special assignments in readings, investigations, or field problems. Topics may include agricultural marketing, agricultural production and farm management, community development, economics of human resources, economics of population and food, land economics, marine economics, rural economic development, regional economics, water economics, or teaching experience. Prereq: permission. May be repeated. Writing intensive.

EREC 799 - Honors Senior Thesis
Credits: 1.00 to 4.00
Honor/thesis students conduct an independent research project, relevant to the student's area of specialization in the major, under the direction of a faculty sponsor. Students submit a research proposal, write a final report, and provide an oral presentation. One or two semester sequence. Restricted to Senior/Natural Resource Majors. Permission required. Writing intensive.
Environmental Engineering

**ENE 400 - Environmental Engineering Lectures I**
**Credits:** 3.00
Introduces the profession, the environmental engineer as planner, designer, problem solver, and interdisciplinary team player; and the goals of the environmental engineering curriculum. Lectures by faculty and practitioners. Introduction to computer skills required for environmental engineering. Engineering ethics.

**ENE 401 - Environmental Engineering Lectures II**
**Credits:** 1.00
Introduces the concept of integrated design and project planning and management in environmental engineering. Field trips to environmental engineering sites and projects. Prereq: ENE 400. Includes CEPS and Continuing Education. Cr/F.

**ENE 520 - Environmental Pollution and Protection: A Global Context**
**Credits:** 4.00
Introduces environmental science and engineering and the anthropogenic causes of environmental change. Emphasizes the causes, effects, and controls of air, water, and land pollution. The political, ecological, economic, ethical, and engineering aspects of environmental pollution and control are discussed. Field trips. Writing intensive.

**ENE 645 - Fundamental Aspects of Environmental Engineering**
**Credits:** 4.00
Application of fundamental concepts of mass balance in treatment processes. Physical, chemical, and biological aspects of pollution control, and design concepts for operations and processes used in environmental engineering are discussed. Concepts of engineering ethics are presented. Students participate in a design project that involves an oral presentation and written report. Prereq: CHEM 404, CIE 642, ENE 520; or permission. Writing intensive.

**ENE 696 - Field Experience**
**Credits:** 1.00
Based on appropriate career-oriented work experience in environmental engineering. Student can get one credit for field experience. A written final report is required as well as permission of student's adviser.

**ENE 697 - Internship**
**Credits:** 2.00
Off-campus work in the environmental engineering field for on-the-job skill development. Needs to be supervised by an environmental engineering faculty member; and a proposal for the internship must be submitted and have permission of the ENE faculty prior to the start of the internship. Prereq: permission. IA (continuous grading).

**ENE 739 - Public Infrastructure Asset Management**
**Credits:** 3.00
The course provides a thorough examination of the growing engineering field of Public Infrastructure Asses Management (IAM). The course enables the student to design and IAM system. It touches upon all types of public infrastructure with a particular focus on water infrastructure for the semester design project. Students build upon their engineering economics and project engineering skills and use simple IAM software along with GIS applications. Practice leaders from the industry provide guest lectures throughout the semester.
focus on triple bottom line or the Societal, Environmental and Economic aspects of IAM are included. The format is a modified team base design learning experience providing practice in processing of technical lecture material, personal performance evaluation (frequent quizzes) and team based performance evaluation. Student groups will present their design to the class and provide a written engineering report. Pre- or Coreq: CIE 533 and ENE 645.

ENE 740 - Public Health Engineering for Rural and Developing Communities
Credits: 3.00
The application of environmental health engineering and sanitation principles in disease prevention and control are discussed. Special emphasis is given to areas of the world where communicable and related diseases have not yet been brought under control and to what can happen in more advanced countries when basic sanitary safeguards are relaxed. The following topics are covered: water-related diseases to include their transmission and control; safe water development, treatment, distribution and storage; and on-site wastewater treatment and disposal system.

ENE 742 - Solid and Hazardous Waste Engineering
Credits: 3.00
A thorough examination of the problems that exist in hazardous and solid waste management are presented in terms of the current regulations and engineering approaches used to develop solutions. Topics include risk-based decision making, transport and fate of contaminants, and the fundamental physical, chemical, and biological concepts, which make up the basis for technological solutions to these waste management problems. Case studies are used throughout the course to highlight key concepts and provide real-world examples. Pre- or Coreq: ENE 645 or permission.

ENE 743 - Environmental Sampling and Analysis
Credits: 4.00
Theory of analytical and sampling techniques used in environmental engineering. Topics include potentiometry, spectroscopy, chromatography, automated analysis, quality control, sampling design, and collection methods. Methods discussed in lecture are demonstrated in labs. Prereq: CHEM 404 and ENE 645 or permission. Lab.

ENE 743W - Environmental Sampling and Analysis
Credits: 4.00
Theory of analytical and sampling techniques used in environmental engineering. Topics include potentiometry, spectroscopy, chromatography, automated analysis, quality control, sampling design, and collection methods. Methods discussed in lecture are demonstrated in labs. Prereq: CHEM 404 and ENE 645 or permission. Lab. Writing intensive.

ENE 744 - Advanced Water Treatment Processes
Credits: 4.00
The primary objective of this course is to provide the environmental engineer with an overview of physical-chemical and biological unit water treatment processes. Major emphasis is placed on the analysis and design of both conventional and advanced water treatment unit processes/operations.

ENE 746 - Bioenvironmental Engineering Design
Credits: 4.00
Selection, design, and evaluation of unit processes employed in biological treatment of waters, wastewaters, and hazardous wastes. Preparation of engineering reports, including developing design alternatives and economic analysis, is required. Prereq: ENE 645 and ENE 756 or permission. Writing intensive.

ENE 747 - Introduction to Marine Pollution and Control
Credits: 4.00
Introduces the sources, effects, and control of pollutants in the marine environment. Dynamic and kinetic modeling; ocean disposal of on-shore wastes, shipboard wastes, solid wastes, dredge spoils, and radioactive wastes; and oil spills. Prereq: ENE 645 or permission.

ENE 748 - Solid and Hazardous Waste Design
Credits: 4.00
Selection, design, and evaluation of unit processes employed in the treatment of solid wastes and hazardous wastes will be studied. Topics include design of materials recovery facilities, landfills, waste-to-energy facilities and hazardous waste site remedial technologies. A group term project taken from a real-world project will be required. An oral presentation by the group and preparation of a final written engineering report including alternative evaluation, permits, scheduling and economic analysis will be required from each group. Prereq: ENE 742 or permission. Writing intensive.

ENE 749 - Water Chemistry
Credits: 4.00
Emphasizes the use of chemical equilibrium principles and theory, calculations, and applications of ionic equilibrium stresses. Topics include thermodynamics, kinetics, acid/base, complexation, precipitation/dissolution, and redox equilibria. Computer equilibrium modeling is presented. Prereq: CHEM 404 or CHEM 405.

ENE 751 - Introduction to Sustainable Engineering
Credits: 3.00
This course begins with exploration of the precept that we live in, and must design engineering works for, a world with a finite supply of natural resources and with limited life support capacity. Tools for sustainability engineering are the focus of the course, which includes life cycle analysis and life cycle impact analysis, the metrics and mass and energy flow analyses used in the field of industrial ecology, and environmental management systems.

ENE 756 - Environmental Engineering Microbiology
Credits: 4.00
Concepts of environmental engineering microbiology. Topics include taxonomy of species important in environmental engineering processes; microbial metabolism, interaction, and growth kinetics in environmental treatment processes; biogeochemical cycling in water; and effects of environmental parameters on environmental engineering microbial processes. Laboratories focus on microbiological methods and laboratory-scale biological treatment experiments. Prereq: ENE 520 and CIE 642 or permission. Lab. Writing intensive.

ENE 784 - Introduction to Project Planning and Design
Credits: 1.00
Part one of a two part sequence. Student groups develop a project statement to address a significant environmental engineering system design. Each team prepares a project plan to be executed in ENE 788, part two of this sequence. Open only to Environmental Engineering majors. Cr/F.

ENE 788 - Project Planning and Design
Credits: 3.00
Student groups formed in multidisciplinary design teams to prepare a design plan for a large-scale environmental engineering system including consideration of budgetary constraints, regulatory requirements, and environmental impacts. Each team prepares a final written report and gives a formal presentation. Prereq: senior environmental engineering major or permission. Writing intensive.

ENE 795 - Independent Study
Credits: 1.00 to 4.00
A limited number of qualified seniors is permitted to pursue independent studies under ENE faculty
guidance. Seniors write terminal thesis reporting the results of their investigations. May be repeated to a
maximum of 4 credits. Prereq: permission of ENE faculty member involved.

ENE 797 - Special Topics
Credits: 1.00 to 4.00
Advanced or specialized topics not normally covered in the regular course offerings. May be repeated to a
maximum of 4 credits, but multiple topics that are not in duplicate areas may be taken to a maximum of 12
credits.

ENE 799H - Senior Honors Thesis
Credits: 4.00
Students in the honors program in environmental engineering complete a project under the direction of a
faculty sponsor resulting in a written thesis which must be accepted by the sponsor by the end of the
second semester, senior year. Four credits total during senior year; 3 of which may be used to fulfill an
ENE non-design elective.
Exchange

EXCH 595 - Exchange
Credits: 18.00
Special fee. Cr/F.
### Forest Technology

**FORT 461 - Dendrology**  
**Credits:** 3.00  
Identification and nomenclature of forest trees and shrubs which are important to the ecology and economy of the Northeastern forest. The study of forested plant relationships with other plants, animals, soil, and site regimes. 1 lec/1 2-hr lab.

**FORT 463 - Forest Ecology**  
**Credits:** 3.00  
Study the interactions of forest trees with their environment, both as individuals and as tree communities; explore environmental problems affecting plant communities; the history and classification of North American forests. Study of soils as they affect forest distribution and tree growth. Includes a series of field-based exercises used to reinforce the principles introduced in lectures.

**FORT 465 - Forest Orientation Seminar**  
**Credits:** 1.00  
Seminar to prepare first year students for study and placement in the broad area of forest technology. Focus on history and development of modern forestry systems and agencies at the state, regional and federal levels. The lives of key individuals like John Muir, Gifford Pinchot, and Aldo Leopold will help place forest management philosophies in perspective. Cr/F.

**FORT 466 - Forest Surveying and Mapping**  
**Credits:** 4.00  
Provides instruction and experience in running cruise lines and in the survey and identification of rural property lines. The focus is on field surveying techniques and problem solving of special importance to foresters. Use of magnetic survey data in rural property measurement. Skill and efficiency is developed in analyzing field survey data, plotting, lettering and finishing topographic and planimetric maps, and road plans, both manually and by Computer Assisted Drafting using multiple software applications.

**FORT 470 - Applied Silviculture**  
**Credits:** 4.00  
Silvicultural practices in the U.S. including reforestation systems. Improvement of forest stands employing the basic tending practices of weeding, thinning, and pruning. Marking of stands prior to logging operations. Prereq: permission of instructor or FORT461 and 463. 2 lec/1 4-hr lab.

**FORT 475 - Forestry Field Practice**  
**Credits:** 1.00  
A week long introduction to the various components of the forest industry of the northeast. Students visit with members of the forest industry in the work-place and learn how they are interrelated. Students gain background experience that will prove beneficial in understanding their studies during their second year in the Forest Technology curriculum. One week of concentrated field study. Forest Technology majors only.

**FORT 490 - NH Sustainable Forest Resource**  
**Credits:** 4.00  
An overview of forestry in New Hampshire and the northeast. History shows how our forests have been used in the past and how they developed into what we see today. Discover the science of Forest Ecology and Silviculture and how foresters use these to manage our forests sustainably for a variety of forest products. Learn how these products are harvested, processed and used. Understand how pathogens and
pests can threaten our forests. On-line course.

**FORT 564 - Arboriculture**
**Credits:** 3.00
Tree selection, care, and maintenance in the urban environment. Includes climbing, safety practices, pruning, hazard tree assessment, and removals. Prereq: FORT 463 or permission. 1 lec/1 4-hr lab.

**FORT 567 - Leadership, Supervision & Safety**
**Credits:** 2.00
Fundamentals of leadership and supervision including effective communication in the workplace and public sector are explored. Project management, personnel training and motivation, plus problem-solving and conflict resolution applied through a practical community service forestry project. Accident prevention, first aid, and CPR instruction also included. 2 lec.

**FORT 569 - Wildlife Ecology & Conservation**
**Credits:** 3.00
Foresters directly influence wildlife by manipulating habitat through silvicultural operations. Course focuses on the ecology of New England wildlife species with emphasis on their habitat requirements and the enhancement of habitat through silviculture and the use of best management practices. 1 lec/1 4-hr lab.

**FORT 572 - Mensuration**
**Credits:** 4.00
Field application of forest inventory and timber cruising techniques. Measurement of tree form, volume, quality, and defect. Growth prediction of individual trees and stands. Use of basic statistical methods as a tool in cruising. Prereq: FORT 461 or instructor permission. 2 lec/1 4-hr lab.

**FORT 573 - Management Operation & Analysis**
**Credits:** 3.00
Forest appraisal and valuation methods, timber sale contracts, depreciation and depletion calculations, forest taxation. Essentials of forest regulation and management planning. 2 lec/1 2-hr lab.

**FORT 574 - Industrial Forest Management Tour**
**Credits:** 1.00
Concentrated field experience and intensive observations of industrial, private, and federal forest holdings and facilities; emphasizing forest utilization and management operations as currently practiced in New England. One week of concentrated field study. Cr/F. Forest Technology majors only.

**FORT 576 - Forest Products**
**Credits:** 4.00
Basics of structure and properties of wood as a raw material. Conversion of logs to lumber at Thompson School sawmill. Lumber and log grading and measuring. Studies in processing efficiency, lumber drying, and physical plant operations. Introduction to paper, veneer, and chip products. Marketing of forest products. 2 lec/1 4-hr lab.

**FORT 577 - Forest Harvesting Systems**
**Credits:** 4.00
A study in harvesting methods and their relation to forest management and silviculture of the state and region. Theory and practice of conventional harvesting systems including hands-on application of techniques with a strong emphasis on protection of the environment and the safety and health of workers. Department permission for non-majors. 2 lec/4-hr lab.
Credits: 2.00
An introduction to the role of forest insects and microorganisms in the context of managing woodlands. Students learn to recognize the signs and symptoms of insect and disease damage in forest trees and products. They study the life cycles and identify common forest insect and disease pests impacting North American tree species. Pest management methods are introduced. 1 lec/3-hr lab.

FORT 579 - Forest Fire Control and Use
Credits: 2.00
A study in basic fire ecology and instruction in forest fire suppression methods. Interactions of forest fuels, topography, and weather as they affect forest fire behavior. Use of controlled fire as a tool in forest and wildlife management. When appropriate, field work will include actual burning.

FORT 581 - Applied Geographic Information Systems (GIS) Techniques
Credits: 4.00
Geographic Information Systems (GIS) are integral to natural resource management and these technologies/software have become widespread throughout various fields. Proficiency in fundamental GIS skills is imperative for resource managers. Students will 1) develop an understanding of imagery acquisition and remote sensing systems/technologies; 2) develop skills in identification, interpretation, and mapping of land/vegetation features, including an understanding of map projection; 3) gain experience in GIS software to perform fundamental geoprocessing and mapping techniques.

FORT 591 - Independent Studies in Forest Technology/Urban Tree Care
Credits: 1.00 to 4.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples include forest management, forest products, forest protection, wildlife management, or urban tree care. Permission required. Course may be repeated up to a maximum of 8 credits.

FORT 592 - Independent Studies in Forest Technology/Urban Tree Care
Credits: 1.00 to 4.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples include forest management, forest products, forest protection, wildlife management, or urban tree care. Permission required. Course may be repeated up to a maximum of 8 credits.

FORT 597 - Work Experience
Credits:
Career-related employment (10 weeks, generally in the summer following freshman year) in a forestry, urban tree care, or other department-approved natural resources area. Cr/F.
## French

**FREN 401 - Elementary French I**  
**Credits:** 4.00  
Conducted in French, the course introduces students to French language and culture through speaking, listening, reading, writing, labs and films. Designed for students without previous training in French. Credit only for students who have had less than two years of French in secondary school. 401-402 taken together satisfies the foreign language requirement. Special fee.

**FREN 402 - Elementary French II**  
**Credits:** 4.00  
See description for FREN 401. FREN 401 is a prerequisite for this course. Cannot be taken separately except with permission of instructor.

**FREN 403 - Review of French**  
**Credits:** 4.00  
Conducted in French. Course emphasizes the active use of French through speaking, listening, reading, writing, labs, and films while providing a review of basic grammar. Designed for those students whose study of French has been interrupted for a significant amount of time or who have had two or more years of high school French. Special fee. FREN 403 does not satisfy the foreign language requirement.

**FREN 500 - Selected Topics in World Literature**  
**Credits:** 4.00  
Topics will be chosen that introduce students to major themes and genres. (Also offered as CLAS 500, GERM 500, ITAL 500, PORT 500, RUSS 500, SPAN 500.) May be repeated for credit. Credit/Fail. Writing intensive.

**FREN 503 - Intermediate French I**  
**Credits:** 4.00  
Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films. Special fee. Writing intensive.

**FREN 503H - Honors/Intermediate French I**  
**Credits:** 4.00  
Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films. Special fee. Writing intensive.

**FREN 504 - Intermediate French II**  
**Credits:** 4.00  
Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films. Special fee. Writing intensive.

**FREN 504H - Honors/Intermediate French II**  
**Credits:** 4.00  
Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films.
FREN 525 - Introduction to French Civilization and Culture  
**Credits:** 4.00  
Taught in English. French civilization from a variety of perspectives and topics. Includes historical, geographical, and artistic expressions of French culture. Not for major credit. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive.

FREN 526 - Introduction to Francophone Cultures  
**Credits:** 4.00  
Taught in English. Focus on French-speaking cultures other than France. Includes historical, geographical, and artistic expressions of these cultures. Not for major credit. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive.

FREN 585 - Intermediate Language Study in France  
**Credits:** 4.00  
Equivalent to FREN 503, requires four weeks of intensive study of French language and culture at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. Prereq: FREN 403 or French 4 in a U.S. high school, with a GPA of 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. (Offered summers only.)  
**Co-requisites:** INCO 589

FREN 586 - Intermediate Language Study in France  
**Credits:** 4.00  
Equivalent to FREN 504, requires four weeks of intensive study of French language and culture at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. Prereq: FREN 503 or 585 with a GPA 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. (Offered summers only.)  
**Co-requisites:** INCO 589

FREN 595 - French Practicum  
**Credits:** 2.00  
Practical use of French language or cultural skills outside the classroom through special projects. May be repeated up to 4 credits. Prereq: Permission. Special fee. Cr/F.

FREN 625 - Cuisine, Culture, and the Creation of French Identity  
**Credits:** 4.00  
What makes France, France, and how did it evolve that way? How do strong regional identities complement and compete with national identity in a globalizing world? Using film, short stories, scholarly articles, and mass media, we examine the development of regional cuisine, literature, art, music, and folk traditions in light of broader French history and politics. Focus on Provence, Alsace, the Southwest, and Burgundy, emphasizing Dijon. Works by Varda, Berri, Zola, Colette, and Merimee. Special fee.

FREN 631 - Advanced French Conversation and Composition I  
**Credits:** 4.00  
Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent written compositions and oral presentations using materials on contemporary culture taken from various media. Students develop phonetics and oral/aural skills in lab and class. Prereq: C or better in FREN 504. Required for majors. Special fee. Writing intensive.

FREN 632 - Advanced French Conversation and Composition II  
**Credits:** 4.00
Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent written compositions and oral presentations using materials on contemporary culture taken from various media. Students develop phonetics and oral/aural skills in lab and class. Prereq: C or better in FREN 504. Required for majors. Special fee. Writing intensive.

FREN 651 - Readings in French Literature
Credits: 4.00
Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631-632. Required for majors. Special fee. Writing intensive.

FREN 651H - Honors/Readings in French Literature
Credits: 4.00
Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631-632. Required for majors. Special fee. Writing intensive.

FREN 652 - Readings in French Literature
Credits: 4.00
Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631-632. Required for majors. Special fee. Writing intensive. May be taken before or after FREN 651. Writing intensive.

FREN 652H - Honors/Readings in French Literature
Credits: 4.00
Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631-632. Required for majors. Special fee. Writing intensive. May be taken before or after FREN 651. Writing intensive.

FREN 675 - Topics in French Civilization
Credits: 4.00
Topics drawn from all aspects and periods of French civilization. Prereq: FREN 631, 632, and 651 or 652. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive.

FREN 676 - Topics in Francophone Culture
Credits: 4.00
Topics drawn from all aspects and periods of French civilization. Prereq: FREN 631, 632 and 651 or 652. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive.

FREN 677 - France in the European Union
Credits: 4.00
Topics drawn from all aspects of contemporary French culture in its relationship with the fifteen member states of the European Union, with emphasis on the role of France in the building of the European Union. Special fee. Prereq: FREN 631-632. Coreq: FREN 651 or 652. (Not offered every year.) Writing intensive.

FREN 683 - Advanced Language Study in France
Credits: 4.00
Equivalent to FREN 631, this course requires four weeks of intensive study of French language at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. Prereq FREN 504 with a GPA of 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. Offered
FREN 684 - Advanced Language Study in France  
Credits: 4.00  
Equivalent to FREN 632, this course requires four weeks of intensive study of French language at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. Prereq: FREN 504 or FREN 683, with a GPA of 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. (Offered summers only.)  
Co-requisites: INCO 589

FREN 690 - Study Abroad in Dijon France  
Credits: 16.00  
Spring semester at the University of Burgundy (Dijon, France) for juniors. This one-semester program is open to majors who have completed with a B- or better FREN 631-632 and FREN 651 or 652, or equivalent. Non-majors need to speak with the program director to determine their eligibility. Non-credit orientation meetings are required during the fall semester prior to departure. The normal UNH requirements for studying abroad apply to this program. For further information, interested students should consult with the director in the French program. Special fee. Prereq: FREN 504 with a C or better and permission. Non-majors FREN 631, 632; FREN 651 or 652 for majors. Special fee. May be repeated. Cr/F.  
Co-requisites: INCO 588

FREN 691 - Summer in Dijon Program  
Credits: 8.00  
This program is open to all students interested in an immersion program during the summer. It provides 8 weeks of intensive courses in French at the CIEF (Centre International des Etudes Francaises) at the Universite de Bourgogne in Dijon, France. Minimum GPA of 2.5. Pre-requisite for non French majors: a minimum of 1 year of elementary French. Pre-requisite for French majors: FREN 631, FREN 632, FREN 651 and/or FREN 652. For French majors, the course is only open to those who cannot fulfill their semester-long study abroad requirement for documented academic reasons. By petition only. Special fee.  
Co-requisites: INCO 588

FREN 691A - Summer in Dijon Program  
Credits: 4.00  
This program is open to all students interested in an immersion program during the summer. It provides four weeks of intensive courses in French at the CIEF (Centre International des Etudes Francaises) at the Universite de Bourgogne in Dijon, France. Courses cover a variety of levels in language, literature, culture, and civilization. Minimum GPA of 2.5. Prereq for non French majors: a miminum 1 year of elementary French. Permission required. Special fee. Cr/F.  
Co-requisites: INCO 589

FREN 695 - Special Advanced Language Study in France  
Credits: 4.00  
Four weeks of intensive language study at the Centre International d'Etudes Francaises (CIELF) in Dijon, France. Prereq: FREN 631 and 632 with grade of B- or better and permission. Special UNH fee and DCE administrative fee. Student responsible for personal and travel expenses as well as tuition and other costs at CIELF. (Offered summer only.) Special fee.  
Co-requisites: INCO 589

FREN 762 - 17th Century French Literature  
Credits: 4.00  
Prereq: FREN 651 and 652 or equivalent. Special fee. (Offered fall semester in alternate years.) Writing
FREN 765 - 18th Century French Literature  
**Credits:** 4.00  
Prereq: FREN 651 and 652 or equivalent. Special fee. (Offered spring semester in alternate years.) Writing intensive.

FREN 775 - 19th Century French Literature  
**Credits:** 4.00  
Prereq: FREN 651 and 652 or equivalent. Special fee. (Offered fall semester in alternate years.) Writing intensive.

FREN 785 - Topics in Francophone Literatures  
**Credits:** 4.00  
Readings in French literatures from outside of France (e.g., Quebec, Africa, the Caribbean). Taught in French. Prereq: FREN 651 and 652. Special fee. (Not offered every year.) Writing intensive.

FREN 790 - Advanced Language and Style  
**Credits:** 4.00  
Translation of contemporary texts, intensive study of major writing techniques (such as narration, explication de texte, compte rendu, dissertation). Required for major. Prereq: at least two literature courses in French numbered above 652. Special fee. (Fall semester only.) Writing intensive.

FREN 795 - Special Studies in French Language and Literature  
**Credits:** 1.00 to 4.00  
Individual guided study of the work of a major author, a genre, or specific topics in literature. Training in bibliography and organization of material. Prereq: permission. Special fee. (Not offered every year.)

FREN 796 - Special Studies in French Language and Literature  
**Credits:** 1.00 to 4.00  
Individual guided study of the work of a major author, a genre, or specific topics in literature. Training in bibliography and organization of material. Prereq: permission. Special fee. (Not offered every year.)

FREN 798 - Special Topics in French Translation  
**Credits:** 4.00  
Selected topics in language, literature, and culture, "hands on" training in translation of the student's target language and individual focus area. Translation from and into the target language. Pre- or Coreq: FREN 651, FREN 652, FREN 790; LLC 642. Special fee.

FREN 799 - Honors Senior Thesis  
**Credits:** 2.00  
Yearlong course leading to an honors senior thesis. Open only to seniors seeking honors in major whose individually designed research projects have been approved by the department honors committee and who have been assigned an adviser. Students must enroll for both fall and spring semesters. Students defend the resulting written thesis in an oral presentation before department members and others. Prereq: permission. Special fee.
**Genetics**

**GEN 401 - Professional Perspectives in Genetics**  
**Credits:** 1.00  
Introduction to the fields of genetics and genomics and to the genetics faculty and their research. Invited speakers provide a sampling of careers available to genetic majors. Emphasis on skills needed for academic success and strategies for achieving professional goals. Required for first-year genetics majors; open to others. Fall semester only. Cr/F.

**GEN 600 - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Prereq: permission. Cr/F.

**GEN 600W - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Prereq: permission. Writing intensive. Cr/F.

**GEN 604 - Principles of Genetics**  
**Credits:** 4.00  
Chemical structure of genetic material, Mendelism, gene recombination, and chromosome mapping. Mutation, gene expression and regulation, recombinant DNA. Quantitative inheritance and population genetics. Prereq: BIOL 411 and 412 or equivalent; CHEM 403 and 404 or equivalent. College math or statistics suggested. Offered each semester. Also open to Neurobiology and Behavior majors in COLA and CS:Bioinformatics and CE:Bioengineering majors in CEPS; other by permission; contact MCBS department office.

**GEN 606 - Genetics Lab**  
**Credits:** 4.00  
Hands-on experience with some of the important organisms used for research in genetics (Drosophila, E coli, yeast, C. elegans, and plants). Investigation of fundamental genetic concepts in the laboratory, experience with tranmission and molecular genetic techniques, introduction to bioinformatics, and analysis and interpretation of data. Prereq: GEN 604. Special fee.

**GEN 704 - Genetics of Prokaryotic Microbes**  
**Credits:** 5.00  
Study of the maintenance, exchange, and expression of genetic material in bacteria and their viruses. Combines a historical overview on the important role microbial genetics played in the development of modern molecular biology with a contemporary perspective on the methods used to understand the function of genes. Particular emphasis is placed on current experimental applications to basic science, biomedical research, and biotechnology. Prereq: BMCB 658 and BMS 503. Lab. Special fee. Writing intensive.

**GEN 705 - Population and Quantitative Genetics**  
**Credits:** 4.00  
An introduction to the theory and application of population and quantitative genetics. Exploration of the
forces (mutation, selection, random drift, inbreeding, assortative mating) affecting the frequency and
distribution of allelic variation in natural populations. Quantifying the structure of populations. Analysis of
continuous variation in populations simultaneously at multiple loci, interactions between genes and their
environment underlying phenotypic variation. Methods of analysis for theoretical and practical applications.
Prereq: GEN 6 04; one semester of statistics and calculus recommended. Lab. (Not offered every year.)

**GEN 706 - Human Genetics**
**Credits:** 4.00
Genetic basis of human traits and diseases including both traditional methods of diagnosis and
contemporary molecular genetic approaches stemming from the human genome project. Course includes
case studies exemplifying common practices in human genetic counseling and integrates the scientific
basis of diagnosis with the special ethical implications of human genetic analysis. Prereq: GEN 604 or
permission.

**GEN 711 - Genomics and Bioinformatics**
**Credits:** 4.00
The methods, applications, and implications of genomics--the analysis of whole genomes. Microbial, plant
and animal genomics are addressed, as well as medical, ethical and legal implications. The lab provides
exposure and experience on a range of bioinformatics approaches--the computer applications used in
genome analysis. Prereq: GEN 604. Lab.

**GEN 711W - Genomics and Bioinformatics**
**Credits:** 4.00
The methods, applications, and implications of genomics--the analysis of whole genomes. Microbial, plant
and animal genomics are addressed, as well as medical, ethical and legal implications. The lab provides
exposure and experience on a range of bioinformatics approaches--the computer applications used in

**GEN 712 - Introduction to Programming for Bioinformatics**
**Credits:** 4.00
Introductory course in programming designed to enable students in the life sciences to solve fundamental
biological questions of simple to moderate complexity that require the use of computers to automate
repetitive tasks and handle query results efficiently. Topics include: computer values of important
parameters of biological sequence data, writing pattern search and motif discovery scripts, accessing,
querying, manipulating, retrieving, parsing, analyzing, and saving data from local and remote databases.

**GEN 713 - Microbial Ecology and Evolution**
**Credits:** 4.00
Evolutionary and ecological forces that generate the tremendous diversity of microbial life on Earth with
emphasis on viruses, archaea and bacteria. Functional roles of microorganisms, their population dynamics
and interactions, and their mechanisms of evolutionary change in a variety of environmental settings,
including natural communities and laboratory microcosms. Prereq: GEN 604, BMS 503, or permission.
Writing intensive.

**GEN 714 - Personal Genomics**
**Credits:** 4.00
Analysis and implications of personal genomic data is the focus of this course. Students understand and
appreciate all aspects of the availability of personal genomic information and tools including scientific,
medical, social, ethical and legal issues. Students have the opportunity to analyse their own individual
genome ot one of the publicly available genomes to learn about all various aspects of this emerging field.
The course will be an entirely online format. Prereq: GEN 604.

GEN 715 - Molecular Evolution  
Credits: 4.00  

GEN 717 - Molecular Microbiology  
Credits: 5.00  
Fundamental physiological and metabolic processes of archaea, bacteria and fungi with a strong emphasis on prokaryotes. Literature-based course. Topics include regulation of and coordination of microbial metabolism, bacterial cell cycle, global control of gene expression, signal transduction, and microbial cell differentiation. Prereq: BMS 503; GEN 604 or permission. Special fee. Lab. Writing intensive.

GEN 721 - Comparative Genomics  
Credits: 4.00  
An overview of the central questions and themes in contemporary comparative genomics. Topics span a broad range of questions and methodologies including: genome biology, phylogenomics, human origins, population genomics and ecological genomics. Provides the conceptual framework required to evaluate exciting new work in this fast-changing field. Prereq: GEN 604 or equivalent.

GEN 771 - Molecular Genetics  
Credits: 4.00  
Structure, organization, replication, dynamics, and expression of genetic information in eukaryotes. Focus on molecular genetic mechanisms of gene expression and its control; molecular genetics methods; molecular genetic control of cell division and differentiation during development. Prereq: BMCB 658 or 751; GEN 604; or permission.

GEN 772 - Evolutionary Genetics of Plants  
Credits: 4.00  
Mechanisms of genetic change in plant evolution, domestication, breeding, and genetic engineering. Topics include Darwinian theory; speciation and hybridization; origins and co-evolution of nuclear and organelle genomes; gene and genome evolution; transposable elements, chromosome rearrangements, polyploidy. Lab: bioinformatics, phylogenetics, writing and presentation skills. Prereq: GEN 604 or equivalent. Lab. Special fee. (Not offered every year.) Writing intensive.

GEN 774 - Techniques in Plant Genetic Engineering and Biotechnology  
Credits: 4.00  
Hands-on experience with techniques used in plant genetic engineering, including cell and tissue culture, gene cloning, and analysis of foreign gene expression. Theory behind these techniques and discussion about: role of plant biotechnology in sustainable agriculture and climate change; modifying plants for better nutrition and stress response, for environmental remediation, and for production of pharmaceuticals; controversies associated with this technology. Special fee.

GEN 790 - Undergraduate Teaching Experience  
Credits: 1.00 to 4.00  
Students assist Graduate Teaching Assistants in preparing, presenting, and executing Genetics courses/laboratories. May be repeated up to a maximum of 4 credits.

GEN 795 - Investigations  
Credits: 1.00 to 4.00  
Independent study/research in various areas of genetics. Prereq: permission. May be repeated to a
maximum of 4 credits.

**GEN 795W - Investigations**  
**Credits:** 1.00 to 4.00  
Independent study/research in various areas of genetics. Prereq: permission. May be repeated to a maximum of 4 credits. Writing intensive.

**GEN 799 - Senior Thesis**  
**Credits:** 1.00 to 4.00  
Research in genetics for senior majors. Prereq: permission. Writing intensive.

**GEN 799H - Honors Senior Thesis**  
**Credits:** 1.00 to 4.00  
Research in genetics for senior majors in Honors program. Prereq: permission. Writing intensive.
Geography

GEOG 401 - Regional Geography of the Western World
Credits: 4.00
An introduction to the people, places, and problems of six Westernized regions of the world -- Europe, Russia, Latin America, the Caribbean, North America, and Australia and Oceania. The course emphasizes five themes: environmental geography, population and settlement, cultural coherence and diversity, geopolitical framework, and economic and social development.

GEOG 401H - Honors/Regional Geography of the Western World
Credits: 4.00
An introduction to the people, places, and problems of six Westernized regions of the world -- Europe, Russia, Latin America, the Caribbean, North America, and Australia and Oceania. The course emphasizes five themes: environmental geography, population and settlement, cultural coherence and diversity, geopolitical framework, and economic and social development.

GEOG 402 - Regional Geography of the Non-Western World
Credits: 4.00
Major culture areas of the non-Western world and the unique interaction of human and physical phenomena that produce the distinctive character of these areas. Emphasizes the manner in which people of different cultures have made use of opportunities and solved problems existing in the major regions occupied by non-Western cultures: the Middle East and North Africa, Africa south of the Sahara, Oriental Asia and the Pacific Islands.

GEOG 402H - Honors/Regional Geography of the Non-Western World
Credits: 4.00
Major culture areas of the non-Western world and the unique interaction of human and physical phenomena that produce the distinctive character of these areas. Emphasizes the manner in which people of different cultures have made use of opportunities and solved problems existing in the major regions occupied by non-Western cultures: the Middle East and North Africa, Africa south of the Sahara, Oriental Asia and the Pacific Islands.

GEOG 405 - Human-Environment Geography
Credits: 4.00
Introduces human-environment relations as a central focus of geography, spanning social and environmental sciences. Considers mapping, natural resource use, commons and markets, hazards, political ecology, and land use change. Case studies link core concepts with examples from local to international scales.

GEOG 473 - Elements of Weather
Credits: 4.00
Basic principles of weather phenomena and the physical processes underlying these phenomena. Emphasis on weather patterns of New England. Lab.

GEOG 510 - Geography of New England
Credits: 4.00
An introduction to the physical and human geography of New England, including landforms, climate and vegetation, population and settlement, urban patterns, culture and identity, political geography, natural resources, and economic development.
GEOG 514 - Geography of the United States and Canada  
**Credits:** 4.00  
An introduction to the physical and human geography of the United States and Canada, including landforms, climate and biogeography, environmental issues, population and settlement, culture and identity, political geography, urban patterns, natural resources and economic development. Course content alternates between topics that are large in scope and scale, and others that are more narrowly focused.

GEOG 515 - The American City  
**Credits:** 4.00  
This course is an introduction to the American City viewed through the perspectives of geography and history. The course is organized historically, but the geography of American cities will be a persistent theme--what goes on where and why, the way cities and urban life vary geographically, and how cities have evolved as places. The class will be reading and discussion oriented. Grades will be based on quizzes, assignments, and participation.

GEOG 520 - Geography of Latin America and the Caribbean  
**Credits:** 4.00  
Utilizes regional and topical approaches to explore the physical, cultural, and historical geography of Latin America and the Caribbean. Particular aspects of the economy, politics, language, religion, and ethnicity is examined. The goal of the course is to lay a foundation for critical analysis of historical and contemporary concerns such as environmental issues, uneven development and poverty, social conflict and violence, and international relations.

GEOG 530 - Geography of China  
**Credits:** 4.00  
This course will examine China's diverse physical environments, politics, economies, and cultures across her vast territory. Students will learn to adopt a relational and spatiotemporal perspective to study the contemporary issues in China. Writing Intensive.

GEOG 540 - Geography of the Middle East  
**Credits:** 4.00  
Environmental, cultural, political-geographic, and ecological foundations of the Middle East. Selected regional problems and issues, e.g., geographical dimensions of the Arab-Israeli conflict, oil, urbanization, population growth, and nomadism. (Not offered every year.)

GEOG 550 - Geography of Sub-Saharan Africa  
**Credits:** 4.00  
Overview of major physical features and human patterns, with an emphasis on the interaction between people and place and the dynamic issues and challenges facing contemporary African societies. Environmental and resource issues, historical impacts on development, culture and social characteristics, rural and urban organization, industrialization and trade, and prospects for the future.

GEOG 560 - Geography of Natural Hazards  
**Credits:** 4.00  
A survey of natural hazards with a focus on what makes them hazardous to humans and how humans respond to those risks. Hazards that are considered include earthquakes, volcanoes, tsunami, floods, hurricanes and other severe weather events. The geography of community vulnerability to natural hazards is also examined.

GEOG 572 - Geography of the Natural Environment  
**Credits:** 4.00  
Provides an introduction to geography of the natural environment, including landforms, weather and
climate, water resources, and biogeography. Examines the processes that shape the different elements of
the environment and the relationships between them.

**GEOG 573 - Biogeography**  
**Credits:** 4.00  
Explores the introductory concepts of plant geography and biogeography, two interconnected disciplines
that document and explain the changing distributions of plants and animals from both a spatial and
temporal context. Gives equal emphasis to ecology (biomes, climates, soils), evolution (migration,
speciation, dispersal), and applied biogeography and plant geography.

**GEOG 574 - Geography of Landforms**  
**Credits:** 4.00  
Explores the geography of earth's major landforms and the geographic factors that influence their
development, distribution, and morphology. Topics include mountain building, river systems, desert
migration and expansion, glacial and periglacial environments, shoreline evolution, and how these
processes interact to form surface features that are unique to their geographic environment. Students
analyze geographic information in class and in the field using air photos, topographic maps, and spatial
data.

**GEOG 581 - Human Geography**  
**Credits:** 4.00  
Differentiation of the world in terms of population, race, language, religion, political territory, and economic
life. Collection and critical use of empirical data; emphasis on spatial and ecological analysis.

**GEOG 582 - Economic Geography**  
**Credits:** 4.00  
Investigates the manner in which resources and space have been organized for the production of goods
and services: agriculture, the extractive industries, manufacturing, and the tertiary sector. Empirical studies,
theories of location, and location models. Major contemporary problems and issues in agriculture and food
supply, energy sources, industrial readjustment, and the global economy. (Not offered every year.)

**GEOG 582W - Economic Geography**  
**Credits:** 4.00  
Investigates the manner in which resources and space have been organized for the production of goods
and services: agriculture, the extractive industries, manufacturing, and the tertiary sector. Empirical studies,
theories of location, and location models. Major contemporary problems and issues in agriculture and food
supply, energy sources, industrial readjustment, and the global economy. (Not offered every year.) Writing
intensive.

**GEOG 584 - Political Geography**  
**Credits:** 4.00  
Interactions between geographic and political phenomena at the sub-national, national, and international
levels. Emphasis on geographical aspects of current political problems within and between states. (Not
offered every year.) Writing intensive.

**GEOG 588 - Geography of Food**  
**Credits:** 4.00  
Explores the geography of what people eat around the world. Examines the factors that shape food
traditions in particular places and regions, including geographical differences in the environment,
population patterns, cultural characteristics, political processes, economic conditions, and history.
Considers how diets are changing today in response to globalization and other forces. Emphasis will be on
common, everyday foods eaten by regular people. Organized regionally. Special fee.
GEOG 595 - Statistics for Geographers  
Credits: 4.00  
Introduces statistics to geographers. Utilizes facts, such as population, vegetation patterns, and policy differences in terms of spatio-temporal focus. Students learn concepts from lectures and statistical tools for analysis during labs and homework assignments.

GEOG 610 - The Peopling of New England  
Credits: 4.00  
New England is often perceived as the least ethnically diverse section of the United States, populated primarily by white, Anglo-Saxon Protestants, descendants of early English settlers. That reputation is undeserved. New England has long been one of the most diverse regions in the country. This class is intended to help students develop an appreciation for the different groups who have populated the region and their influence. The course is reading based and discussion oriented.

GEOG 650 - Field Methods in Geography  
Credits: 4.00  
a survey of selected geographical field methods and the application of these methods - both qualitative and quantitative. It is designed around a series of field techniques, research and lab exercises, and the classroom setting which will introduce students to techniques widely used in gathering and analyzing spatial data in the geographical context. Special fee.

GEOG 658 - Introduction to Geographic Information Systems  
Credits: 4.00  
An introduction to the use of geographic information systems (GIS) for natural resources and related fields. Data models/structures, map projections, data input/output/storage, data analysis/modeling, interpolation, and data/quality standards. Hands-on using ArcView 3.x GIS software. Students are strongly encouraged to complete an introductory course in statistics before enrolling in course. Majors only. (Also offered as NR 658.)

GEOG 670 - Climate and Society  
Credits: 4.00  
An introduction to climate science and the interaction between humans and climate. Examines the processes that control climate, the mechanisms that drive climate change, and the impact of climate change on society. Writing intensive.

GEOG 671 - Weather Forecasting  
Credits: 4.00  
Examines in depth, the physical processes that govern the development and movement of weather systems. Topics include the relationship between surface and upper-level winds, vertical motion and pressure systems, storm development, and techniques used in weather forecasting.

GEOG 673 - Political Ecology  
Credits: 4.00  
Examines human-environment relations through the geographic subfield of political ecology, integrating social and biophysical sciences. Emphasizes cross-scalar relationships in resource decisions and community development, with substantial coverage of rural, non-US contexts. Seminar-style course with regular readings, writings and discussion. Writing intensive.

GEOG 680 - Historical Geography  
Credits: 4.00  
An introduction to major themes, important scholars, and commonly used research techniques in historical
geography. Course is reading and research oriented. Focus will be on North America. (Also listed as HIST 680.) Writing intensive.

GEOG 685 - Geography of Population and Development  
Credits: 4.00  
A regional approach to the study of population geography with concern for the interaction between the focus of economic growth and the components of population change and development. Considers the environmental impact of developing trends in the developed and developing worlds and the relationship of these trends to sustainable growth and population patterns. Writing intensive.

GEOG 686 - World Economy and Globalization  
Credits: 4.00  
Emphasizes the spatial development of the world economy and the evolution into today's "globalized" economy. Topical emphasis includes the processes of global economic production changes, the role of transnational corporations, and the role of the state in globalization. Writing intensive.

GEOG 690 - Geography of Third World Development  
Credits: 4.00  
Explores the geography of development in the Third World (Africa, Asia, Latin America, and Oceania). Addresses factors that affect development spatially and temporally. Emphasis on geographic scale (local, national, regional, and global). Students write and present critical thinking papers that address the interactions of development factors at different scales.

GEOG 695 - Internship  
Credits: 1.00 to 4.00  
Internships provide an opportunity for on-the-job skill development and practical experience in a closely supervised work setting. The student must provide a written proposal to a supervising faculty member before an internship program is approved. At the end of the semester, the student must make a presentation, provide work samples, or submit a detailed report, log, or portfolio describing the internship experience. May be repeated for up to 8 hours of credit. Cr/F.

GEOG 757 - Remote Sensing of the Environment  
Credits: 4.00  
Practical and conceptual presentation of the use of remote sensing and other geospatial technologies for mapping the environment. The course begins with the use of aerial photographs (Photogrammetry and photo interpretation) and includes measures of photo scale and area, parallax and stereo viewing, object heights, flight planning, photo geometry, the electromagnetic spectrum, camera image analysis, global positioning systems (GPS), and geographic information systems (GIS). Conceptual lectures are augmented with practical homework assignments and hands-on lab exercises. Prereq: Algebra. Special fee. Lab. (Also offered as NR 757).

GEOG 759 - Digital Image Processing for Natural Resources  
Credits: 4.00  
Introduction to digital remote sensing, including multispectral scanners (Landsat and SPOT), radar, and thermal imagery. Hands-on image processing including filtering, image display, ratios, classification, registration, and accuracy assessment. GIS as it applies to image processing. Discussion of practical applications. Use of ERDAS image-processing software. Knowledge of PCs required. Prereq: GEOG 757 or equivalent and permission. (Also offered as NR 759).

GEOG 760 - Geographic Information Systems in Natural Resources  
Credits: 4.00  
Introduces the use of geographic information systems (GIS) for use with natural resources including data
input, manipulation, storage, analysis, and display. Accuracy of spatial data and use of digital elevation models. Discussion of practical applications. Use of PC Arc/Info software. Prereq: permission. Lab. (Also listed as NR 760.)

**GEOG 795 - Special Project**  
*Credits: 2.00 or 4.00*  

**GEOG 796 - Special Topics**  
*Credits: 4.00*  

**GEOG 797 - Seminar**  
*Credits: 2.00*  
Exploration of geography as a research discipline. Definition and investigation of research problems. Primarily for geography seniors. May be repeated up to a maximum of 4 credits.

**GEOG 799 - Honors Thesis**  
*Credits: 4.00*  
Independent research project conducted under supervision of a faculty sponsor culminating in a written thesis. Students must also make a public presentation of their thesis. Required for all honors students. Open only to geography majors who are part of the honors program. Before registering for the course, students must secure a faculty sponsor, obtain approval for a thesis topic, and complete an honors thesis student/sponsor agreement. Only open to Geography majors.
GERM 401 - Elementary German I  
Credits: 4.00  
For students without previous training in German. Aural comprehension, speaking, writing, reading, language labs. No credit for those with two or more years of German in secondary school. Special fee.

GERM 402 - Elementary German II  
Credits: 4.00  
See description for GERM 401.

GERM 500 - Selected Topics in World Literature  
Credits: 4.00  
Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, ITAL 500, PORT 500, RUSS 500, SPAN 500.) May be repeated for credit. Credit/Fail. Writing intensive.

GERM 503 - Intermediate German I  
Credits: 4.00  
Review of grammar; practice in oral and written expression; readings and cultural material. Prereq: GERM 401-402 or equivalent. Labs. Special fee.

GERM 504 - Intermediate German II  
Credits: 4.00  
Review of grammar; practice in oral and written expression; readings and cultural material. Prereq: GERM 401-402 or equivalent. Labs. Special fee.

GERM 521 - Major German Authors in English  
Credits: 4.00  
Selected masterpieces of the 18th, 19th, and 20th centuries by authors such as Goethe, Mann, Kafka, Hesse, Bachmann, Koeppen, Brecht, Frisch, Wolf, and Durrenmatt. Readings and discussions in English. May be taken for major credit. Special fee.

GERM 524 - German Cinema  
Credits: 4.00  
Aquaints students with major German film texts. Using analytical and critical tools, students read film texts as aesthetic works (with a form and a narrative) and as historical works (with a social function). Through cinema the course explores German society and history. The course is conducted in English. Special fee.

GERM 524H - Honors/Special Topics in German Film  
Credits: 4.00  
Using analytical and critical tools, students read film texts as aesthetic works (with a form and a narrative) and as historical works (with a social function). Culminates in an investigation of a distinct historical period of German film or of a particular theme through the history of German film. Special fee.

GERM 525 - Introduction to German Culture and Civilization  
Credits: 4.00  
Aspects of the political, social, and cultural life of Germany, Austria, and Switzerland. Conducted in English. Required of German majors; strongly recommended for any students planning study abroad in a German-speaking country. Special fee.
GERM 525H - Honors/Introduction to German Culture and Civilization  
Credits: 4.00  
Aspects of the political, social, and cultural life of Germany, Austria, and Switzerland. Conducted in English. Required of German majors; strongly recommended for any students planning study abroad in a German-speaking country. Special fee.

GERM 586 - Study in Berlin  
Credits: 8.00  
Gives students an immersion experience in the German language and culture. Students will study one week at UNH and 5 weeks in Berlin, where they will take an intensive language course (80 hours) at the BSI Private Language School, receive cultural instruction from the on-site UNH faculty member, and pursue an individual research project. Permission required. Special fee. May be repeated for a maximum of 8 credits.  
Co-requisites: INCO 589

GERM 595 - Internship  
Credits: 2.00 to 4.00  
The German Internship consists of unpaid placement in an approved business, social service or educational organization in a German-speaking context with on-site supervision. Student is responsible for keeping a journal to be evaluated by a UNH faculty mentor. Site supervisor evaluates intern's work on location in consultation with UNH mentor. Prereq: GERM 504. Variable credit 2 to 4 credits per unit. May count up to 4 credits toward German major or minor and an additional 4 as graduation elective. Does not replace Study Aboard requirement for major. Special fee.

GERM 596 - Practicum  
Credits: 2.00  
Practical use of German language and culture through special projects outside the classroom. May be repeated for a maximum of 4 credits. Permission. Cr/F.

GERM 601 - Introduction to German Literature  
Credits: 4.00  
Reading and analysis of poems, dramas, and short prose; introduction to theory of literary forms and methods of analysis. Required of all German majors; must be taken as soon as possible after GERM 504. Prereq: knowledge of German. Special fee.

GERM 631H - Honors/Advanced Communications Skills I  
Credits: 4.00  
Intensive practice in vocabulary building and developing a sense of appropriate style for various contexts of oral and written communication. Special emphasis on conversational and expository speaking. Discussion of topics of current interest, oral reports, role play, and simulation of everyday situations, reinforced by written work. Required for the German major and minor. Special fee. Prereq: GERM 504. Writing intensive.

GERM 631W - Advanced Communications Skills I  
Credits: 4.00  
Intensive practice in vocabulary building and developing a sense of appropriate style for various contexts of oral and written communication. Special emphasis on conversational and expository speaking. Discussion of topics of current interest, oral reports, role play, and simulation of everyday situations, reinforced by written work. Required for the German major and minor. Special fee. Prereq: GERM 504. Writing intensive.

GERM 632 - Advanced Communications Skills II  
Credits: 4.00  
Intensive practice in vocabulary building and coherent expression in a variety of stylistic contexts. Special
emphasis on writing skills, from expository prose to letter and resume writing, essays, journalistic reports, and creative writing, focusing on topics of current interest. Required for the German major. Special fee. Prereq: GERM 504

**GERM 685 - Study Abroad**
**Credits: 16.00**
A summer, semester, or year of study in one or a combination of the departmentally recognized programs such as the New England Universities Salzburg Program (UNH students as consortium members receive a discount on this program), the work-study program in Hamburg, or any other appropriate, approved programs. Open to students of any major with GERM 504 or equivalent training. Financial aid applies to all approved programs. Interested students should inquire at department for program brochures and specific requirements and should apply in consultation with a German adviser. For information on other study abroad programs, students should contact the Center for International Education. Cr/F. An IA (continuous grading) grade will be assigned until an official transcript is received from the foreign institution.

**GERM 686 - Study Abroad**
**Credits: 16.00**
A summer, semester, or year of study in one or a combination of the departmentally recognized programs such as the New England Universities Salzburg Program (UNH students as consortium members receive a discount on this program), the work-study program in Hamburg, or any other appropriate, approved programs. Open to students of any major with GERM 504 or equivalent training. Financial aid applies to all approved programs. Interested students should inquire at department for program brochures and specific requirements and should apply in consultation with a German adviser. For information on other study abroad programs, students should contact the Center for International Education. Cr/F. An IA (continuous grading) grade will be assigned until an official transcript is received from the foreign institution.

**GERM 728 - Modern German Literature**
**Credits: 4.00**
Major literary movements from 1872 to 1945. Reading and analysis of selected works. Special fee. Writing intensive.

**GERM 728H - Honors/Modern German Literature**
**Credits: 4.00**
Major literary movements from 1872 to 1945. Reading and analysis of selected works. Special fee. Writing intensive.

**GERM 745 - Contemporary German Literature and Culture**
**Credits: 4.00**
Literary trends in the German-speaking countries since 1945. Analysis and interpretation of works by major authors. Special fee. Prereq: GERM 504. Writing intensive.

**GERM 795 - Independent Study**
**Credits: 1.00 to 4.00**
Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

**GERM 795H - Honors/Independent Study**
**Credits: 1.00 to 4.00**
Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.
**GERM 796 - Independent Study**  
**Credits:** 1.00 to 4.00  
Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

**GERM 796H - Honors/Independent Study**  
**Credits:** 1.00 to 4.00  
Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

**GERM 797 - Special Studies in German Language and Literature**  
**Credits:** 4.00  
Selected topics in language, culture, and literature.

**GERM 798 - Special Studies in German Language and Literature**  
**Credits:** 2.00 or 4.00  
Selected topics in language, culture, and literature. Special fee.
GREEK 401 - Elementary Classical Greek I  
**Credits:** 4.00  
Grammar, simple composition, and translation. For students without previous training in Greek. Special fee.

GREEK 402 - Elementary Classical Greek II  
**Credits:** 4.00  
Grammar, simple composition, and translation. For students without previous training in Greek. Special fee.

GREEK 403 - Elementary Modern Greek I  
**Credits:** 4.00  
Aural-oral practice and the study of fundamental speech patterns, reading, and writing to achieve a firm basis for an active command of the language. (No credit for students who have had two or more years of modern Greek in secondary school.) Special fee.

GREEK 404 - Elementary Modern Greek II  
**Credits:** 4.00  
Aural-oral practice and the study of fundamental speech patterns, reading, and writing to achieve a firm basis for an active command of the language. (No credit for students who have had two or more years of modern Greek in secondary school.) Special fee.

GREEK 503 - Intermediate Classical Greek I  
**Credits:** 4.00  

GREEK 504 - Intermediate Classical Greek II  
**Credits:** 4.00  

GREEK 505 - Intermediate Modern Greek I  
**Credits:** 4.00  
Short selections from modern Greek literature with grammar review and oral practice. Readings from such authors as Solomos, Cavafy, Palamas, Kazantzakis, Venezis, Myrivilis, Seferis, and Elytis. Prereq: GREK 404 or equivalent. Special fee.

GREEK 506 - Intermediate Modern Greek II  
**Credits:** 4.00  
Short selections from modern Greek literature with grammar review and oral practice. Readings from such authors as Solomos, Cavafy, Palamas, Kazantzakis, Venezis, Myrivilis, Seferis, and Elytis. Prereq: GREK 404 or equivalent. Special fee.

GREEK 595 - Directed Reading in Greek  
**Credits:** 2.00 or 4.00  
Independent study of a classical, Byzantine, or modern Greek author. May be repeated for a maximum of 8 credits. Prereq: GREK 503-506, or equivalent. Special fee.

GREEK 596 - Directed Reading in Greek
**Credits:** 2.00 or 4.00
Independent study of a classical, Byzantine, or modern Greek author. May be repeated for a maximum of 8 credits. Prereq: GREK 503-506, or equivalent. Special fee.

**GREK 635 - Third Year Modern Greek I**
**Credits:** 4.00
Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent compositions and oral presentations using materials on contemporary culture and literary texts as well as various media. Students develop oral/aural skills in lab and class. Prereq: GREK 505-506; or 595-596 (if approved) with a grade of C or better. Special fee.

**GREK 636 - Third Year Modern Greek II**
**Credits:** 4.00
Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent compositions and oral presentations using materials on contemporary culture and literary texts as well as various media. Students develop oral/aural skills in lab and class. Prereq: GREK 505-506; or 595-596 (if approved) with a grade of C or better. Special fee.

**GREK 751 - Homer and the Archaic Period**
**Credits:** 4.00
Readings from the Iliad, the Odyssey, the Homeric hymns, Hesiod, Pindar, and the lyric poets. Prereq: permission. Special fee.

**GREK 753 - Advanced Study in Athenian Literature**
**Credits:** 4.00

**GREK 754 - Advanced Study in Athenian Literature**
**Credits:** 4.00

**GREK 795 - Special Studies**
**Credits:** 4.00
A) Pre-Socratic Philosophers; B) Hellenistic Greek Authors; C) Menander; D) Callimachus; E) Apollonius of Rhodes; F) Theocritus; G) Polybius; H) Greek Authors of the Roman Empire; I) Plutarch; J) Septuagint; K) New Testament; L) Greek Church Fathers; M) Byzantine Authors; N) Spoken Greek O) Advanced Greek Composition; P) Introduction to Classical Scholarship; Q) Greek Epigraphy; R) Greek Dialects; S) Comparative Grammar of Greek and Latin; T) Homer: A Linguistic Analysis; U) Greek Institutions; V) Paleography and Textual Criticism. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

**GREK 796 - Special Studies**
**Credits:** 4.00
A) Pre-Socratic Philosophers; B) Hellenistic Greek Authors; C) Menander; D) Callimachus; E) Apollonius of Rhodes; F) Theocritus; G) Polybius; H) Greek Authors of the Roman Empire; I) Plutarch; J) Septuagint; K)
New Testament; L) Greek Church Fathers; M) Byzantine Authors; N) Spoken Greek O) Advanced Greek Composition; P) Introduction to Classical Scholarship; Q) Greek Epigraphy; R) Greek Dialects; S) Comparative Grammar of Greek and Latin; T) Homer: A Linguistic Analysis; U) Greek Institutions; V) Paleography and Textual Criticism. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>HHS 401</td>
<td>Baseline for Collegiate Learning Assessment (CLA+)</td>
<td></td>
<td>Longitudinal assessment of critical thinking skills in Health Care students.</td>
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<tr>
<td>HHS 444</td>
<td>The Right to be Disabled in the Extreme Makeover Society</td>
<td>4.00</td>
<td>Explores how society's view of disability, its &quot;construction,&quot; is influenced by a variety of cultural variables and the implications of that construction on institutions such as medicine and health care, education, the arts, the legal system, architecture and engineering, etc.</td>
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<tr>
<td>HHS #540</td>
<td>Statistics for Health and Human Service Professionals</td>
<td>4.00</td>
<td>A conceptual and analytical approach to the use of statistics in the health and human service professions. Emphasizes the logic and purpose of statistics. Attention to special problems of statistical design such as random assignment, single subject trials, and the ethics of control groups. Basic computer skills for manipulating data. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.</td>
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Health Management & Policy

HMP 401 - United States Health Care Systems
Credits: 4.00
Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues.

HMP 401H - Honors/United States Health Care Systems
Credits: 4.00
Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues. Writing intensive.

HMP 401W - United States Health Care Systems
Credits: 4.00
Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues. Writing intensive.

HMP 403 - Introduction to Public Health
Credits: 4.00
Course presents an overview of the structure, function, and organization of the public health system/services (governmental, proprietary, and voluntary sectors) and how they operate, emphasizing core functions and major divisions (public health administration, epidemiology and biostatistics, environmental health, social and behavioral health). Surveys contemporary problems facing society, e.g., workforce issues, bioterrorism, epidemics, and lifestyle choices contributing to obesity, tobacco and alcohol use, violence and challenges students to think critically about them. Introduces public health careers.

HMP 440A - Honors/Global Public Health Issues
Credits: 4.00
This course is designed to provide students with an introduction to and overview of the key areas of global health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. This course is part of the Honors Symposium titled: Reinventing Healthy Communities Nationally and Globally: Medical, Legal, and Cultural Perspectives. This course is the same course as HMP 444A Honors/Global Public Health Issues, that was approved by the Discovery Program as an Inquiry, World Cultures Category course. HMP 440A will not be offered as an Inquiry course, but will maintain the World Cultures Category. Prereq: Permission.
Co-requisites:

HMP 444 - From Frankenstein to Dolly, and Beyond
Credits: 4.00
This course is an interdisciplinary introductory course designed specifically for first year students. It seeks to stimulate and support student inquiry and exploration of social and ethical issues associated with scientific research and advances, the value-laden questions that they often precipitate, and their impact on individuals, population groups, and society at large. (Also listed as MICR 444.)

HMP 444A - Global Public Health Issues
Credits: 4.00
This course is designed to provide students with an introduction to and overview of the key areas of global health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. This course is part of the Honors Symposium titled: Reinventing Healthy Communities Nationally and Globally: Medical, Legal, and Cultural Perspectives. This course is the same course as HMP 440A Honors/Global Public Health Issues, that was approved by the Discovery Program as an Inquiry, World Cultures Category course. HMP 440A will not be offered as an Inquiry course, but will maintain the World Cultures Category. Prereq: Permission.
health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. Using the perspectives of public health, the course will cover factors associated with the development of health problems and efforts to prevent disease in impoverished areas. Students will also explore the role of social communication, politics, religion, economics, education and culture in contributing to global public health issues and will integrate these factors and values in developing solutions to the widespread public health issues impacting communities worldwide. Students will learn about the magnitude of disease in the developing world (e.g., communicable and non-communicable disease, women and child health, nutrition, and unintentional injuries), how health is assessed and how health systems effectively work together to improve global health.

**HMP 501 - Epidemiology and Community Medicine**  
**Credits:** 4.00  
The distribution and determinants of disease, illness, and health in the community. Community health and illness measures, health status, and source of data. Development of hypotheses and study designs to reduce community health problems using epidemiological reasoning, methods, and analyses. Lab.

**HMP 501H - Honors/Epidemiology and Community Medicine**  
**Credits:** 4.00  
The distribution and determinants of disease, illness, and health in the community. Community health and illness measures, health status, and source of data. Development of hypotheses and study designs to reduce community health problems using epidemiological reasoning, methods, and analyses. Lab.

**HMP 505 - Public Health: History and Practice**  
**Credits:** 4.00  
Blends a broad overview of the historical development of public health with important areas of contemporary public health practice. Traces the history and practices of public health from classical times, through the Middle Ages, the Renaissance, and European Enlightenment. Special emphasis on the historical evolution, development, and future of public health in the U.S. The latter includes the organization of public health in the U.S., its major functions and practices, its infrastructure, its programs and services, and its future challenges.

**HMP 511 - Introduction to Health Information Systems**  
**Credits:** 4.00  
This course introduces the student to the nomenclature and foundations of health information technology and systems in health care delivery settings and the management and strategic uses for those systems. It is relevant for those studying health care management and those using clinical health information systems. It examines health care information flow, information systems, technology standards and information security, and presents relevant examples, practical applications and case studies. Prereq: HMP 401.

**HMP 569 - Human Behavior and the Public Health**  
**Credits:** 4.00  
Provides a grounding in fundamental concepts of the behavioral sciences as they illuminate public health. Individual and community responses to prevention, identification of symptoms, diagnoses, treatments, chronic ailments, and rehabilitation are discussed. In each of these areas, the course explores the interaction between community, family, patient, and health care provider.

**HMP 600 - Special Topics**  
**Credits:** 1.00 to 4.00  
A) Hospital Management, B) Long-term Care Management, C) Ambulatory Care Management, D) Clinical Services Management, E) Home Care Management, F) Mental Health Management, G-Z) Interdisciplinary. May repeat, but may not duplicate subject areas. Prereq: junior major or permission. Special fee on some sections.
HMP 621 - Pre-practicum Seminar
Credits: 2.00
Preparation for field practicum experience, orientation to experiential learning and competency development. Prereq: major, HMP 401m 403, 501, MATH 420 424/425.

HMP 622A - Field Practicum in Organizational Analysis
Credits: 1.00

HMP 622B - Field Practicum in Management Skills Development
Credits: 1.00

HMP 622C - Field Practicum in Project Analysis
Credits: 1.00

HMP 624 - Post Practicum Seminar
Credits: 2.00
Summary and conclusion from field practicum experience. Individual analysis and panel discussions to include site assessment, project description and methodologies employed, critique of individual skills and knowledge base in relation to internship. Major only.

HMP 631 - Health Issues Seminar
Credits: 2.00
Discussion of current issues in the fields of health management, health policy and public health. Prereq: major or permission.

HMP 642 - Health Economics
Credits: 4.00
Theoretical and empirical analysis of the U.S. health care delivery sector. Topics include health insurance markets and their effects on patients' demand, uninsured populations and their access to health care services, breakdowns in the principal/agent relationship between patients' and providers, competition in the medical sector, technology, pharmaceuticals and the scope and effect of government involvement in the delivery of health care. (Also listed as ECON 642.)

**HMP 711 - Health Systems Research I**  
**Credits:** 4.00
Introduces intermediate techniques for data manipulation and analysis for the health care field. Also introduces methods for survey research and large data set manipulation and analysis. There is a lab section utilizing a statistical software package where students perform tasks from a large national data set. Prereq: introduction to statistics.

**HMP 712 - Health Analytics**  
**Credits:** 4.00
This course introduces students to the field of health analytics and data science. It expands upon introductory statistical and data manipulation methods to include data mining, predictive analytics, cluster analysis, trend and pattern recognition, and data visualization. It couples data skills with interpretive and communication skills. Students will also be exposed to basic statistical programming. There will be a graduate component of the course (812) where students will work on advanced concepts and complete a separate culminating project.

**HMP 715 - Environmental Health**  
**Credits:** 4.00
This course offers a general introduction to environmental health from the community, regional, and global perspective by addressing fundamental topics and current controversies such as air pollution, water pollution, built environment/urban sprawl, food safety, waste disposal, and occupational health. Students learn about environmental health assessment methods. Major issues in environmental health and related regulatory efforts and public health policy reform are examined. Prereq: HMP 403 & HMP 501.

**HMP 721 - Managing Health Care Organizations**  
**Credits:** 4.00
Organizational characteristics of ambulatory, acute, and long-term care facilities. Management issues and strategies involving governance, clinical services, human and fiscal resources, and community-based services. Prereq: major or permission.

**HMP 722 - Health Care Management II**  
**Credits:** 4.00
A continuation of HMP 721 - Managing Health Care Organizations with specific lectures and assignments devoted to organizational behavior, leadership, and managerial skills. Case studies and examples will relate specifically to health care organizations. Prereq: HMP 721; HMP majors only.

**HMP 723 - Health Planning**  
**Credits:** 4.00
Theoretical and historical foundations of health planning; the relationship of health planning and regulation; the application of planning methods; and the utilization of strategic planning and its relationships to marketing. Prereq: major or permission. Special fee.

**HMP 735 - Social Marketing**  
**Credits:** 4.00
An introduction to the vocabulary and tools of social marketing. Expanding upon the traditional principles of marketing and consumer behavior, students are exposed to the challenges of trying to effect behavior
HMP 740 - Health Care Financial Management  
Credits: 4.00  
Techniques, principles, and practices of managing fiscal aspects of health care organizations. Exploration of concepts and techniques associated with variance analysis, cost allocation, management of working capital, and capital decision analysis. Analysis of the impact of reimbursement on health care organizations. Prereq: Major or permission.

HMP 741 - Health Care Financial Management II  
Credits: 4.00  
This course focuses on issues related to effective financial management of health care organizations and programs, building upon material covered in HMP 740, Health Care Financial Management. Topics include the time value of money, long-term debt, stocks and equity, and evaluation of capital projects. Prereq: HMP 740; HMP majors only.

HMP 742 - Strategic Management for Health Care Organizations  
Credits: 4.00  
Application of managerial methods involving financial, marketing, and operational analysis to health management. Case studies. Prereq: major or permission; HMP 740. Lab. Special fee. Writing intensive.

HMP 744 - Health Ethics and Law  
Credits: 4.00  
Ethical theories, core legal principles and cases, and decision-making models; patient's rights and professional responsibilities; social justice and resource allocation; critical ethical dilemma's facing health care managers, policy makers, and executives; managerial versus medical care conflicts. Prereq: major or permission.

HMP 744E - Health Ethics  
Credits: 2.00  
Ethical theories, principles, and decision-making models that facilitate argumentation and critical analysis related to health issues where values often conflict; patient and employee rights, responsibilities/duties; the relationship between ethics and the law; selected ethical dilemmas and conflicts facing health professionals. Issues may include confidentiality and privacy, personnel/managerial communications, advertising and marketing, health care and profits, quality of life, pre-birth and end-of-life, electronic medical records and personal health information, immunization and communicable disease, human genetics, human rights and social justice, the right to health care and human experimentation. Students examine ethical issues, and the implications of alternatives and decisions on multiple stakeholders, including patients and family members, various health care providers and their respective organizations, health policy makers, and the public at large. Prereq: major or permission.

HMP 744L - Health Law  
Credits: 2.00  
This course provides an introduction to the legal foundations of health care in the U.S. Health law is examined as it applies to professionals entering the field of health management and other health professions. The legal system, regulations affecting health and safety, and issues facing practitioners are presented. Current status of the law, future directions, and its complexity are explored. Topics include privacy, liberty, and proprietary interests, from the perspective of the provider and the patient; laws related to the regulation of medical services, medical professionals, and standards of care; medical malpractice, institutional and corporate liability; antitrust; contracts; and patient rights. This course will complement HMP 744E Health Ethics.
HMP 746 - Health Policy
Credits: 4.00
Analysis of the public policy process, the development of health policies in the U.S., and discussion of specific health policy issues. Prereq: major or permission. Writing intensive.

HMP 748 - Health Policy Analysis
Credits: 4.00
Public policy outputs analyzed for effectiveness, efficiency, and equity, focusing on public policies in the United States. Prereq: major or permission. Lab. Special fee

HMP 796 - Independent Study
Credits: 1.00 to 4.00
In-depth study with faculty supervision. Prereq: permission of major adviser and faculty in the area concerned.

HMP 798H - Honors Project/Research Design
Credits: 2.00
Examines selected research designs and methods used in health services research/program evaluation. Establishes theoretical and methodological foundation for honors-in-major research project to be conducted during the subsequent semester under a faculty member's supervision. Prereq: senior honors-in-major status and permission.

HMP 799H - Honors Project/Research
Credits: 2.00 to 4.00
In-depth research project (conducting and analysis) under supervision of faculty member. Includes scholarly presentation of findings to faculty and other interested parties and preparation of manuscript suitable for publication in peer-viewed journal. Prereq: HMP 798H and permission. Writing intensive.
History

HIST 405 - History of Early America
Credits: 4.00
America from the early era of European discovery to the mid-19th century. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Course meets the History major requirement for Group 1.

HIST 405H - Honors/History Early America
Credits: 4.00
America from the early era of European discovery to the mid-19th century. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Writing intensive. Course meets the History major requirement for Group 1.

HIST 405W - History of Early America
Credits: 4.00
America from the early era of European discovery to the mid-19th century. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Writing intensive. Course meets the History major requirement for Group 1.

HIST 406 - History of the Modern United States
Credits: 4.00
History of the United States since the mid-19th century. Political, social, and economic developments as well as relationships of the modern U.S. with other countries. Course meets the History major requirement for Group 1.

HIST 406H - Honors/History of the Modern United States
Credits: 4.00
History of the United States since the mid-19th century. Political, social, and economic developments as well as relationships of the modern U.S. with other countries. Writing intensive. Course meets the History major requirement for Group 1.

HIST 406W - History of the Modern United States
Credits: 4.00
History of the United States since the mid-19th century. Political, social, and economic developments as well as relationships of the modern U.S. with other countries. Writing intensive. Course meets the History major requirement for Group 1.

HIST 410 - Historic Survey Amer Civiliztn
Credits: 4.00
Topical survey, within broad chronological divisions, of the development of American civilization since 1600. Students may take the course up to two times as long as the topic for the two courses is different. Writing intensive. Course meets the History major requirement for Group 1.

HIST 410H - Honors/Historical Survey of American Civilization
Credits: 4.00
Topical survey, within broad chronological divisions, of the development of American civilization since 1600. Writing intensive. Course meets the History major requirement for Group 1.

**HIST 421 - World History to the 16th Century**  
**Credits:** 4.00  
The global experience of human communities with special emphasis on the development of the major civilizations and their interactions. Comparisons of social, cultural, religious, and political life and the emergence of distinctive and diverse human societies are examined. Course meets the History major requirement for Group III.

**HIST 422 - World History in the Modern Era**  
**Credits:** 4.00  
Emergence of major global human interactions due to the growth of major civilizations. The global context for the rise of the modern West. The rise and decline of Western global domination and the emergence of new states and changing societies throughout the world. Course meets the History major requirement for Group III.

**HIST 422H - Honors/World History in the Modern Era**  
**Credits:** 4.00  
Emergence of major global human interactions due to the growth of major civilizations. The global context for the rise of the modern West. The rise and decline of Western global domination and the emergence of new states and changing societies throughout the world. Course meets the History major requirement for Group III.

**HIST 425 - Foreign Cultures**  
**Credits:** 4.00  
Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. Course meets the History major requirement for Group II or III, depending on the topic.

**HIST 425H - Honors/Foreign Cultures**  
**Credits:** 4.00  
Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. Writing intensive. Course meets the History major requirement for Group II or III, depending on the topic.

**HIST 425W - Foreign Cultures**  
**Credits:** 4.00  
Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. Writing intensive. Course meets the History major requirement for Group II or III, depending on the topic.

**HIST 435 - Origins of European Society**  
**Credits:** 4.00  
This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition, Course meets the History major requirements for Group II.

**HIST 435H - Honors/Origins of European Society**  
**Credits:** 4.00
This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition, Course meets the History major requirements for Group II. Writing intensive.

HIST 435W - Origins of European Society
Credits: 4.00
This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition, Course meets the History major requirements for Group II. Writing intensive.

HIST 436 - Europe and the Modern World
Credits: 4.00
The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II.

HIST 436H - Honors/Europe and the Modern World
Credits: 4.00
The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II. Writing intensive.

HIST 436W - Europe and the Modern World
Credits: 4.00
The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II. Writing intensive.

HIST 440A - Martin Luther King, Jr., and the Struggle for Racial Justice
Credits: 4.00
This course examines Martin Luther King's life, philosophy, and career on the front lines of the civil rights movement. In our study of King as well as the larger black freedom struggle, we seek an understanding of how certain questions related to racial justice played out in American history. We focus on issues of civil disobedience, just and unjust laws, love and hate, violence and non-violence. Students will read many of King's famous writings such as the Letter from Birmingham Jail, as well as his lesser-known speeches - among them king's 1967 address denouncing the Vietnam War. More generally, this seminar introduces students to the rudiments of historical thinking and asks broader questions about the role of individuals in history and how social change happens. Course meets the History major requirement for Group I.

Co-requisites:
Credits: 4.00
Every person interacts with the health care system -- including you. In this class, students will study the interactions between law, society, science, and medicine to gain an understanding about how the American health care system developed and who has and does make decisions about health. Topics covered include vaccination, health care providers, discrimination, and epidemics. Course meets the History major requirement for Group I.

Co-requisites:

HIST 440C - Honors/Collective Guilt and Collective Responsibility in History
Credits: 4.00
Most Americans recognize the Holocaust as an extraordinary crime, though there is less agreement about who was responsible, whether justice was rendered and appropriate compensation was awarded survivors. Things become more complicated when examining what might be considered crimes committed by Americans. This course concentrates both on the Holocaust and the underside of American history and poses questions about the connections between the past and the responsibility of citizenship in the present. Writing intensive. Course meets the History major requirement for Group I or II.

Co-requisites:

HIST 440D - Honors/Citizens and Persons
Credits: 4.00
The definition and substance of citizenship have changed dramatically in the course of history. Modern societies in particular have experienced struggles over who belongs to the nation, who deserves to protect it and be protected by it, as well as ideas about individual and group rights. Thees conflicts continue to the present day, as seen in the public and legal debates over access to the ballot box, immigrant rights, marriage equality, inclusion of people with disabilities, state violence, and other issues. In this class, we will trace the evolution of expanding (and occasionally contracting) political and civil rights and responsibilities over time, with a comparative focus on United States, Europe, and Latin America. Some of the questions we will explore in this course include: By which mechanisms have Atlantic world societies decided who belongs and who does not belong to the nation? How has the relationship of citizenship to equality changed over time? Have any countries achieved full equality, and where does this ideal remain unfulfilled? Permission required.

HIST 444 - Through Their Eyes: The American Civil War from Primary Sources
Credits: 4.00
Introduces the nature of historical research through an intensive study of the Civil War era, including slavery, abolitionism, and political conflict before the war, as well as the military, social, and political history of the war itself. Use of primary sources such as newspapers, public documents, letters, and diaries, including unpublished manuscripts held in Special Collections, Dimond Library. Writing intensive. Course meets the History major requirement for Group I.

HIST 444B - Revolutions Across the Atlantic
Credits: 4.00
An exploration of the Age of Revolution, 1776-1800 on both sides of the Atlantic. Beginning with Tom Paine's declaration "Tis Time to Part" that launched the American Revolution and ending with the spread of the French Revolution by bayonets into Switzerland, we investigate the clubs organized against the slave trade, we read the plays that projected imaginary revolutions onto desert islands, and we follow the rumors that spread news of Caribbean revolts to Philadelphia and Paris. This course will be primarily discussion, with some short writing assignments in the first half of the course. Students will research and write their own histories of some facet of revolutionary history in the second half of the course. Writing intensive. Course meets the History major requirements for Group I or II.

HIST 444C - World War Propaganda in Britain and the United States
Credits: 4.00
Examine multi-media propaganda in World War I and World War II Britain and the U.S. to investigate the total war experience, the relationship between these two nations, and the workings of a critical weapon. Propaganda was a bloodless weapon in an era of high-tech tools, but it was also a feared and ubiquitous one. Some of the issues addressed in this course include: Who were some of the targets of propaganda? How were posters different from films or radio broadcasts? What were the messages of propaganda? What does propaganda say about these nations as cultures and societies as well as about their war efforts? We analyze multimedia primary sources as well as use secondary ones in our discussions. Writing intensive. Course meets the History major requirements for Group I or II.

HIST 444D - Slavery and Society in Pre-Colonial Africa
Credits: 4.00
Examines the evolution and practice of the institution of slavery in Africa from the earliest times to the era of European colonialism. Using contemporary personal narratives by the slaves, the course examines specific historical contexts of various slave systems, continuity and change in the ideologies and practices of slavery, religion and slavery, race and slavery, gender and slavery, conditions of slaves, as well as the making and uses of slaves - as domestics, concubines, eunuchs, officials, soldiers, labor and capital. Using films, slide images, and a comparative approach, African slavery will be examined within the context of the early evolution of slavery in the Mediterranean and Islamic worlds as well as its later expressions in the Atlantic world of the Americas. Course meets the History major requirements for Group III.

HIST 444E - American at War: Society, Culture, and the Home Front
Credits: 4.00
Course will examine how the preparation for war, war itself, and the legacy of war shape American society, culture, and national identity. Students explore the relationship of war to topics such as American politics, literature, music, visual arts, popular culture, as well as gender, ethics, and race relations. Primarily discussion with short writing assignments in the first part of the course. Students research topics of their choice in the second and third parts of the course. Writing intensive. Course meets the History major requirements for Group I.

HIST 444G - Voices from Modern China
Credits: 4.00
Human voices--written or vocal--left records of history. Yet too often we hear only the voice of the statesman, which is too partial to bring to life a colorful history like China's. This seminar explores China's dramatic changes in modern times through revolution, reform, and war as experienced by a wide range of individuals who witnessed or participated in these huge events and left their voices in record. We will read and discuss the lived experiences of some iconic (well-known) political or cultural leaders, as well as working women, male and female revolutionaries, youthful rebels, a leading industrialist, and foreign observers during China's extraordinary transformations over the past two centuries. Writing intensive. Course meets History major requirement for Group III.

HIST 444J - Global Citizenship: In Pursuit of Liberty
Credits: 5.00
What does it mean to be a global citizen? Are we? What are human rights? Are they universal? This honors discovery course will explore with the mean and women who traveled and thought beyond the borders of their locality and their moment of time and who imagined themselves citizens of the world. We will start with early revolutions that traversed oceans and national borders. We'll read utopias and perform plays that saw their world differently. In the end, we will investigate major global challenges of our own world. We will move backwards, but also forwards in history. We will read novels, and perform plays. We will listen to Beethoven and Berlioz, in class and in larger questions of our international community, from sustainability to diversity as they echo through different disciplines. This 5 credit course will satisfy both the
FPA and HP discovery requirements. Course restricted to members of the University Honors Program. UHP members should use the preregistration form before attempting to register. It is an Inquiry course and Writing intensive.

**HIST 483 - History of World Religions**
**Credits:** 4.00
Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. Begins with the religions of small and tribal societies (e.g., African, Native American), moves through religions of complex societies (e.g., Hinduism), and then studies the various traditions that emanated from ancient revelations: Zoroastrianism, Buddhism, Judaism, Christianity, Islam, and certain new forms of Christianity. This initial survey of world religions prepares students for HIST 484. Course meets History major requirement for Group III.

**HIST 483W - History of World Religions**
**Credits:** 4.00
Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. Begins with the religions of small and tribal societies (e.g., African, Native American), moves through religions of complex societies (e.g., Hinduism), and then studies the various traditions that emanated from ancient revelations: Zoroastrianism, Buddhism, Judaism, Christianity, Islam, and certain new forms of Christianity. This initial survey of world religions prepares students for HIST 484. Writing intensive. Course meets History major requirement for Group III.

**HIST 490 - Medieval History through Film**
**Credits:** 4.00
This course is intended to give students an opportunity to come to grips with some of the central questions that historians ask, namely how do we know what we know (epistemology), and what image of the past are we trying to create (history). Students read (1) scholarly literature (2) contemporary narrative sources (3) and watch films that depict events that are described in these narrative sources. Course meets History major requirement for Group II

**HIST #497 - Explorations in Historical Perspectives**
**Credits:** 4.00
In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Course meets the History major requirements for Group I, II, or III, depending on the topic.

**HIST #497H - Honors/Explorations in Historical Perspectives**
**Credits:** 4.00
In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Writing intensive. Course meets the History major requirements for Group I, II, or III, depending on the topic

**HIST #497W - Explorations in Historical Perspectives**
**Credits:** 4.00
In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Writing intensive. Course meets the History major requirements for Group I, II, or III, depending on the topic

**HIST 498 - Expl Hist Perspectives (C)**
Credits: 4.00
In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Course meets the History major requirements for Group I, II, or III, depending on the topic.

HIST 500 - Introduction to Historical Thinking
Credits: 4.00
Basic skills essential to the study of history: critical reading of historical literature, improvement of written and oral analysis of historical material, and use of library resources. Intensive study of books and documents from varying historical fields and periods. Required of history majors; open to other interested students. Writing intensive.

HIST 501 - Medieval Military History
Credits: 4.00
Western societies from the Roman Empire to the emerging nation states of early modern Europe spent an enormous proportion of their surplus wealth on war. This course introduces this crucial aspect of Western history and examines the period extending from the third century AD, to just before the extensive introduction into Europe of gunpowder weapons in the fifteenth century. Discussion of not only battlefield tactics and famous generals but also the effect that war had upon society as a whole and the economic ramifications of war, the Christianization of war, and the effect of war upon literature. Course meets the History major requirements for Group II.

HIST 505 - African American History
Credits: 4.00
Explores the forces integration of the Atlantic World through the African slave trade and the development of creole cultures in America, and takes the story of Black Americans' "creative survival" and the evolution of African-American culture through the end of the Civil War. Writing intensive. Course meets the History major requirements for Group I.

HIST 506 - African American History
Credits: 4.00
Experiences, aspirations, and contributions of black Americans from their ethnic origins in Africa to the present American crisis in race relations; comparative study of cultures and institutions. Reconstruction to the present. Writing intensive. Course meets the History major requirements for Group I.

HIST 509 - Law in American Life
Credits: 4.00
Investigates the role of law in American social, political, and economic life from the European settlements to the present. Traces the development of legal institutions, but focuses on the various functions of law (e.g., in structuring social relationships, allocating resources, defining governmental authority, expressing social and moral values, and as a mechanism for control). Course meets the History major requirements for Group I.

HIST 511 - History of New Hampshire
Credits: 4.00
This course reconstructs the surprising past of the place we call New Hampshire. Beginning with the 17th-century encounter between English and Native people, it runs to the present. Literature, documents, photos and films provide access to New Hampshire's changing natural environment, its rural life, industrialization, politics and recent struggles. Writing intensive. Course meets the History major requirements for Group I.

HIST 521 - Origins of Modern Science
Credits: 4.00
Development of scientific ideas in Europe from the Renaissance through the Scientific Revolution to the Enlightenment. Topics include themes in the physical and biological sciences and their relations to cultural and social contexts. No special science background is required. Course meets the History major requirements for Group II.

HIST 522 - Science in the Modern World
Credits: 4.00
Development of science, particularly in Europe and North America, from the 18th century to the present. Themes including Darwinism, the growth of modern physical and biological sciences and science in the contemporary world. No special science background is required. Course meets the History major requirements for Group II.

HIST 532 - Modern Latin America
Credits: 4.00
Provides a broad overview of Latin America from the 18th century to the present. It examines the breakdown of colonial rules, the establishment of independent countries, the formation of viable nation states, the importance of geography, the roles of the different elements of society. Social, political, and economic changes and continuities emphasized to give a sense of the ambiguities of the historical process. Cultural differences illustrated with slides and music. The effects of elite rule and of United States interventions studied. Writing intensive. Course meets the History major requirements for Group III.

HIST 537 - Espionage and History
Credits: 4.00
Introduces the history and politics of espionage and intelligence organizations from the 20th century to the present. Special attention to intelligence work among the major powers in World War I, World War II, and the Cold War. Readings include autobiographical accounts and other primary sources as well as novels. Course meets the History major requirements for Group II.

HIST 538 - Modern European War and Society: The Napoleonic Wars to World War II
Credits: 4.00
This course is organized around three conflicts: the Napoleonic Wars, World War I, and World War II. As we study them, we'll discuss the evolution and impact of total war in order to understand how societies work in wartime and how these conflicts have shaped Europe. In our exploration of each war, we examine a range of participants from international alliances to individual soldiers and to civilians involved in the conflict. Total war, by its nature, incorporates most elements of society, so we will spend time looking at the homefronts as well as the battlefronts. We will survey the conflicts as a whole, but also devote time to some special events or elements. For example, we will look at the battle of Somme during the portion of the course dedicated to World War I. We will also study some of the art that arose out of the conflict. The core of the class will be lectures, but we will engage in some discussion almost every day and there are some classes that will be dedicated to discussion. Course meets the History major requirements for Group II.

HIST #540 - Foundations of Medieval History: 300-1300 CE
Credits: 4.00
Introduces the history of Western Europe from the end of the Roman Empire to the late twelfth century. Particular focus on the history of Christianity, social and economic structures, the role of women in medieval culture, and literacy and learning. Writing intensive. Course meets the History major requirements for Group II.

HIST 560 - Modern Britain
Credits: 4.00
This course explores Great Britain from the American Revolution to the reign of Elizabeth II. We examine Britain's unparalleled Imperial power, the vibrancy of Victorian Culture, and the devastating impact of the two World Wars, which initiated Britain's post-war decline. During the Cold War, Britain rebuilt its position through cultural exports like rock-n'-roll music, royal pomp, and the mini-skirt, but has never fully recovered its status, despite its vibrant multi-cultural allure. Course meets the History major requirements for Group II.

**HIST 563 - Introduction to Russian Culture and Civilization**
**Credits:** 4.00
Interdisciplinary course on the development of Russian culture from its origins through the end of the 19th century. Historical documents, literary works, ethnographic materials, films, slides of Russian art, and music. Course meets the History major requirements for Group II.

**HIST 564 - Russia and the Soviet Union in World War II**
**Credits:** 4.00
This course examines World War II from the perspective of Russia and the Soviet Union. Readings, lectures, and discussions cover the major battles, Stalin's leadership, experiences of the soldiers (both men and women), life on the home front, the Holocaust on Soviet territory under German occupation, and propaganda. Students also read the most important Russian novel set in World War II. Midterm, final, short papers. Writing intensive. Course meets the History major requirements for Group II.

**HIST 565 - Women in Modern Europe**
**Credits:** 4.00
A social history of women in Europe from 1700 to the present. Examines the development of the "modern nuclear family," transformations in women's work during the industrial revolution, and women's political evolution from bread rioters to hearth tenders to petitioners. Sources include published diaries, historiographical studies, and novels. Course meets the History major requirements for Group II.

**HIST 566 - Comparative Revolutions: How to Make a Revolution in the World before Marx**
**Credits:** 4.00
This course in HOW TO MAKE A REVOLUTION (if you lived more than 100 years ago) will ask why the Sea Beggars flooded Holland, the Levellers dug up the Commons, and Black Loyalists fled the independent Americans after their revolution. The class asks how slaves in Haiti defeated Napoleon’s troops, utopian socialists built a railway around a cross at the center of Europe, and Marx rallied the workers of the world to unite. Course meets the History major requirements for Group II.

**HIST 575 - Ancient Near East**
**Credits:** 4.00
From the Neolithic revolution to the time of Alexander the Great. Rise of civilization; nature of human artistic and intellectual development in the earliest civilizations of Mesopotamia and Egypt; Judaism in its historical setting. Course meets the History major requirements for Group III.

**HIST 579 - History of China in Modern Times**
**Credits:** 4.00
This course introduces students to major historical developments in China from 1600 to the end of the twentieth century. Major themes include: ethnicity, alien rule, political reforms and revolution, industrialization, interactions with the rest of the world (such as cross-cultural relations and military conflict), social and cultural transformation. Readings for the course are a combination of secondary and primary sources in translation, including scholarly articles, memoirs, biography, fictions, and journalist reports, most of which are landmark works indispensable for the study of modern Chinese history. Course meets the History major requirements for Group III.

**HIST 580 - History of Japan in Modern Times**
Credits: 4.00
Surveys major historical changes in Japan from 1600 to the end of the 20th century. Topics include Tokugawa centralized feudalism, samurai class, Edo culture, foreign relations with Asian countries and the United States, wars, postwar reforms under American Occupation, and the rise of Japanese economic power. Sources include official documents, personal memoirs, literary works, films, as well as slides of ukiyo-e (woodblock paintings). Course meets the History major requirements for Group III.

HIST 583 - Mystic and Saint in Islam
Credits: 4.00
Examines how and why a cult of Sufi saints became such a significant part of religious practice in medieval Islamic Egypt and Anatolia. Course meets the History major requirements for Group III.

HIST 585 - Medieval Islam
Credits: 4.00
This course examines the origins and expansion of Islam and the development of the Muslim community from the time of Muhammad until the Islamic empires of the 16th century. We will address the associated geographies, artifacts, and legal formations associated with the medieval and early modern Islamic world. The course focuses on major developments in politics, religion, and the arts. Course meets the History major requirements for Group III.

HIST 586 - Islam in the Modern Age, 15th Century to present
Credits: 4.00
Emergence of modern Middle Eastern states and societies from the time of the Ottoman Empire to the present. A survey of major developments, including the emergence of nationalism, the Islamic resurgence, and social transformations. Course meets the History major requirements for Group III.

HIST 587 - History of Africa from the Earliest Times to 1870
Credits: 4.00
This survey course introduces students to the major landmarks in the making of African history and societies from the earliest times to 1870 AD. Beginning with the dual premises that Africa is the birthplace of both the human species as well as some of the oldest and most varied civilizations in the world, the course examines the early civilizations of both Egypt and the Nile Valley, the development and of the Swahili culture, the Sudanese and forest empires, religious beliefs and the moral order, gender and class, warfare and diplomacy, the advent and impact of Islam and Christianity, migrations and cultural formations in central and southern Africa, commerce, and encounters with Europe, slavery and the Trans-Atlantic slave trade, and the end of formal African independence. Films and other visuals are streamed to supplement the readings. No pre-requisite required. Course meets the History major requirements for Group III.

HIST 588 - History of Modern Africa: 1870 to the Present
Credits: 4.00
This survey course introduces students to the major forces and dynamics of change in the modern history of Africa, from the late 19th century to the present. The primary focus is on European imperialism and its aftermaths in Africa. Issues to be examined include: the scramble for and partition of Africa; resistance to colonization; the rise and fall of apartheid in Southern Africa; religion and society, music and culture, gender and sexuality, art and literature, pan-Africanism, military rule, HIV/AIDS, democratization, and nation building. Emphasis on African initiatives, and on an exploration of contemporary challenges and the major forces reshaping the history of this oldest, most diverse, and most fascinating continent. Feature films, drama skits, literary works, and guest lectures are utilized. No prerequisites required. Course meets the History major requirements for Group III.

HIST #589 - Islam in Africa
Credits: 4.00
Focuses on the advent, spread, and major consequences of Islam in Africa. Examines the major phases of Islamic expansion: early conquests in North Africa and the Iberian Peninsula, the spread of Islam across the Sahara into the Sudan, the jihadist and reformist movements of the 18th and 19th centuries and the development of Islam during the colonial and postcolonial era. Emphasizes the varieties of the practice of Islam, the role of Islam in states formation and the impact of Islam on the religious and social life of the African peoples. The intersections of Islam with the issues of trade, slavery, politics, gender, imperialism, and modernization, the rise of Islamic fundamentalism, the place of North Africa within the Mediterranean Islamic culture, as well as the relationships of Islam with indigenous religions and with Christianity in African history and societies explored. Course meets the History major requirement for Group III.

HIST 595 - Explorations
Credits: 1.00 to 4.00
See department listings for semester topic. Course meets History major requirement for Group I, II, or III depending on the topic.

HIST 596 - Explorations
Credits: 1.00 to 4.00

HIST 597 - Medicine and Society in Pre-Modern Europe
Credits: 4.00
Explores the history of medical theory and practice in Europe from the twelfth to the early seventeenth century. Themes include: 1) varieties of healing strategies, including naturalistic, magical, astrological, religious, and supernatural; 2) attitudes to the body, health and disease; 3) the broad range of healers who practiced healing arts, including learned physicians, surgeons, barbers, midwives, wise women, saints, and even charlatans; 4) the kinds of institutions devoted to promoting health, including the home, the hospital, and the monastery. Course meets the History major requirement for Group II.

HIST 600 - Explorations
Credits: 4.00
Advanced explorations in one of the fields listed below: A) American History, B) European History, C) World History, D) Ancient History. Barring duplication of subject, may be repeated to a maximum of 12 credits. Course meets History major requirement for Group I, II, or III depending on the topic.

HIST 601 - Seminar in Religious Texts
Credits: 4.00
Close study of sacred text(s) from a particular religious tradition (Islam, Christianity, Buddhism, Judaism, etc.) or a thematic selection of texts across religions. (Also offered as RS 601.) Course meets History major requirement for Group I, II, or III depending on the topic.

HIST 602 - Holocaust: The War on Europe's Jews
Credits: 4.00
The attempted destruction of European Jewry during the Third Reich is one of the pivotal events in the history of modern Western Civilization. Course explores the circumstances and behavior of the Jews (as victims, resisters, survivors), the perpetrators (German and non-German), bystanders (German, European, and American), and rescuers (German and non-German). Attention is also given to such post-1945 matters
as justice, compensation, and memory. Course meets History major requirement for Group II.

**HIST 603 - European Conquest of North America**  
**Credits:** 4.00  
European Conquest of America explores many of the major issues relating to the creation and development of colonial North America. We will focus particularly on the extraordinary heterogeneous mixture of peoples who lived in North America and the Caribbean, and on the complexity and consequences of their interactions. Throughout the semester we will continually evaluate arguments among historians about whether or not it makes sense to understand the colonial period in terms of a conquest, or whether Native Americans retained enough power and resistance throughout the colonial period to make such an interpretation inaccurate. Course meets History major requirement for Group I.

**HIST #604 - History of Medicine in the United States**  
**Credits:** 4.00  
Have you been a patient, a nurse, or a holder of insurance? Almost everyone in the United States has a role in health care. We study the growth and development of the field of American medicine from colonial times to the present, examining the changing relationships between patients, health care professionals, technology, government, and others. The focus will be shifts in responsibility and authority over time from patients, to doctors, and even to businesses. Course meets History major requirement for Group I.

**HIST 605 - American Revolution, 1750-1800**  
**Credits:** 4.00  
Examines the transformation of thirteen British colonies into the United States through the election of Thomas Jefferson as president in 1801. Topics include the revolution’s origins, the social and political impact of war, the changing structure of the family, the role of religion, the drafting and ratification of the Constitution, and the revolution’s consequences for Indians and African Americans. Course meets History major requirement for Group I.

**HIST 606 - History of the Early Republic**  
**Credits:** 4.00  
Explores the histories of the people and institutions that transformed the new United States from a coastal republic of largely independent freeholders to a transcontinental democracy increasingly driven by class. Topics include slavery, the family, reform movements, and the formation of national identity. Course meets History major requirement for Group I.

**HIST 609 - Special Topics in American Legal History**  
**Credits:** 4.00  
In-depth thematic exploration of law in American life. Topics include race and equality in America; community, pluralism, and American law; property, liberty, and law; gender and law. May be repeated for credit with instructor’s permission. Consult department listings of topics. Writing intensive. Course meets History major requirement for Group I.

**HIST 611 - Civil War Era**  
**Credits:** 4.00  
Surveys the period from the presidency of Andrew Jackson to the end of the Reconstruction. Focuses on causes, course, and consequences of the Civil War. Topics include slavery in the Old South, antebellum reform movements, creation and breakdown of the Second Party System, social and economic (as well as military) events during the war and major developments during Reconstruction after the war. Course meets History major requirement for Group I.

**HIST 612 - Emergence of Industrial America**  
**Credits:** 4.00
Investigates the economic transformation of 19th-century America from a rural, agricultural society to an urban, industrial one. Explores the sweeping economic changes and focuses on such topics as change in work and leisure, westward expansion and its effects on Native Americans, shifts in gender roles, growth of a consumer culture, rise of the labor unions, Populism, immigration, reform and regulation movements, growth of American imperialism, and intellectual developments. Course meets History major requirement for Group I.

HIST 613 - American Ways of War  
Credits: 4.00  
"Is there an American way of war?" This commonly asked question will be the focal point of the course. To answer that we will study the interactions of both war and society in the United States from the Civil War onwards, addressing such issues as the causes, courses, diplomacy, homefront, legacy, and the art of the great and small wars. Course meets the History major requirement for Group I.

HIST 615 - The Rise of Modern United States, 1900-1945  
Credits: 4.00  
By 1900, the United States had emerged as the world's leading industrial power and leading destination for millions of immigrants and had begun to become a major player in world affairs. Americans enjoyed unprecedented prosperity and became eager consumers of new inventions and popular culture: cars, radios, jazz records, and the "motion pictures." But they also experienced the worst depression the country had ever known and struggled to make sense of a world that went to war twice within a generation. Women, African Americans, immigrants - all struggled to carve out their place in the new political order. By World War II, the United States assumed many of its "modern" characteristics. Using novels, movies, photographs, sporting events, political speeches and political debates, we will explore both the domestic and the international aspects of the development of modern U.S. Course meets the History requirements for Group I.

HIST 616 - United States Since World War II  
Credits: 4.00  
United States since 1941; cultural, political, and social factors causing major changes in American life. Course meets the History major requirement for Group I.

HIST #617 - Vietnam War  
Credits: 4.00  
An advanced interdisciplinary study of the American experience in Vietnam which utilizes fiction, film, music, and historical analysis to examine such matters as how and why the United States became involved in Vietnam, went to war there, and failed to win, as well as the consequences and legacies of that fateful conflict. It is strongly suggested that students first complete courses in modern American history. Course meets the History major requirement for Group I.

HIST 618 - American Environmental History  
Credits: 4.00  
Examines how nature has been a factor in American history and how Americans have wrestled with the concepts of nature and culture. Topics include industrialization, evolution, conservationism, environmentalism, and environmental diplomacy. Course meets the History major requirement for Group I.

HIST 619 - Foreign Relations of the United States  
Credits: 4.00  
The history of American diplomacy from the colonial era to the present, with the dividing point at 1900. The focus will be on both the foreign and domestic influences that shaped American diplomacy. Course meets the History major requirement for Group I.
HIST 620 - Foreign Relations of the United States
Credits: 4.00
The history of American diplomacy from the colonial era to the present, with the dividing point at 1900. The focus will be on both the foreign and domestic influences that shaped American diplomacy. Course meets the History major requirement for Group I.

HIST 621 - History of American Thought
Credits: 4.00
This course introduces the subfields of American intellectual and cultural history by assessing the ideas of some of the brightest minds that thought about life on the land we know of as the United States of America before the middle of the nineteenth century. This course surveys more than two centuries of thinkers and their connection to America's plural and evolving popular culture. Ultimately, this course seeks to answer the question: What is the history of American thought?

HIST 622 - History of American Thought
Credits: 4.00
Influential thinkers and ideas have shaped American politics, society, economy, and culture since the Civil War. Among the topics explored are American Victorianism, Social Darwinism, Pragmatism, Modernism and its opponents, gender and identity politics and post modernism. Mark Twain, Elizabeth Cady Stanton, Thorstein Veblen, W.E.B. DuBois, John Dewey, F. Scott Fitzgerald, Hannah Arendt, Thomas Kuhn, Malcolm X, Susan Sontag and William F. Buckley Jr. will be among the thinkers explored. Course meets the History major requirement for Group I.

HIST 624 - Topics in Modern United States Social History
Credits: 4.00
Advanced study of topics in U.S. social history since the Age of Jackson. Topics will vary; may include slavery and the antebellum South, reform movements in U.S. history, family history, labor history, the impact of war on American society, race in recent U.S. history. May be repeated as topics change. Course meets the History major requirement for Group I.

HIST 625 - Southern History and Literature since the Civil War
Credits: 4.00
Equal focus on the history and literature of the South since the Civil War. Topics include reconstruction, the age of segregation, and the Civil Rights Movement. Literary focus is on the period since 1920, including the "Southern Renaissance." Authors include William Faulkner, Robert Penn Warren, Flannery O'Connor, and Zora Neale Hurston. Course meets the History major requirement for Group I.

HIST 632 - Latin American History: Topics
Credits: 4.00
Topics vary (see department listing for current semester). Seminar entails reading, discussion, and research on literature and documents related to the selected topic. Provides students with the opportunity to do research under close direction. Course meets the History major requirement for Group III.

HIST 633 - Medieval England 800-1300
Credits: 4.00
This course provides students with an opportunity to gain an in-depth understanding of the history of medieval England from the beginning of the period of consolidation under the Wessex dynasty in the ninth-century through the end of the thirteenth century. In addition to obtaining a large corpus of information through the reading of a significant monographs dealing with England during this period, students will be challenged to develop the critical analytical skills necessary for the thorough understanding and practice of historical methodologies, with a particular focus on the practice of historical method in writing medieval history. Finally, students will be given the opportunity to improve their communications skills through
extensive class discussions dealing with the scholarly works read for this course, and in writing assignments. Course meets the History major requirement for Group II.

**HIST 634 - Medieval Empires**  
**Credits:** 4.00  
This course will explore the intellectual and political foundations of imperial rule in the Middle Ages with a particular focus on the Carolingian, German, and Byzantine empires of the early and high Middle Ages. The course will begin with the development of the idea of empire under Alexander the Great and then during the Roman empire. The course will then turn to an examination of how the rulers of the three great empires of the western Middle Ages adapted the classical ideas and practices of empire for their purposes. The course focuses on sources. Background material will be provided in short lectures. Course meets the History major requirement for Group II.

**HIST 640 - Holy War in the Holy Land: The Medieval Crusades**  
**Credits:** 4.00  
Survey of the medieval military expeditions organized by Christians to secure the Holy Land during the 12th and 13th centuries. Topics considered include the formulation of a "just war" theory; political, intellectual, religious, and military interactions between Christians, Jews, and Muslims; the Crusader State of Jerusalem; and the histories of individual crusades. Course meets the History major requirement for Group II.

**HIST 641 - Europe after the Black Death**  
**Credits:** 4.00  
Explores the dramatic changes that characterized Western Europe as it rebounded in the fifteenth through the sixteenth centuries from the ravages of the Black Death of 1348. Examines the social, political, and artistic developments in late medieval and Renaissance Italy before "crossing the Alps" to trace the expansion of Renaissance culture in Northern Europe. Topics include the humanist movement; new patterns of social organization; the revival of classical antiquity in the arts, architecture, religion, and political theory; the effects on European society of the encounter with the "New World"; shifting roles for men and women in early modern European societies; religious war and conflict. Course meets the History major requirement for Group II.

**HIST 642 - Saints, Sinners, and Heretics: Europe in the Age of Religious Reform**  
**Credits:** 4.00  
Examines the history of Western Christendom from roughly 1400 to 1600, a period of tumultuous religious change throughout Europe. We begin in the Middle Ages where the seeds of religious division were sown. We then tackle Martin Luther's challenge to the Catholic church, trace the diffusion of his message throughout Europe, and address the Catholic response to the evangelizing movements that he inspired. Finally we investigate some of the regional varieties of Protestantism that developed in the latter half of the sixteenth century with a particular focus on Switzerland, Germany, England, Scotland, France, and the Netherlands. Course meets the History major requirement for Group II.

**HIST 644 - Victorian Britain**  
**Credits:** 4.00  
The Victorian Era was a time of contrasts. Queen Victoria, a monarch known for her moral strictness, sexual probity and rigid sense of decorum ruled over a vast world Empire. The streets of London, however, teemed with prostitutes, pickpockets and impoverished immigrants from Ireland, Europe and beyond, whose lives seemed untouched by either the prosperity or moral stringency that characterized the age. In this class we explore the varieties of Victorian experience both at home and in the global empire. We will examine the glittering lives of the rich as well as the abject poverty of the working poor and explore our own fascination with the dress, the homes, and the lives of the Victorians. Examining sources such as novels, decorative arts, corsets & bustles, Parliamentary debates, architecture, and scientific writings, we will
attempt to uncover the many-faceted culture, society and political life of Victorian Britain. Course meets the History major requirement for Group II.

**HIST 645 - 19th Century European Great Powers - Diplomacy and International Law**

**Credits:** 4.00

In this course, we will study power in Europe during the apogee of that region's strength. The long nineteenth century is a period during which Europe avoided major continent-wide (and world-wide) wars, despite constant upheavals. That is a remarkable accomplishment when one compares the events of the nineteenth century with those of the twentieth, despite the fact that the former influenced the latter. Focus is on those who wielded power internationally, including dealmakers, deal-breakers, manipulators, and idealists. To express, test, restrain, or leverage power, actors engaged in wars and negotiations that led to a range of contracts from treaties, such as the Treaty of Fontainebleau ending Napoleon's reign; to alliances, like the Anglo-Japanese Naval Alliance ending Britain's "splendid isolation" from international partnerships; to conferences, including the Hague Conventions regulating wars. In addition, it is important to look at statutes influencing foreign policy, as did the Second German Naval Law of 1900 which increased European tensions before World War I. Examining the relations of powerful nineteenth century states, therefore, illuminates international law as well as more traditional elements of diplomacy. Students learn about 19th century great powers of Europe and important pieces of international legal relationships as well as develop critical thinking and communication skills. Course meets the History major requirement for Group II.

**HIST 652 - Topics in European Intellectual History**

**Credits:** 4.00

Explores such major developments as the Enlightenment, Russian intellectual history, and the relationship between gender and intellectual history. Includes topics since the Renaissance. Since topics vary, students should check the department newsletter or office for course theme in any given term. May be repeated as topics change to a maximum of 12 credits. Course meets the History major requirement for Group II.

**HIST 654 - Topics in History of Science**

**Credits:** 4.00

Advanced study of a selected topic in the history of European science since the Renaissance. Course meets the History major requirement for Group II.

**HIST 656 - Twentieth Century Europe**

**Credits:** 4.00

The Twentieth Century began with European nations at the apex of their global power. It ended with their world dominance in ruins. Two World Wars, the rise of Nazism, and communist revolutions had left Europe in the shadow of the United States. Examining European history from the birth of the automobile to the fall of the Berlin Wall, we explore the political, social and cultural forces that made the twentieth century the bloodiest epoch in world history. Course meets the History requirement for Group II.

**HIST 662 - England in the Tudor and Stuart Periods**

**Credits:** 4.00

England experienced great upheaval under the Tudor and Stuart dynasties. This course explores many of the key political, religious, social and economic changes that changed the face of England in the 16th and 17th centuries. We will study all of the Tudor and Stuart monarchs, and we will focus particularly on the following topics: Henry VIII, the English Reformation, Elizabeth I, Commons v. Nobility, the English Civil Wars and the execution of Charles I, the Restoration and the Glorious Revolution. Course meets the History requirement for Group II.

**HIST 664 - Russia: Modernization through Soviet Empire**

**Credits:** 4.00
The challenges of modernization, experience and legacy of Leninist and Stalinist revolutions. Soviet consolidation and decline through the Gorbachev era. Course meets the History requirement for Group II.

HIST 665 - Themes in Women's History
Credits: 4.00
In-depth examination of a selected topic in women's history. Topics may include Women and Health, Women in Modern European Political Theory, Comparative History of Women and Revolution. See Time and Room Schedule of history department newsletter for the specific topic. May be repeated for credit with permission of instructor. Course meets the History requirement for Group II.

HIST 669 - Germany from 1918 to Present
Credits: 4.00
Begins with the revolution of 1918 and then explores the political, social, and intellectual character of the Weimar Republic, the rise and nature of Nazism, the Holocaust, the foundation of both the German Democratic Republic and Federal Republic and their evolution in the shadow of the Cold War, and concludes with the unification of Germany after the fall of the Berlin Wall in 1989. Course meets the History requirement for Group II.

HIST 675 - Early History of Ancient Greece
Credits: 4.00
Greek history from the Minoan and Mycenaean eras through the Persian Wars of the early fifth century. Emphasis on original sources including the Homeric epics, Plutarch, Sappho, and Herodotus. Examination of the distinctive developments of political systems in Sparta and Athens, as well as issues of colonization, diplomacy, religion, and culture. Thorough discussion of types of available evidence and their integration into historical understanding. Course meets the History requirement for Group II.

HIST 676 - Classical and Hellenistic Greek Worlds
Credits: 4.00
Greek history from the Persian Wars of the early fifth century through the life of Alexander the Great and the creation of the Hellenistic world. Emphasizes original sources including Herodotus, Thucydides, the Athenian playwrights, and Plato. Examines the transformation from city-state political organization to large Hellenistic kingdoms, as well as discussion of Greek historiography, intellectual life, and social theory. Thorough discussion of types of available evidence and their integration into historical understanding. Course meets the History major requirements for Group II.

HIST 677 - Roman Republic
Credits: 4.00
Covers pre-Roman Italy, the Etruscans, and the foundation of the Republic, Rome's expansion through the Punic Wars, relations with the Hellenistic kingdoms, and disintegration and final collapse of the Republic. Includes discussions of Roman art, engineering, and political theory. Emphasis on Latin sources in philosophy, history, and literature. Course meets the History major requirements for Group II.

HIST 678 - Roman Empire
Credits: 4.00
Collapse of the Roman Republic and creation of the Augustan principate. History of the principate through the division of the empire, with discussion of the fall of Rome in the west and the eastern empire through Justinian. Discusses Roman art, literature, philosophy, and religious developments such as the proliferation of mystery religions and the rise of Christianity. Course meets the History major requirements for Group II.

HIST 679 - Rights Revolution
Credits: 4.00
It is all but impossible to think or talk about contemporary legal and moral controversies without invoking...
the idea of "rights." Yet few of us can claim a clear understanding of this pivotal concept. Historically, how have particular claims, preferences, and socio-economic interests attained the status of publicly-recognized "rights"? Are there other ways to conceptualize and prioritize rights, other forms of "rights talk," than the ones we currently employ? History 679 takes as its point of departure the enormous expansion in rights claimed by both individuals and groups in recent decades -- the "rights revolution." This development has elicited both praise and alarm, and we will examine the philosophical, moral, and political dimensions of each. Course meets the History major requirements for Group I.

**HIST 680 - Historical Geography**  
**Credits:** 4.00  
Introduces major themes, important scholars, and commonly used research techniques in historical geography. Course is reading and research oriented. Focus is on North America. Writing intensive. (Also listed as GEOG 680.) Course meets the History major requirements for Group I.

**HIST 681 - Society and Culture in 20th-Century China**  
**Credits:** 4.00  
Explores major aspects of social and cultural transformation in China from the beginning of the century, when the Qing dynasty was replaced by a Republic, to the age of globalization. Themes included the rise of citizenship and civic activism, mass culture in print media, commercial culture in advertisement and consumerism, European and Russian influences on cultural and political changes, war of resistance, refugee and social dislocation, rural transformation shaped by socialism and global market. Course meets the History major requirements for Group III.

**HIST #684 - History of Southern Africa since 1652**  
**Credits:** 4.00  
Examines the major themes in the history of a troubled sub-region of Africa. In-depth exploration of the nature and impact of socio-cultural formations, the evolution of centralized societies, the initiation and expansion of white settlements, and the Mfecane revolution. Analysis of the dynamics and consequences of European imperialism, economic competition and industrialization, European settler-nationalism, racial conflict, slavery, class and gender politics, Indian and African nationalism, democratization, and development in post-colonial and post-apartheid Southern Africa. Course meets the History major requirements for Group III.

**HIST 690 - Seminar: Historical Expl**  
**Credits:** 4.00  

**HIST 691 - Internship**  
**Credits:** 1.00 to 4.00  
Supervised internship with a governmental agency, private corporation, philanthropic institution, library, archives, museum, historical society, or other institution seeking individuals interested in historical research. May be repeated up to a maximum of 8 credits. Cr/F.

**HIST 695 - Independent Study**  
**Credits:** 1.00 to 4.00  
Near East and Africa, K) European Historiography, L) American Historiography, M) Russia, N) World History, O) English History, P) New Hampshire History, Q) Historical Methodology, R) Irish History, S) History of Science, T) Maritime, U) Museum Studies. For students showing a special aptitude in history who desire to study an area or subject for which no appropriate course is offered. May be repeated up to a maximum of 8 credits. Prereq: permission

HIST 695W - Independent Study
Credits: 1.00 to 4.00

HIST 698 - Internship in Museum Studies
Credits: 4.00
Supervised position with a museum, historical society, archive, or other history related site. Cr/F.

HIST 771 - Museum Studies
Credits: 4.00
Introduction to theory, methods, and practice of museum studies. Examination of various museum functions, as well as contemporary historical controversies.

HIST 772 - Studies in Regional Material Culture
Credits: 4.00
Introduces the theory and methodology of material culture, that is, the study of history through the analysis of buildings, human-created landscapes, and artifacts made and used in the United States, particularly in New England. May be repeated for credit with permission of undergraduate adviser. Course meets the History major requirements for Group I.

HIST 774 - Historiography
Credits: 4.00
Analysis of ancient and modern historians. Open to undergraduates with permission. (Not offered every year.)

HIST 775 - Historical Methods
Credits: 4.00
Contemporary historical methods. Required of all entering Ph.D. candidates; open to undergraduate with permission. (Not offered every year.)

HIST 780 - Special Topics in Museum Studies/Material Culture
Credits: 4.00
Study of a selected topic related to museum studies or material culture. May be repeated for course credit with permission of the undergraduate adviser. Course meets the History major requirements for Group I.

HIST 789 - Seminar in the History of Science
Credits: 4.00
In-depth examination of a selected topic in the history of science. Subject varies. Open to undergraduates with permission of the instructor. No special background in science required.
HIST 796 - Research Internship
Credits: 2.00 to 4.00
Intensive collaborative experience in research for undergraduate majors. Students gain professional skills while assisting a faculty member on a continuing research project. Permission Required.

HIST 797 - Colloquium
Credits: 4.00
Selected topics in American, European, and non-Western history. Required of history majors. Students must elect section in the department office at the time of registration. Prereq: HIST 500. Writing intensive. Course meets the History major requirements for Group I, II, or III, depending on the topic.

HIST 799 - Senior Thesis
Credits: 4.00
Supervised research leading to the presentation of a major research paper. Open only to history majors. Permission of department chairperson required. May not be used as a substitute for the required senior colloquium.
Homeland Security

HLS 410 - Introduction to Homeland Security  
Credits: 4.00  
The primary focus of this course is to describe the entirety of the homeland security enterprise in the US and to survey many of the major expressions of it. This includes a history of homeland security and emergency management, the legislative and regulatory authority for homeland security, the current structure and organization to the US Department of Homeland Security, etc. In addition, specific units on emergency management, terrorism and intelligence, homeland security law and policy, transportation security issues, critical infrastructure and risk analysis and environmental security are each presented.

HLS 415 - Fundamentals of Corporate Security  
Credits: 4.00  
HLS 415 will introduce the student to the fundamentals of corporate security including the nature, scope, history, and essential elements of organization (or enterprise) security in the workplace, with emphasis on the private sector. Specific areas include the operational aspects of security strategies for identifying and controlling security exposures, risk management strategies, applicable legal issues, personal protection, property protection, role of intelligence, and concepts of disaster planning and management.

HLS 455 - Foundations of Information Security Practice and Policy  
Credits: 4.00  
HLS 455 provides a survey of the field of cyber\information security. The course describes information security and the role it plays in homeland security including ethical and legal issues, risk management and planning, and information security technology. The role of the Department of Homeland Security has in securing cyberspace and the nation's information-related infrastructures is also explored.

HLS 480 - Professional Skills in Homeland Security  
Credits: 4.00  
HLS 480 prepares students to effectively enter the workforce via an internship or co-op experience. Students learn to prepare a resume and cover letter, practice interviewing, learn about how their personality matches job descriptions, search for internships, and develop an e-Portfolio that describes themselves, their professional aspirations, skills, etc. Professional ethics, decision making, organizational power, basic leadership and management principles and professionalism are discussed and illustrated.

HLS 510 - Fundamentals of Emergency Management  
Credits: 4.00  
This course includes thorough coverage of the historical background of emergency management (EM) in the United States as well as many of the most significant laws and policies that have defined and shaped the field, including HLSPD 5, HLSPD 8, the National Flood Insurance Act, and the Stafford Act. Topics include detailed coverage of FEMA's all hazards approach, all phases of the EM cycle, including mitigation, preparation, response, and recovery; integrated emergency management systems, the incident command system, the National Incident Management System, emergency support functions, and risk communications. The course culminates with each student writing and formally presenting an integrated emergency management plan. Prereq: HLS 410 and HLS 415 or permission.

HLS 515 - Critical Infrastructure Security and Resilience  
Credits: 4.00  
HLS 515 includes an introduction to critical infrastructure security, resilience, and risk analysis as it is conceptualized, regulated and used in the homeland security enterprise. Topics include the history and
evolution of critical infrastructure protection including the composition, characteristics and risks to critical infrastructures. Public-private partnerships and sector-specific plans are examined. Resilience in a global context and risk analysis as a means by which resources and assets are allocated to critical infrastructure(s) is presented. Prereq: HLS 410, HLS 415 and HLS 455 or consent of coordinator.

**HLS 520 - Homeland Security Law and Policy**

**Credits: 4.00**

This course is an overview of key legal, policy, and ethical issues in the context of Homeland Security policy and practice. Students examine legal concepts regarding constitutional rights of individuals, legal process, access to courts, the law of war, and national security principles as they relate to homeland security legislation and policy initiatives. Legal principles of due process, habeas corpus, search and seizure, compulsory process, and international agreements are explored in greater depth. The law of war will be examined in the context of preemptive war and the current National Security Strategy, the status of combatants and detention, Elements of national security law, intelligence collection and sharing, the Patriot Act, and military-civilian relations, etc. Prereq: HLS 410 or consent of the instructor.

**HLS 580 - Environmental and Human Security**

**Credits: 4.00**

Students will learn how environmental issues may give rise to socio-political instability around the world which can become threats to US national/homeland security. This course will explore how U.S. domestic and foreign policy, and ultimately, U.S. national security, can be impacted by emergent threats to nations from environmental health issues, climate change, deforestation, infrastructure vulnerabilities, and natural resource shortages caused by rapid industrialization, population growth, and urbanization in less developed countries. In a seminar format, students and faculty will cover a variety of readings and discuss their conclusions and students will have the opportunity to lead class discussions on assigned readings.

**HLS 610 - Exercise Design and Evaluation in Homeland Security**

**Credits: 4.00**

HLS 610 studies the role and structure of exercise design as it is applied in homeland security and emergency management. Students are introduced to the nature and characteristics of discussion and operations-based exercises and the Homeland Security Exercise Evaluation Program. The legislative and policy background of national preparedness is presented. Students complete a project and presentation that demonstrates how exercises are designed, scripted, implemented (conducted) and evaluated. Prereq: HLS 510 and HLS 515 or consent of coordinator.

**HLS 650 - Intelligence Systems and Structures in Homeland Security**

**Credits: 4.00**

Intelligence is a systematic process of collection, analysis, and dissemination of information in support of national, state, and/or local policy or strategy. HLS 650 will explore the varied expressions of the intelligence community as it exists in the US. In addition, students will explore the history and development of the IC in the US, major legislative acts that led to the development of intelligence as a major function of US national security strategy. Prereq: HLS 410 or permission of instructor.

**HLS 750 - Emergent Topics in Homeland Security/Homeland Defense**

**Credits: 4.00**

HLS 750 will investigate the nature of strategic planning as it relates to homeland security and national security in the United States. In addition, students will explore how strategic planning relates to decision making in more stable environments as well as decision making under uncertainty. Relevant legislation and past decisions (such as the Bay of Pigs and the Cuban Missile Crisis) will be explored. In addition, the basic concepts of the techniques for strategic communication will be explored, developed, and related to decision making along with the characteristics of making high quality strategic decisions. Prereq: HLS 510 and 515 or consent of instructor.
HLS 760 - Strategic Planning and Decision Making  
**Credits:** 4.00  
HLS 760 investigates the nature of strategic planning as it relates to homeland security and national security in the U.S. Students explore how strategic planning relates to decision making in more stable as well as uncertain environments. Relevant legislation and past decisions (such as the Bay of Pigs and the Cuban Missile Crisis) are explored including concepts and techniques for making high quality decisions. Strategic communication principles and techniques are presented. Prereq: HLS 510 and HLS 515 or consent of coordinator. Writing intensive.

HLS 770 - Internship in Homeland Security  
**Credits:** 4.00  
HLS 770 represents the professional work experience required in the homeland security major. Students work in a professional setting for a minimum of 300 hours under the supervision of a site supervisor. All internships require students to identify and complete work on a specific project (s) approved by the HLS coordinator. Internships may be taken at any time after students have taken 30 credits of university coursework, and after completing HLS 410, HLS 455, and HLS 480. Note that students who are academically or otherwise unable to enter into internship must take HLS 799. Prereq: HLS 410, HLS 455 and HLS 480 or consent of coordinator.

HLS 790 - Capstone in Homeland Security  
**Credits:** 4.00  
HLS 790 allows students to work collaboratively with an organization to identify and solve a homeland security or emergency management challenge. Each group researches the origins of their client's challenge and identifies applies best practices as countermeasures. Students culminate their projects with presentations to their classmates and to their clients. The expectation of this class is to develop a professional example of the student's thinking and writing to solve real security problems. Prereq: senior standing, HLS 610 and HLS 760 or consent of coordinator. Writing intensive.

HLS 799 - Thesis in Homeland Security  
**Credits:** 4.00  
HLS 799 is an alternative professional work experience required by the homeland security major and can substitute for HLS 770. Students function fairly independently but still in regular contact with the instructor as they devise a thesis and investigate current issues or challenges to US national security. The thesis is a research paper that uses either primary or secondary data collection methods with the expectation that the project be equivalent to the 300 hours interns are obligated to work. HLS 799 is graded as Cr/F just as HLS 770.
Horticultural Technology

HT 401 - Freshman Seminar
Credits: 1.00
An introduction to the horticulture technology, the Thompson School, and the University: programs, expectations, advising, and resources. Survival skills for college including time management, study skills, and note-taking. Career preparation including portfolios, resumes, professional organizations, and continuing education. Special fee. 1 hr. lec. Cr/F.

HT 404 - Plant Propagation
Credits: 4.00
Reproduction of plants for horticultural purposes by sexual and asexual methods. Seeds, cuttings, separation, division, layering, grafting, budding, and in vitro propagation. Special fee. Prereq: HORT 207 or permission. 2 lec/1 lab.

HT 405 - Plants, People, Place
Credits: 2.00

HT 407 - Plant Structure and Function
Credits: 4.00
Morphology, anatomy, and physiology, with emphasis on the higher plants. Horticultural implications. Lab stresses observations and manipulations of the particulars of plant life. Special fee. 2 rec/1 lab.

HT 415 - Soils and Land Use
Credits: 2.00
Introduction to soils with emphasis on physical, morphological, chemical, and biological characteristics and their applications in horticultural land use decisions. Includes soil genesis and classification and soil survey use. Special fee. 3 rec/1 lab/7 wks.

HT 416 - Soils and Plant Nutrition
Credits: 2.00
Role of nutrition in plant health care. Macro- and micro-nutrient needs, nutrition deficiency symptoms, soil testing, and fertilizer application techniques in both soil and soil-less media. Special fee. 3 rec/1 lab/7 wks.

HT 427 - Horticultural Facilities Mgmt
Credits: 2.00
Layout, construction, management principles, and horticultural technique used on controlled growth structures, including greenhouses, cold frames, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities. Special fee. 1 lec/1 lab.

HT 428 - Horticultural Facilities Mgmt
Credits: 2.00
Layout, construction, management principles, and horticultural technique used on controlled growth structures, including greenhouses, cold frames, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities. Special fee. 1 lec/1 lab.

HT 434 - Pest Management
Credits: 4.00
Introduction to pests of horticultural plants, including diseases, insects, and weeds. Symptoms, morphology, identification, life cycles, impacts, and management measures. Emphasis on integrated pest
management. Special fee. 3 lec./1 lab.

**HT 440 - Introduction to Floral Design**
**Credits:** 2.00
Basic arrangements, including symmetrical and asymmetrical, circular, triangular, and line pieces; and the basic corsage designs used by florists. Application of principles to designs during laboratory sessions. Special fee. 1 lec/1 lab.

**HT 450 - Flower Show Design and Construction**
**Credits:** 1.00
Design, construction, and maintenance of the Thompson School horticultural exhibit at a public flower show. May be repeated. Special fee. 1 rec.

**HT 454 - Irrigation Design**
**Credits:** 3.00
Design, installation, and operation of irrigation systems in the greenhouse, nursery, field crops, and landscape. Special fee. 1 lec/1 lab.

**HT 456 - Horticultural Pruning**
**Credits:** 2.00
Basic pruning techniques for fruits and ornamentals: apples, peaches, raspberries, blueberries, grapes; deciduous and evergreen shrubs and trees; herbaceous materials. Prereq: HT 405 or equivalent. Special fee. 1 lec/1 lab.

**HT 458 - Herbaceous Ornamental Plants**
**Credits:** 2.00
A comprehensive study of herbaceous ornamental plants including morphology, classification, identification, and usage of common perennials, annuals, ferns, ornamental grasses, herbs, and bulbs used in the Northeast. Production, installation, and maintenance of herbaceous ornamentals is also included. Prereq: HT 405 or permission. Special fee. 1 lec/1 lab.

**HT 459 - Winter Identification of Landscape Trees in the Northeast**
**Credits:** 2.00
Winter landscape tree morphology and identification. This on-line course begins with introductory lectures on winter landscape tree morphology and Family characteristics. Students then learn how to identify more than 60 common deciduous landscape trees by watching videos which show each plant's winter identification characteristics. Students evaluated through on-line quizzes and a photographed twig collection. Digital camera required. No campus visit, but students need to be geographically located in the Northeast for access to trees. Prereq: FORT 461 or HT 557 or NR 425 or PBIO 566.

**HT 460 - Sustainable Plant Management**
**Credits:** 4.00
Sustainable practices and principles in selecting, establishing and maintaining woody and herbaceous plants for optimum health. Topics include planting, pruning, fertilization, pest identification, plant culture and communities.

**HT 493 - Field Operations**
**Credits:** 1.00 to 3.00
Seven-week or fourteen-week modules of field experience in selected areas of horticulture under the supervision of an appropriate member of the faculty/staff. A student may enroll in two modules per term. A) Floriculture; B) Floral Design; C) Nursery and Garden; D) Landscape; E) Horticultural Therapy. Special fee. Prereq: permission of instructor and student's adviser.
HT 494 - Field Operations  
**Credits:** 1.00 to 3.00  
Seven-week or fourteen-week modules of field experience in selected areas of horticulture under the supervision of an appropriate member of the faculty/staff. A student may enroll in two modules per term. A) Floriculture; B) Floral Design; C) Nursery and Garden; D) Landscape; E) Horticultural Therapy. Special fee. Prereq: permission of instructor and student's adviser.

HT 529 - Horticultural Facilities Mgmt  
**Credits:** 2.00  
Layout, systems, construction, management principles, and horticultural techniques used in controlled growth structures, including greenhouses, propagation houses and beds, cold frames, hoop houses, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities, with second-year focus on scheduling and supervision. 2 lab.

HT 530 - Horticultural Facilities Mgmt  
**Credits:** 2.00  
Layout, systems, construction, management principles, and horticultural techniques used in controlled growth structures, including greenhouses, propagation houses and beds, cold frames, hoop houses, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities, with second-year focus on scheduling and supervision. 2 lab.

HT 544 - Advanced Floral Design  
**Credits:** 2.00  
Color and its use; planning both wedding and sympathy floral pieces; comparing traditional and contemporary design techniques and materials; construction of bridal bouquets and other essential bridal designs, sympathy pieces and tropical/dried floral pieces during lab sessions. Prereq: HT 440 or permission. Special fee. 1 lec/1 lab.

HT 551 - Introduction to Design Communication  
**Credits:** 2.00  
Introduction to methods of communicating garden and landscape design. Lab work covers selected 2-D and 3-D tools and techniques, including instrumental drawing, modeling, and computer-aided drafting and design (CADD). Special fee. Prereq: TSAS 205, Computers in the Workplace. 1 lec/1 lab.

HT 553 - "Pond-less" Water Feature Design and Installation  
**Credits:** 2.00  
A major trend in landscape design is the use of water features that range from simple recirculating pond to major waterfalls and fountains. Class starts with the design principles of "pond-less" features and expands to proper installation techniques. Determining water flow, recirculation rates, appropriate pump requirements and filter techniques are critical to a fully functioning feature. Explore differences between "pond-less" and eco-system ponds. Class culminates in the design and installation of a complete system.

HT 554 - Sustainable Irrigation and Rain Harvesting  
**Credits:** 3.00  
As identifying water resources becomes ever more critical, students learn how to efficiently irrigate the landscape using low volume irrigation with harvested rainwater as the water source. Course focuses on proper design concepts of low volume irrigation as well as the design of rainwater storage systems. Includes developing site plans, identifying soil types and determining plant material to be irrigated. Learn about flow rates, water pressure and the technical components required for a complete system.

HT 555 - Landscape Lighting Design and Installation
Credits: 2.00
Creating outdoor "rooms" is a hot trend in landscaping. Class starts with design elements that are functional, aesthetically pleasing while minimizing light pollution and electrical usage. Learn various lighting options from LED to other low-voltage systems and their unique technical installation requirements plus how to prepare a good cost estimate. Landscape lighting provides exterior security, comfort and adds visually to the landscape canvas for both private and commercial properties.

HT 557 - Woody Landscape Plants
Credits: 3.00
Identification, morphology and classification of Woody Plant Materials of importance in ornamental horticulture in the Northeast including deciduous and evergreen trees, shrubs, vines and groundcovers. Woody plant selection for landscape situations. Special fee. Prereq: HT 405. 2 lec/1 lab.

HT 561 - Grounds Maintenance
Credits: 2.00
Introduction to the principles and practices (i.e. weed identification/management, turf maintenance, pruning) of maintaining public and private grounds--residential, commercial, institutional, recreational. Special fee. 1 lec/1 lab.

HT 563 - Landscape Construction
Credits: 4.00

HT 565 - Turf Management
Credits: 4.00
An introductory look at turf grass management; turf grass culture and physiology; identifying cool-season grasses; identifying and controlling turf grass pests (insect, diseases and weeds); controlling pests using traditional, biological and integrated (IPM) practices; establishing cool-season grasses; seed and sod installation; fertilization practices will be covered.

HT 566 - Garden Design and Culture
Credits: 2.00
What makes a garden inviting and sustainable? Explore elements of design then learn how to design and install a variety of gardens that are attractive, integrate with the surrounding environment/ecosystem, and require minimal inputs of time, water, and nutrition. Course emphasizes the selection of native and low maintenance plants. Projects include residential landscape plantings and specialty gardens such as water, rock, rain and themed gardens. Cost estimation and business management considerations also introduced. Co-requisites: HT 458

HT 570 - Grounds Management
Credits: 2.00
Grounds management with emphasis on field organization and project supervision. Special fee. Prereq: HT 561. 1 lec/4-hr. Lab/7 wks. May be repeated for a maximum of four (4) credits.

HT 572 - Landscape Design Studio
Credits: 4.00
Principles of residential and commercial landscape design: site analysis, spatial organization, graphics and drafting, use of landscape fixtures and plant materials, final plans and specifications, cost estimates. Special fee. Prereq: HT 257 and 563. 2 lec/4-hr lab.
HT 575 - Floricultural Crop Production
Credits: 2.00
Leading cut-flower crops, potted plants, and bulbous crops, including cultural requirements, crop timing, harvesting procedures, distribution systems, and marketing principles. Special fee. Prereq: permission. 2 lec/1 lab.

HT 576 - Bedding Plant Production
Credits: 2.00
Bedding plant production, cultural requirements, crop timing, marketing principles. Includes common annuals, perennials, vegetables, and herbs of the Northeast. Field trips. Special fee. Prereq: permission. 3 lec/1 lab/7 wks.

HT 585 - Fruit and Vegetable Production
Credits: 3.00
Tree fruits (apple, pears, and peaches) small fruits (strawberries, raspberries, grapes and blueberries) and vegetables grown in New England will be covered. Information will emphasize the growing, maintenance and the marketing of fruits and vegetables from the garden center perspective. Special fee. 2 lec/1 lab.

HT 588 - Horticultural Business Management
Credits: 4.00
Business principles and practices in the formation, operation, and growth of horticultural enterprises. An introduction to marketing, accounting, personnel, and operation management. 4 lec.

HT 591 - Studies
Credits: 1.00 to 3.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a new topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include floriculture, floral design, nursery, landscape, and horticultural therapy. Permission required. Course may be repeated up to a maximum of 6 credits.

HT 592 - Studies
Credits: 1.00 to 3.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a new topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include floriculture, floral design, nursery, landscape, and horticultural therapy. Permission required. Course may be repeated up to a maximum of 6 credits.

HT 597 - Horticultural Work Experience
Credits:
A guided work experience in a student-selected area of horticulture, providing both a broad overview and a detailed understanding of work in the field. Contracting with an employer for 480 hours of career-oriented work, the student is assigned a wide variety of duties and responsibilities typical of that business or organization. Students maintain a detailed reflective journal of the experience, a portfolio-based summary report, and thorough self-evaluations. Cr/F.
Hospitality Management

HMGT 401 - Introduction to the Hospitality Industry
Credits: 4.00
Review the broad spectrum of the hospitality industry from an historical perspective, in concert with current history, trends, and challenges presented by notable industry executives. Distinguished guests represent all segments of the hospitality industry plus selected allied support businesses. Industry segments include, but are not limited to, hotels and lodging, restaurant and food service, travel and tourism, conferences and conventions, casinos and gaming, clubs and resorts, health care and senior living, franchising and entrepreneurship, and technology support. Writing intensive.

HMGT 403 - Introduction to Food Management
Credits: 4.00
Designed to introduce the student to the fundamental components of food production principles and to some basic management skills. The subject matter is presented through classroom lectures, interactive electronic instruction, guest lectures, and food production labs, including the Hospitality Management Department’s Gourmet Dinner Program.

HMGT 404 - Professional Development I
Credits: 1.00
The course serves as an introduction toward building a successful college and professional career. You will develop resume writing skills, interviewing skills, verbal and written communication skills, how to develop a team culture and be part of a team, and work with an alumni or faculty mentor. Training in CPR, Safe Food Handling, and Alcohol Service leads to Certification.

HMGT 405 - Introduction to Food and Service Management
Credits: 4.00
This course is designed to build knowledge and experience in food and service management. Basic principles of foodservice management and their application to menu development, food safety, procurement, equipment usage and identification, customer service, marketing, leadership, human resources, and finance are covered during this course. Laboratory experience in both front and back of the house will provide hands-on experience in basic understanding of how a kitchen operates and dining room service.

HMGT 504 - Professional Development II
Credits: 2.00
Development and integration of self-assessment, career planning, and academic work. Students design and produce an individual career action plan in preparation of a required summer internship. Through self-assessment instruments they develop an understanding of their personal values, interests, skills, and personality in relation to their vocational options, academic process, and career projections. Cr/F.

HMGT 554 - Lodging Operations Management
Credits: 4.00
The course is designed to introduce operations. Two areas are emphasized: the actual operations of a front office and how the front office functions related to the other departments in a hotel. Topics discussed in the class includes overview and current trends of the lodging industry, hotel organization, reservations, registration, guest services and communications, hotel security, front office accounting, housekeeping, night audit, planning for operations, sales techniques, revenue management, and human resources management. To achieve the learning objectives, lectures, labs, e-learning course, guest lectures, and
individual assignments are employed. Pre- or corequisite: HMGT 401.

**HMGT 570 - International Food and Culture**  
**Credits:** 4.00  
This course explores multiple world cultures using food, language, religion, geography, communication, politics, among other attributes, and compares/contrasts with our own diverse cultures here in the United States. Learn why we eat what we eat, when, and how. Food is a critical component across the world's many different cultures and this course will investigate how they are viewed by persons of different backgrounds. The course will leave you with an expanded understanding and appreciation of why and how persons from diverse cultures with varying backgrounds approach their food and beverage needs differently. Inquiry Attribute, World Culture, Writing intensive.

**HMGT 598 - Happy and Healthy at Work/Promoting Wellness, Diversity and Inclusion**  
**Credits:** 4.00  
Offers improved understanding and ability to effectively manage a diverse and healthy workforce. Addresses key diversity, inclusion, and wellness issues in the workplace of a general, technical, and social nature with an emphasis on disability and health promotion. (Also listed as OT 598).

**HMGT 600 - Hospitality Marketing Management**  
**Credits:** 4.00  
Students apply basic marketing principles to the competitive environment of service businesses, such as hotels, restaurants, and other hospitality firms. Strong emphasis on consumer behavior, services management theory, and the hospitality marketing mix as they relate to service firms of all types. Course material is presented through a variety of techniques: case studies, lectures, guest speakers, team projects, and written assignments. Prereq: HMGT 401. Pre- or Coreq: HMGT 554. Writing intensive.

**HMGT 604 - Professional Development III**  
**Credits:** 2.00  
Students design and produce and individual career action plan. Emphasis on identifying each individuals marketable skills, locating job possibilities, writing resumes and correspondence, and interviewing for jobs. Career development workshops are used to enhance the learning experience. Pre- or Coreq: HMGT 504 Cr/F.

**HMGT 618 - Uniform Systems for the Hospitality Industry**  
**Credits:** 4.00  
Following a review of financial statements and an introduction to the Uniform System of Accounts for Hotels and Restaurants, students learn specific applications of managerial accounting and decision support systems for the hospitality industry. Topics include cash flow analysis, cost management, cost-volume-profit analysis, pricing models, budgeting, and forecasting. Students develop an understanding of computer software and back-and front-office computer systems as they relate specifically to the hospitality industry. Lectures, computer exercises, and papers. Prereq: ADMN 502.

**HMGT 625 - Hospitality and Employment Law**  
**Credits:** 4.00  
Tort and contract liability in the hospitality industry. Emphasizes a managerial approach to solving or avoiding potential problems including employment law issues that arise in any business environment: wrongful termination, compensation rules, affirmative action, employment discrimination, sexual harassment, and issues involving privacy in the workplace. Looks at numerous State and Federal Agencies with which Hospitality business must work. Examines key forms of ownership in terms of taxes, risks and rewards. Prereq: junior standing.

**HMGT 635 - Hospitality Human Resource Management**
Credits: 4.00
Addresses key hospitality resource management issues of a general, technical, and social nature including communication, motivation and leadership, job stress and safety, security, government regulations, discrimination, and substance abuse. Covers technical areas such as recruiting and selecting, placement, employment, training, performance appraisal, disciplining, and termination. Prereq: junior standing. Writing intensive.

HMGT 655 - Hospitality Finance and Development
Credits: 4.00
Provides the advanced student with a familiarity of the principles and practices of development and acquisition of hotel, restaurant, and other hospitality businesses, and the real estate development process. Emphasizes market and financial evaluation and decision making relative to economic, ethical, legal, and social aspects of the organization's environment. Group projects involving the preparation of a complete economic feasibility study for hotel or restaurant development or acquisition or repositioning are required. Prereq: HMGT 618.

HMGT 661 - Event Design, Planning, and Management
Credits: 4.00
Strategic and logistical considerations in managing the planning, development, marketing, and implementation of meetings, conventions, and events. Prereq: junior standing.

HMGT 662 - Convention Sales and Service Management
Credits: 4.00
Provides students with an understanding of the sales and service management aspects of the international and domestic convention, exhibition and meeting industries. Analyze the market potential of convention centers, resort hotels, convention hotels and independent venues. Consider the strategic and logistic aspects of the planning, development, coordination and execution of conventions, exhibitions and meetings. Introduction to and certification in numerous aspects of the DELPHI software system.

HMGT 667 - Adv Food/Bev Operations Mgt
Credits: 4.00
A project management course integrating management principles and techniques in the presentation of large scale gourmet dinners. Examines services operations management: planning and forecasting, marketing and sales, production delivery systems, service encounters, technology, purchasing and inventory management, human resources, scheduling, productivity and quality issues. Prereq: senior standing.

Co-requisites:

HMGT 681 - Contemporary Resort Development and Management
Credits: 4.00
Looks at the elements of developing and maintaining Resort properties including Spas, Ski Areas, Waterparks, Time Shares, Beach Resorts and Full service resorts with private home development. Examines the key roles real estate and financing play in all resort development and sustainability. Field Trip included. Writing intensive.

HMGT 682 - Private Club Management
Credits: 4.00
Examines the effective operation and management of private clubs including city clubs, country clubs and yacht clubs. Major topics include: the unique niche that clubs represent in the hospitality industry, organizational structure of clubs, role of the board of directors, membership requirements, differences between tax-exempt clubs and non-exempt clubs, government regulation, preparing for a career in the club field, trends in club management and the future of clubs.
HMGT 685 - Study Abroad  
**Credits:** 1.00 to 16.00  
Open to students studying abroad in the discipline as approved by the hospitality management program director. Cr/F.

HMGT 686 - Study Abroad  
**Credits:** 1.00 to 16.00  
Open to students studying abroad in the discipline as approved by the hospitality management program director. Special fee. Cr/F.

HMGT 695 - Independent Analysis  
**Credits:** 2.00 to 12.00  
Study and research project for honor students to advance knowledge in lodging and food services fields. Prereq: junior standing and permission.

HMGT 695W - Independent Analysis  
**Credits:** 2.00 to 12.00  
Study and research project for honor students to advance knowledge in lodging and food services fields. Prereq: junior standing and permission. Writing intensive.

HMGT 696 - Supervised Student Teaching Experience  
**Credits:** 1.00 to 8.00  
Participants are expected to perform such functions as attending classes, leading discussion groups, assisting faculty, presenting information in undergraduate courses that they have successfully completed, holding office hours, grading papers and exams. Enrollment is limited to juniors and seniors who have had above average GPAs. May be repeated to a maximum of 8 credits. Cr/F.

HMGT 698 - Topics  
**Credits:** 1.00 to 4.00  
Special topics and developments in lodging, food services, and other hospitality industries. Prereq: junior standing. Course may be repeated when topics change up to a maximum of 8 credits.

HMGT 698T - Topics/Study Away  
**Credits:** 1.00 to 4.00  
Topics; Study Away. Special fee. **Co-requisites:** INCO 589

HMGT 703 - Strategic Management in the Hospitality Industry  
**Credits:** 4.00  
Capstone course, interrelating and applying strategic management concepts to hospitality organizations. Cases from hotel companies, restaurant chains, and other hospitality-related businesses, supplemented by economic and other published information from the industry, are used as departure points for class discussion. Prereq: senior standing. Writing intensive.

HMGT 750 - Advanced Operations Management  
**Credits:** 4.00  
Students travel to a major Boston hotel weekly to spend a day working in various departments. The course gives students an in-depth look at the operation of the individual departments, as well as learning how departments must function in an integral way for a successful hotel to operate. Students also experience areas not able to be covered in the on-campus curriculum including Receiving, Security, Maintenance and a day with a General Manager. Prereq: HMGT major and junior or senior status.

HMGT 756 - International Franchising
Credits: 4.00
Designed to help the student acquire an understanding of franchising as a system of distribution and business expansion. Franchising is studied from both the perspectives of the franchisee and the franchiser. In addition, economic, financial, and legal issues associated with franchising are covered. By the end of the course, students acquire the skills and sources of information that would permit sound assessment of the business opportunities available in franchising. Prereq: ADMN 585 or HMGT 600. (Also offered as MKTG 756.)

HMGT 758 - Revenue Management and Pricing
Credits: 4.00
This course covers two topics critical to today's hotel industry; the actual techniques of selling, converting inquiries from individuals and conventions into business. Revenue Management is the technique of evaluating a piece of business and determining its profitability over all departments. The course looks intently at past history as well as forecasting in order to determine the price to be charged based on demand and profitability sought.

HMGT 771 - International Wine and Beverage
Credits: 4.00
Examination of purchasing, evaluation, storage, service, and control of alcoholic beverages. Emphasizes wines, although beer, ale, distilled spirits, liqueurs, and mixed drinks are examined. Enrolled students must be at least 21 years old.

HMGT 777 - Casino Management
Credits: 4.00
Examines the history of the gaming industry and the development, organization and management of casinos. Investigates economics, moral and social issues of gaming including problem gambling. Covers gaming regulations, accounting and taxation of casinos, casino marketing, national and international gaming destinations, game probabilities and the interaction of the casino department with other other divisions of mega casino resorts including lodging, food and beverage and meetings and conventions. A central focus will be on current trends and events. A field trip in a mega casino resort is required. Enrolled students must be at least 21 years old in the first day of class. No credit will be given to students who have taken HMGT 777J.

HMGT 777J - Casino Management
Credits: 4.00
Examines the history of the gaming industry and the development, organization and management of casinos. Investigates economics, moral and social issues of gaming including problem gambling. Covers gaming regulations, accounting and taxation of casinos, casino marketing, national and international gaming destinations, game probabilities and the interaction of the casino department with other other divisions of mega casino resorts including lodging, food and beverage and meetings and conventions. A central focus will be on current trends and events. There is no age, other prerequisite, or field trips required. No credit will be given to students who have taken HMGT 777.

HMGT 790 - Honors/The Workshop
Credits: 1.00
Open to students enrolled in the Paul Honors Program, this workshop is specifically designed for honors students starting the program in their junior year. It is designed to enable students to share the work they are doing for the honors designated course. The workshop will also include guest speakers and other programming of interest to Paul Honors Students. Permission required. Cr/F.

HMGT 792 - Honors/The Consulting Project
Credits: 2.00
Open to students enrolled in the Paul Honors Program, this course is designed to broaden perspectives and build bridges to the external business community. Students will work across all of the disciplines offered by Paul College on consulting projects developed in conjunction with the NH SBDC (Small Business Development Center). Permission required. Cr/F.

HMGT 794 - Honors/The Research Process  
**Credits:** 2.00  
Open to students enrolled in the Paul Honors Program, this course is designed to help students formulate a thesis topic, learn the skills needed to write a thesis and serve as a mechanism for pairing students with a faculty thesis advisor. In addition, students will be expected to attend several research seminars. Permission required. Cr/F.

HMGT 795 - Internship II  
**Credits:** 1.00 to 4.00  
Off-campus work in the hospitality industry for on-the-job skill development. Normally supervision is provided by a qualified individual in the organization with frequent consultation by the faculty sponsor. Initial sponsorship of an Hospitality Management faculty member must be obtained followed by approval of Paul advisor and Dean’s Office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors with 3.0 or better cumulative GPA.

HMGT 799 - Honors Thesis/Project  
**Credits:** 4.00 to 8.00  
Supervised research leading to the completion of an honors thesis or project; required for graduation from the honors program in hospitality management. Prereq: permission of director of undergraduate programs and department chair. Writing intensive.
HDFS 444 - We Don't All Play the Violin: Stories and Stereotypes of Asians in America
Credits: 4.00
An interdisciplinary course that examines perceptions of difference and foreign culture through and exploration of the process of emigration of Chinese, Japanese, Cambodian, and Vietnamese families from Asia to America and their experiences here. Class considers history, economics, state and national legislation and regulations, politics, art, gender and generational differences, and family relationships, as well as North American American reactions to the presence of Asians, how stereotypes by both Asians and Americans were developed, and their impact on family members. Writing intensive.

HDFS 444A - Children at Risk
Credits: 4.00
This course considers child sexual molestation in the Boy Scouts, YMCA's, and churches. Child pornography, prostitution, trafficking, and slavery are also explored. Together we will try to answer the following six questions: Who is at risk of molestation,? How are children molested? Where are they molested? Who molests children and why do they molest them? What are the impacts on children and society? What responsibilities do adults and institutions have to protect children? Writing intensive.

HDFS 525 - Human Development
Credits: 4.00
Developmental information from conception through death; theoretical perspectives and research methods in human development; emphasis on student's communication and analytical skills.

HDFS 525H - Honors/Human Development
Credits: 4.00
Developmental information from conception through death; theoretical perspectives and research methods in human development; emphasis on student's communication and analytical skills.

HDFS 545 - Intimate Relationships and Families
Credits: 4.00
Theories and research relating to the family and its role in individual development.

HDFS 553 - Personal and Family Finance for Family Life Professionals
Credits: 4.00
Applied financial management emphasizing teaching financial issues to a variety of audiences. Topics include savings, credit, insurance and retirement, and programs and resources available to facilitate financial education.

HDFS 565 - Introduction to Child Life
Credits: 4.00
When facing acute, chronic, or life-threatening illness and traumatic injuries, children and families have unique needs within the medical system. The purpose of this course is to provide an introduction to the theory and practice of the child life profession and family centered care. Topics include children's emotional reactions to hospitalization, use of play, preparation, and family support, designing healing environments, and specializations within the field. (Also listed as RMP 565).

HDFS 586 - Families at Risk
Credits: 4.00
This course is designed to look at the biological, cultural and situational factors that affect parenting in the twenty-first century. Concerns such as terrorism, disease, and media influences are discussed. Paradigms for positive parenting in a negative world are developed. The current problems of global warming, war, gangs, alcohol and drug abuse, and a depressed economy have an effect on daily life and how families cope. Possible remedies, solutions, and support networks that help families are discussed. Prereq: HDFS 545 or permission.

**HDFS 605 - Child Study and Development Center Field Experience**  
**Credits:** 2.00 or 6.00  
Supervised experience in the UNH Child Study and Development Center with children infancy-kindergarten, intended for students interested in early education and development. Weekly 3 hours per credit on site engaged in classroom activities as contracted with supervisor. Regular journaling and a final integrative paper on a classroom topic of interest are required. Prereq: a minimum of 12 credits in child development and education (3 credits may be taken concurrently with HDFS 605), and permission. Materials fee. May be repeated up to a total of 8 credits. Cr/F.

**HDFS 623 - Developmental Perspectives on Infancy and Early Childhood**  
**Credits:** 4.00  
Integrative view of the developing child from conception through childhood within the family context. Prereq: HDFS 525.

**HDFS 624 - Developmental Perspectives on Adolescence and Early Adulthood**  
**Credits:** 4.00  
Developmental information from pubescence through early adulthood; the concept of identity and influences on identity formation.

**HDFS 625 - Adult Development and Aging**  
**Credits:** 4.00  
Covers the general biological, psychological, and sociological theories and issues related to adult development and aging. Focuses on diversity in the process of aging and the influence of various contexts on that process. Course is helpful for students who plan to work in adult and gerontological research or in social services settings with adults, and/or those who wish to become more knowledgeable on issues related to successful adult development and aging.

**HDFS 635 - Teaching and Learning in Early Childhood Settings**  
**Credits:** 4.00  
Current theoretical approaches to communicating with children and influencing their behavior. Weekly four-hour laboratory experience working with preschool children is required at UNH Child and Family Center. Weekly three-hour seminar. Prereq: HDFS 525, HDFS 623; permission. Special fee

**HDFS 641 - Parenting Across the Life Span**  
**Credits:** 4.00  
Examination of parent-child relations across a range of developmental time periods and situations. Explores issues affecting parent-child relationships. Prereq: FS 525, 545.

**HDFS 653 - Family Economics**  
**Credits:** 4.00  
Exploration of family economics and well being; public policy and family structure influences on the economic well being of families. Prereq: HDFS 545. Writing intensive.

**HDFS 695 - Independent Study**  
**Credits:** 1.00 to 6.00
Scholarly project in the area of child, family, and consumer studies. Regular conferences with supervising faculty required. Prereq: approval of departmental faculty.

**HDFS 697 - Special Topics**  
**Credits:** 1.00 to 6.00  
Focused examination of a particular theoretical, methodological, or policy issue. May be repeated to a maximum of 8 credits. Prereq: permission.

**HDFS 697W - Special Topics**  
**Credits:** 1.00 to 6.00  
Focused examination of a particular theoretical, methodological, or policy issue. May be repeated to a maximum of 8 credits. Prereq: permission. Writing intensive.

**HDFS 707 - Practicum**  
**Credits:** 1.00 to 6.00  
Supervised in-depth experience in teaching, research, or advocacy in a professional setting to increase the student's understanding of children, families. 01) Child, 02) Family. Prereq: HDFS major; permission. Special fee. Cr/F.

**HDFS 709 - Child Development Internship**  
**Credits:** 4.00  
Supervised teaching internship at the UNH Child Study and Development Center with children 6 wks-6 years old age for 9 hours each week. Internship experiences include teaching, documentation, and assessment. In addition students attend a weekly one-hour seminar for an in-depth reflection and analysis of the internship experience. Prereq: HDFS 525; HDFS 623; HDFS 635; and permission. Materials fees. May be repeated up to a total of 8 credits. Special fee.

**HDFS 710 - Community Internship**  
**Credits:** 1.00 to 12.00  
Supervised position in community early childhood settings. 1) Infant-toddler assistant; 2) Preschool-child care assistant; 3) Kindergarten assistant; 4) Child Life. May be repeated up to a total of 12 credits. Section 4 requires a minimum of 8 cr. Prereq: permission. Cr/F.

**HDFS 712 - Child Advocacy and Family Policy Internship**  
**Credits:** 4.00 to 8.00  
Supervised experience working in state, federal, international, or state-wide advocacy organization or agency that advocates for children and/or families. Students spend a required number of hours per week in their selected program, based on the number of credit hours. (Spring semester, possibly Summer). Prereq: HDFS major; senior status; HDFS 525; 545; 28 credit hours of human development and family studies coursework; permission. May be taken for 4 to 8 credits. Cr/F.  
**Co-requisites:** HDFS 714

**HDFS 714 - Seminar for Child Advocacy and Family Policy Interns**  
**Credits:** 2.00  
This biweekly seminar focuses on issues of concern to child advocacy and family policy internship students, and develops students' professional skills. Prereq: HDFS major, senior status; permission. (Spring semester, possibly Summer).  
**Co-requisites:** HDFS 712

**HDFS 733 - Supervising Programs for Young Children**  
**Credits:** 4.00  
Philosophical bases and theoretical rationales of various programs for young children; program alternatives
and resources; issues in administration including supervision, finances, and regulations. Prereq: permission. (Fall semester only.) Writing intensive.

**HDFS 734 - Curriculum for Young Children**  
*Credits: 4.00*  
Designing and implementing developmentally appropriate activities for young children; assessing the effectiveness of activities; evaluating materials and equipment. Prereq: HDFS 525; 623; 635. (Spring semester only.) Only open to Human Development and Family Studies and HDFS: Child and Family Studies majors. Writing intensive.

**HDFS 743 - Families, Schools, and Community**  
*Credits: 4.00*  
Emphasizes the critical value of effective family-school-community partnerships in enhancing the education of young children. The literature assessing the interactive nature of parent and school resources with cultural influences is examined. Current models of family-school-community partnerships are explored. Students participate in parent/school/community activities within early childhood education centers and schools. Prereq: permission. Writing intensive.

**HDFS 746 - Human Sexuality**  
*Credits: 4.00*  
Investigation of physiological, psychological, and sociological aspects of human sexuality. Particular attention to various social practices, policies, and programs that affect sexual attitudes and behaviors.

**HDFS 757 - Race, Class, Gender, and Families**  
*Credits: 4.00*  
Explores the intersection of race, class, and gender in family life in the U.S. Theory, research, and other relevant literature is used to examine the variety of family configurations in our society today and the diverse experiences that families have as a result of existing social, political, and economic institutions. The strengths of various family types are considered, as well as the particular challenges these families may encounter in contemporary society. Prereq: seniors or graduate students only. Writing intensive.

**HDFS 760 - Family Programs and Policies**  
*Credits: 4.00*  
Analyzes the connection between family support programs and family policy. Stresses program planning, implementation, and evaluation. Examines the research, theory, history, and current status of model family programs. Prereq: HDFS 545. Writing intensive.

**HDFS 771 - Observation and Assessment of Young Children**  
*Credits: 4.00*  
Comprehensive view of various observation techniques for determining children's strengths and emerging skills. Exploration of issues regarding the use of formal assessments and testing with young children, retention and transitional placements, and the parent's role in testing. Prereq: HDFS 525; 623; 635. (Fall semester only.)

**HDFS 772 - International Approaches to Child Advocacy**  
*Credits: 4.00*  
An investigation into the rationales for advocacy, types of advocacy, advocacy techniques and strategies, and current domestic and international advocacy issues and approaches. Prereq: seniors only. Writing intensive.

**HDFS 773 - International Perspectives on Children and Families**  
*Credits: 4.00*
An investigation of historical and modern conceptions of children and families in selected African, Asian, European, and Latin countries. Emphasis is placed on the contribution of these populations to the changing ethnic portrait of America. Prereq: seniors only.

**HDFS 773W - International Perspectives on Children and Families**  
**Credits:** 4.00  
An investigation of historical and modern conceptions of children and families in selected African, Asian, European, and Latin countries. Emphasis is placed on the contribution of these populations to the changing ethnic portrait of America. Prereq: seniors only. Writing intensive

**HDFS 776 - Children, Adolescents and the Law**  
**Credits:** 4.00  
This course is designed to familiarize students with the specialized laws and adjudicative systems that govern children, adolescents and families and reflect society's effort to balance competing interests and goals. It provides the chance to explore laws and processes that affect children and adolescents as they interact with their caregivers, families and society at large. Prereq: HDFS 525, 545 and HDFS 623 or 624. Open to HDFS and Justice Studies majors only. Writing intensive.

**HDFS 782 - Family Internship**  
**Credits:** 6.00  
Supervised experience working in social, legal, and marketplace settings that offer services to families. Students spend a minimum of 15 hours per week in a selected community program. Admission by application only. Applications due prior to registration spring semester of the junior year. A senior-level course with 6 credits being taken each semester. Prereq: HDFS major; senior status; HDFS 525; 545; 20 credit hours of family studies course work; permission. Pre- or Coreq: HDFS 760. IA (continuous grading). Cr/F.

**Co-requisites:** HDFS 792

**HDFS 785 - Seminar for Student Teachers**  
**Credits:** 2.00  
Supplements the student teaching experience and effects a transition to the profession of teaching for those students admitted to the early childhood certification option.

**HDFS 786 - Seminar for Student Teachers**  
**Credits:** 2.00  
Supplements the student teaching experience and effects a transition to the profession of teaching for those students admitted to the early childhood certification option.

**HDFS 788 - Student Teaching Young Children**  
**Credits:** 8.00  
Supervised teaching experience. Students spend a minimum of 20 hours per week in a selected program for young children working with a cooperating teacher. Students must apply during the fall semester of their junior year. Prereq: HDFS major; HDFS 525; 545; 623; 635; 733; 734; 743; EDUC 706; KIN 675; MATH 601; THDA 520; permission. Coreq: HDFS 785-786. (Spring semester only.) Special fee. Cr/F.

**HDFS 792 - Family Internship Seminar**  
**Credits:** 2.00  
This biweekly seminar focuses on issues of concern to family internship students, provides advanced training in educational strategies for working with families, and develops students' professional skills. This is a two-semester course with 2 credits being taken each semester. Prereq: HDFS major; admission to family internship program; permission. (Fall and spring semester.) IA (continuous grading).

**Co-requisites:** HDFS 782
HDFS 792W - Family Internship Seminar  
**Credits:** 2.00  
This biweekly seminar focuses on issues of concern to family internship students, provides advanced training in educational strategies for working with families, and develops students' professional skills. This is a two-semester course with 2 credits being taken each semester. Prereq: HDFS major; admission to family internship program; permission. (Fall and spring semester.) IA (continuous grading). Writing intensive.  
**Co-requisites:** HDFS 782

HDFS 794 - Families and the Law  
**Credits:** 4.00  
Exploration of laws effecting families and the interaction of family members with each other and with society. Prereq: HDFS 545. Writing intensive.

HDFS 795 - Advanced Independent Study  
**Credits:** 4.00  
Students in the major may undertake advanced study in child development, lifespan development or family support in cosultation with a HDFS faculty memeber. The result of the study is to be a significant written product of a quality comparable to a 700 level course. A learner/sponsor contract will be required. Prereq: permission.

HDFS 797 - Advanced Special Topics  
**Credits:** 1.00 to 6.00  
Highly focused examination of a particular theoretical, methodological, or policy issue. Prereq: permission.

HDFS 799 - Honors Senior Thesis  
**Credits:** 2.00 to 4.00  
Under direction of a faculty sponsor, students plan and carry out an independent investigative effort in an area of family, child, and/or consumer studies, resulting in a written thesis and an oral presentation before students and faculty. Prereq: majors only; senior standing; permission. Two-semester sequence as continuing course.
Humanities

HUMA 401 - Introduction to the Humanities
Credits: 4.00
Introduction to the interdisciplinary study of the humanities. Taking as its entry point a significant work, the course is organized by topics related to that work, selected and arranged to invoke lively intellectual debate among faculty and students alike. Group lectures by the four core humanities faculty members. The instructors teaching the course will provide material for smaller weekly discussion sections led by each of those faculty members. Requirements include lively discussions, papers, and examinations. Not repeatable.

HUMA 401W - Introduction to Humanities
Credits: 4.00
Introduction to the interdisciplinary study of the humanities. Taking as its entry point a significant work, the course is organized by topics related to that work, selected and arranged to invoke lively intellectual debate among faculty and students alike. Group lectures by the three core humanities faculty members. The instructors teaching the course will provide material for smaller weekly discussion sections led by each of those faculty members. Requirements include lively discussions, papers, and examinations. Writing intensive.

HUMA 411 - Humanities I
Credits: 4.00
Introduction to the humanities and Western culture through literature, history, philosophy, music, art, and architecture. Examination of selected historical periods from classical Greece through the Renaissance through readings, films, slides, and field trips. Special fee. Writing intensive.

HUMA 412 - Humanities II
Credits: 4.00
Introduction to the humanities and Western culture through literature, history, philosophy, music, art, and architecture. Examination of selected historical periods from the Enlightenment to the present through the use of readings, films, slides, and field trips. Writing intensive.

HUMA 444 - Idea of University
Credits: 4.00
An inquiry course that introduces first-year students to the history of the university and to the philosophical, artistic, and political crises it has undergone and continues to undergo today. HUMA 444 is an interdisciplinary course, team-taught by three professors from different fields. Writing intensive.

HUMA #444C - Mozart and the Enlightenment: Social Norms and Sexual Behavior in the Age of Reason
Credits: 4.00
An interdisciplinary introduction to the European Enlightenment (approximately 1690-1790) as a cultural phenomenon, arising from developments in the natural sciences, that infused all areas of human endeavor with new ways of thinking and behaving, including social norms and sexual behavior, and how it was communicated and disseminated, not only through the written word but also through theater and music, especially in works of Mozart exploring the use and abuse of Human Reason in daily life. Writing intensive.

HUMA 444D - Plague/Literary Histories of Epidemics
Credits: 4.00
Explores the meanings of epidemics as represented in literature. Topics include mysterious ancient disasters, the Black Death, AIDS, and hypothetical diseases used as thought experiments, as well as current controversies about the spread and prevention of disease. How do disease and its control shape state and social structures? How have the meanings of disease, health, medicine, and the body changed over time? What kind of art does disease give rise to?

HUMA 444E - What is a Criminal?
Credits: 4.00
Criminals are people who break the law -- In theory. How do people become criminals (with regard to biological, cultural, and economic influences)? What happens to them in the criminal justice system, and how does the system shape the definition of "criminal"? We will also discuss "criminals of conscience" from Thoreau and Gandhi to Edward Snowden. The course will emphasize reading but will also engage with other media, including films, podcasts, and visual art.

HUMA 450 - The Pre-Modern Economy and the Origins of Capitalism
Credits: 4.00
This course provides a historical introduction to the development of the pre-modern economy from the earliest traces of capitalism in Ancient Greece to the Industrial Revolution. Special attention will be paid to commerce and finance in the Greco-Roman economy, the Commercial Revolution and invention of the firm in Renaissance Italy, early-modern Europe to the Industrial Revolution, and such fundamental thinkers as Karl Marx and Karl Polanyi.

HUMA 500 - Critical Methods in the Humanities
Credits: 4.00
Critical analysis of works in the humanities. Focuses on major texts, evaluation of secondary literature, research writing, criticism. Required of all HUMA majors. Writing intensive.

HUMA 510A - Ancient World: An Interdisciplinary Introduction
Credits: 4.00
What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

HUMA 510B - Ancient World: An Interdisciplinary Introduction
Credits: 4.00
What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

HUMA 510C - Ancient World: An Interdisciplinary Introduction
Credits: 4.00
What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

HUMA 510D - Ancient World: An Interdisciplinary Introduction
Credits: 4.00
What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

HUMA 511A - Medieval World: An Interdisciplinary Introduction
What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive

HUMA 511B - Medieval World: An Interdisciplinary Introduction
Credits: 4.00
What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive

HUMA 511C - Medieval World: An Interdisciplinary Introduction
Credits: 4.00
What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive

HUMA 511D - Medieval World: An Interdisciplinary Introduction
Credits: 4.00
What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive

HUMA 512A - Renaissance and Early Modern: An Interdisciplinary Introduction
Credits: 4.00
Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.

HUMA 512B - Renaissance and Early Modern: An Interdisciplinary Introduction
Credits: 4.00
Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.

HUMA 512C - Renaissance and Early Modern: An Interdisciplinary Introduction
Credits: 4.00
Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.
HUMA 512D - Renaissance and Early Modern: An Interdisciplinary Introduction  
Credits: 4.00  
Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.

HUMA 513A - Modern World: An Interdisciplinary Introduction  
Credits: 4.00  
Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

HUMA 513B - Modern World: An Interdisciplinary Introduction  
Credits: 4.00  
Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

HUMA 513C - Modern World: An Interdisciplinary Introduction  
Credits: 4.00  
Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

HUMA 513D - Modern World: An Interdisciplinary Introduction  
Credits: 4.00  
Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

HUMA 514A - 20th Century, 1900-1945: An Interdisciplinary Introduction  
Credits: 4.00  
This course examines the relationships of literature, art, philosophy, and science in the first half of the twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstern. Writing intensive.

HUMA 514B - 20th Century, 1900-1945: An Interdisciplinary Introduction  
Credits: 4.00  
This course examines the relationships of literature, art, philosophy, and science in the first half of the twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstern. Writing intensive.

HUMA 514C - 20th Century, 1900-1945: An Interdisciplinary Introduction  
Credits: 4.00  
This course examines the relationships of literature, art, philosophy, and science in the first half of the
twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstern. Writing intensive.

**HUMA 514D - 20th Century, 1900-1945: An Interdisciplinary Introduction**
**Credits:** 4.00
This course examines the relationships of literature, art, philosophy, and science in the first half of the twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstern. Writing intensive.

**HUMA 515A - 20th Century, 1945-1999: An Interdisciplinary Introduction**
**Credits:** 4.00
Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

**HUMA 515B - 20th Century, 1945-1999: An Interdisciplinary Introduction**
**Credits:** 4.00
Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

**HUMA 515C - 20th Century, 1945-1999: An Interdisciplinary Introduction**
**Credits:** 4.00
Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

**HUMA 515D - 20th Century, 1945-1999: An Interdisciplinary Introduction**
**Credits:** 4.00
Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

**HUMA 519 - Classical Greece**
**Credits:** 4.00
Examination of the culture of classical Greece through the history, drama, philosophy, and art of the period. Open to all students. Recommended for students in the humanities major. Special fee.

**HUMA 550 - Budapest Spring Semester: Special Studies in Comparative Ideas**
**Credits:** 4.00
This course involves periodic offerings in literature, art, history, philosophy and political science designed to stimulate reflection on ideas and issues in Hungarian and Central European history and culture in a larger
global context. Topics vary depending upon the expertise of the resident faculty. Special fee.

**Co-requisites:** INCO 588

**HUMA 551 - Budapest Spring Semester: Field Studies in Art and Culture**

**Credits:** 6.00

This course is designed to provide students with first-hand experience of art, history, culture, folklore, and traditions of Hungary and Central Europe. The course combines preparatory readings with guided field trips to museums, historical sites, and culturally significant events and locations. Students maintain a weekly blog reflecting on field trip experiences.

**Co-requisites:** INCO 588

**HUMA 592 - Special Topics in the Humanities**

**Credits:** 2.00 to 8.00

Special topics; offered occasionally. May be repeated up to a maximum of 12 credits.

**HUMA 592W - Special Topics**

**Credits:** 2.00 to 8.00

Special topics; offered occasionally. May be repeated up to a maximum of 12 credits. Topic/Where Did They Come From? The Emergence of Judaism, Christianity, and Islam is Writing intensive.

**HUMA 622 - Studies of Freedom and Liberty**

**Credits:** 4.00

Principles of freedom and liberty that helped to form Western culture from the Renaissance to the present. Topics include concepts of human nature, theories of government and society. Readings include Machiavelli, Locke, Paine, Mill, Marx, Freud, Sartre, and Marcuse.

**HUMA #640 - Birth of Rock and Roll**

**Credits:** 4.00

An interdisciplinary study of the cultural forces that brought the birth of rock and roll in the 1950’s. This study of pre-rock music and culture will be further enriched by art, literature, and photography which focuses on the roots of rock and roll. Writing intensive.

**HUMA 650 - Humanities and the Law: The Problem of Justice in Western Civilization**

**Credits:** 4.00

Interdisciplinary modular course examines interpretations of the nature of justice, its origins, the role of the professional judiciary, and the relationship of law and ethics. Students take three successive five-week modules during the semester. (Not offered every year.) Writing intensive.

**HUMA 651 - Humanities and Science: The Nature of Scientific Creativity**

**Credits:** 4.00

Interdisciplinary modular course examines the historical and intellectual foundations of the physical, biological, and human sciences. Students take three successive five-week modules during the semester. (Not offered every year.) Writing intensive.

**HUMA 698 - Independent Study**

**Credits:** 4.00

Independent study open only to highly qualified juniors and seniors who have completed at least four humanities courses above the 400 level. Requires original research and substantial writing projects under the direction of a member of the core faculty of the humanities. Prereq: HUMA junior or senior majors; four HUMA courses above the 400 level.

**HUMA 700 - Seminar**
Credits: 4.00
Provides an opportunity for in-depth reading, viewing, and/or listening to texts and artifacts. Emphasis on the multiple perspectives and methodologies that can be brought to bear upon these works from several humanistic disciplines. May be repeated for credit. Writing intensive.

**HUMA 730 - Special Studies**
Credits: 4.00
Selected topics not covered by existing courses, with subjects to vary. May be repeated for credit. Prereq: one 400- or 500-level HUMA course or junior standing. Writing intensive.

**HUMA 795 - Study of Creativity**
Credits: 4.00
A study of human creativity through representative lives and works of such figures as daVinci, Einstein, Kathe Kollwitz, Bach, Dickens, and Freud. Lectures, class discussions, films, and slides supplemented by gallery tours, plays, and concerts. Open to students with a background in humanities or by permission of the instructor. Special fee. (Normally offered every other year.) Writing intensive.

**HUMA 796 - Study of Contemporary Issues**
Credits: 4.00
Current social and political issues with focus on recent developments in public policy, science, and business, and their impact on social values. Prereq: junior status or permission. (Normally offered every other year.) Writing intensive.

**HUMA 798 - Research Seminar**
Credits: 1.00 to 2.00
Provides a context within which students may discuss and receive direction in the course of completing a major research paper. At the end of the seminar, students present their research to the faculty and their fellow students. Prereq: HUMA 500; senior standing; permission. HUMA majors only. Writing intensive.

**HUMA 799 - Research Seminar**
Credits: 3.00 to 4.00
Provides a context within which students may discuss and receive direction in the course of completing a major research paper. At the end of the seminar, students present their research to the faculty and their fellow students. Restricted to majors. Prereq: HUMA 500; HUMA 798; senior standing; permission. Writing intensive.
Information Technology

**IT 403 - Introduction to Internet Technologies**  
Credits: 4.00  
Introductory course exploring the fundamentals of Internet communications with an emphasis on the World Wide Web. Students develop an understanding of the Internet's underlying technologies and learn how to utilize them as contributing members of the Web community. Students become proficient with creating and publishing Web pages using HTML and CSS. No prior knowledge or experience is assumed. No credit if credit earned for CIS 405. (Note CIS 405 is offered at UNH Manchester, and is not related to CS 405 at UNH Durham.)

**IT 502 - Intermediate Web Design**  
Credits: 4.00  
An intermediate level exploration of the theory and practice of Web design. Students learn the fundamentals of design theory applicable to the World Wide Web and examine tools and techniques for applying that knowledge to their projects. Additional topics include information architecture, usability, accessibility, optimization, typography, and market visibility. Working knowledge of XHTML and CSS required. Prereq: CS 403.

**IT 505 - Database Programming**  
Credits: 4.00  
Introduces database programming in the microcomputer environment. Students use a procedural programming language such as Visual Basic to manipulate data managed by a database management system. Emphasis is on the relational database model. Topics include connections, queries (including use of SQL), relations, constraints, transaction processing, concurrency issues, exception handling, and report generation. Prereq: a programming course. Computer Science majors not allowed.

**IT 506 - Intermediate Applications Programming with Visual Basic**  
Credits: 4.00  
Introduction to advanced Visual Basic data structures, focusing on the language's object oriented features. Topics include the creation of programmer-defined classes and objects, collections, user controls, exception handling, regular expressions, and Web forms. Prereq: a programming course.

**IT 520 - Computer Architecture**  
Credits: 4.00  
Fundamentals of computer organization, including binary systems, data representation (and compression), machine language, program execution, memory and process issues. Operating systems and networking basics. Not open to CS majors. Prereq: a programming course.

**IT 600 - Internship**  
Credits: 1.00  
Provides opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the instructor. The proposal must specify what the student will learn from internship, why the student is properly prepared for the internship, and what supervision will be available during the internship. A mid-semester report and a final report are required. Prereq: permission; majors only. May be repeated up to a maximum of 4 credits. Cr/F.

**IT 604 - Intermediate Web Development**  
Credits: 4.00
An intermediate-level examination of the theory and practice of developing applications for the World Wide Web. Students will learn practical techniques for designing and implementing Web applications, with a particular emphasis on server-side processing and data-driven Web sites. Working knowledge of XHTML, CSS, and some programming language is required. Prereq: CS 403 and a programming course.

**IT 605 - Client-side Web Development**

Credits: 4.00  
An intermediate-level examination of the theory and practice of developing client-side applications for the World Wide Web. Students will learn practical techniques for designing and implementing dynamic Web sites through the use of client-side processing. Working knowledge of HTML, CSS, and some programming language is required. Prereq: IT 403 and a programming course.

**IT 609 - Network/Systems Administration**  
Credits: 4.00  
Introduces the central issues in administration of a networked computer system. Topics include the client-server model (including support of mail, FTP, Telnet, the Web), disk and file systems, backup and recovery, and security. Privacy and other legal/social issues will be discussed. Prereq: IT 520 and a programming course, or permission of the instructor.

**IT 612 - Scripting Languages**  
Credits: 4.00  
This course is a study of the class of programming languages and tools known as scripting languages. Topics include: a general discussion of language design and its relationship to the intended computing environment, introduction to the command-line environment, the role of scripts in controlling and connecting other programs and components, basic functionality of at least two scripting languages, and the syntax use of regular expressions. Programming projects in multiple languages will be required. Prereq: IT 505 or CS 515.

**IT 666 - Computer Security**  
Credits: 4.00  
Provides students with the skills required to recognize and diagnose potential security issues in computer and network systems. Through readings, case studies, exercises, research papers, exams and personal experience, students will discuss and debate security policies and legislation, system procedures, security tools and techniques and the patterns that attackers use to foil security systems. Other topics include types of attacks, viruses, intrusion detection and tracking, firewalls, trust relationships and authentication, secure connections, and cryptography. At the conclusion of the course, student will have a heightened sense of security in the actions they take when using and maintaining computer systems. Prereq: IT 520 or permission of the instructor. No credit if credit earned for CIS 615.

**IT 696 - Independent Study**  
Credits: 1.00 to 6.00  
Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. May be repeated. Only open to Information Technology majors.

**IT 699 - Internship**  
Credits: 1.00  
Provides the opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the instructor. The proposal must specify what the student will learn from the internship, why the student is properly prepared for the internship and what supervision is available during the internship. A mid-semester report and final report are required. Students may receive compensation for their internship work. Prereq: permission. May be
repeated for a maximum of 4 credits. Information Technology majors only. Cr/F.

**IT 704 - Advanced Web Development**  
**Credits:** 4.00  
An advanced exploration of various topics in Web development. Topics covered each semester will be chosen to reflect the current state of stable and accepted Web technologies, with a decided emphasis on open-source solutions. Both client-side and server-side technologies are likely to be included, with particular attention given to concepts and techniques used to facilitate efficient Web development. Prereq: IT 604.

**IT 705 - Project Management for Information Technology**  
**Credits:** 4.00  
This course focuses on a core set of project management essentials that can affect the bottom line of project technical and business performance. These are termed "best practices," and those addressed are: formal risk management, agreement on interfaces, metrics based scheduling/tracking, frequent binary completion milestones, incremental development, people aware management style, and change management. The emphasis is on information technology projects; however, the basic principles are pertinent to a wider class of project domains. Prereq: Senior standing in IT or permission. Writing intensive.

**IT 710 - Senior Project**  
**Credits:** 4.00  
Students are organized into teams and work on a specific IT project. Utilizing the skills and concepts learned in IT 705 (as well as other previous academic and field experience), each team works with one or more stakeholders to provide all necessary project elements - from initial specification through design and development to delivery. Teams are expected to provide both interim and final written and/or oral reports for the project. Prereq: IT 705; Information Technology majors only.

**IT 725 - Network Technology**  
**Credits:** 4.00  
Introduction to fundamental concepts of computer networks and exploration of widely-used networking technologies. Topics include principles of congestion and error control; network routing; local, wireless and access networks; application protocol design; and network programming. In-depth discussion of the Internet suite of protocols. Prereq: IT 520.

**IT 775 - Database Technology**  
**Credits:** 4.00  
Topics include database architecture, schema design and definition, entity-relationship diagrams, data retrieval and update, and indexing performance. Architectures for single-user, multi-user, client-server, and web access are introduced. The relational data model is emphasized but alternative database models, such as semi-structured and object models, are introduced. Database administration topics include examination of metadata information, data integrity, and management of users and privileges, performance tuning, transactions, isolation levels, and security. Ethics of data protection are introduced. Students develop skill in SQL. Not open to CS majors. No credit if credit earned for CS 775. Prereq: IT 505.

**IT 780 - Topics in Information Technology**  
**Credits:** 4.00  
Material not normally covered in course offerings. May be repeated for credit.
Integrated Agriculture Mgmt

IAG 408 - Foundations for Living Sustainably in New England
Credits: 4.00
An introduction to the principles and practices of sustainable living in New England. Within the framework of human culture as an integral part of our ecosystem and focusing on the integration of site-scale applications, topics touched upon include ecology, site inventory and mapping, horticulture, forestry, animal science, architecture, food, regulatory issues, business concepts, and community integration. Special fee.

IAG 490 - Integrated Agriculture Management Capstone
Credits: 2.00
The capstone experience includes formal lectures and coursework. In addition there is a required pre-approved and mentored project, or other special project-based student activity accepted by the IAG program advisors. The students will be expected to present the project to freshman students in the Integrated Agriculture program and also in a public venue. The course occurs in the student's final year at the Thompson School of Applied Sciences. Permission required.

IAG 597 - Integrated Agriculture Management Work Experience
Credits:
Career related employment for 400 hours, generally in the summer following the freshmen year. This is in an agricultural, forestry, or food related firm, farm or related business, department approval required. Student submits a monthly report, and a final report from employer required. Students are eligible to register for IAG 297 after completing at least one semester as an IAMT student.
Integrated Applied Mathematics

IAM 550 - Introduction to Engineering Computing
Credits: 4.00
An application driven introduction to computer-aided problem solving leveraging foundational knowledge in engineering and the physical sciences. Engineering applications are used to motivate the computational methods needed in scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, and numerical differentiation and integration, are introduced as useful computational tools for tackling a broad range of engineering and scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, numerical differentiation and integration, are introduced as useful computational tools for tackling a broad range of engineering and scientific applications and to provide concrete and contextual programming experiences. MATLAB is used, with topics including scripts, functions, logical expressions, conditional statements, looping, data visualization, plotting, and recursion presented within the framework provided by both the numerical methods and the scientific or engineering problems. Laboratory included. Pre- or Coreq: MATH 426. No credit earned if credit received for MATH 445.

IAM 751 - Introduction to High-Performance Computing
Credits: 4.00
Course gives an introduction to select areas of high-performance computing, providing a basis for writing and working with high-performance simulation codes. The three main topics are: 1) basic software engineering, 2) high-performance and parallel programming, and 3) performance analysis and modeling. Additional topics may include heterogeneous architectures like GPUs and data analysis/visualization. Prereq: MATH 753 and working knowledge of a programming language (C or Fortran), or by permission of instructor.
INCO 400 - Graduate Preparation Seminar  
**Credits:** 1.00  
A survey seminar that explores issues related to graduate school preparation. Topics include graduate school culture, academic research, the role of multicultural scholars, faculty relations, the graduate record exam, resume/vita development, and financing graduate education. Prereq: Enrollment in McNair Scholars Program. May be repeated for credit. Cr/F.

INCO 403 - Healthcare Professions Seminar  
**Credits:** 2.00  
This seminar is designed for students (primarily for sophomores; juniors and seniors may also take the course) who are in the initial phase of preparation to a career in allopathic or osteopathic medicine, dentistry, podiatry, optometry, physicians assistant, chiropractics, physical therapy, pharmacy, or naturopathic medicine. Through readings and discussion students will become informed about current topics in healthcare, and specifically about these professions, requirements for admission to degree programs, and about how to become a competitive applicant. Cr/F.

INCO 410 - Introduction to College Teaching  
**Credits:** 2.00  
Evolving role and function of colleges and universities in American higher education. Issues involving the professorate including teaching, scholarship and service as the framework for an academic career.

INCO 430 - Interdisciplinary Science  
**Credits:** 4.00  
Advanced topics in selected areas of science through interdisciplinary lectures, demonstrations, hands-on laboratory experience, and field trips; the use of mathematical and computer skills in science; social, economic, environmental, and ethical applications and implications of recent advances in the selected area of science; the process of research. Restricted to high school juniors and seniors by permission only.

INCO 450 - Introduction to Race, Culture and Power  
**Credits:** 4.00  
Explores the ways in which the concept of "race" serves to justify global relationships of domination and inequality and is embedded in U.S. society. Examines how dominant powers use "culture" to maintain subordination and how subordinated peoples use "culture" to resist exploitation. (Also listed as ANTH 450.)

INCO 460 - Deflategate  
**Credits:** 4.00  
This course is not about deflated footballs. Instead, it is about the interplay between those footballs -- along with numerous other sports things -- and the legal, regulatory and journalistic systems governing sports. Students in Deflategate learn about crucial areas of law that relate to sports and the methodologies used to practice in relevant fields. Students also gain valuable instruction on core journalism methods and their applications to a sports story attracting national headlines. The course concludes with an application of methodologies in law and journalism to Deflategate.

INCO 490 - Introduction to the Research Process in the Biological Sciences  
**Credits:** 2.00  
This course introduces students to the process of research in the biological sciences - identifying a topics, narrowing that topic to a question, conducting literature searches - ultimately leading to writing a research
A proposal in the style of a Summer Undergraduate Research Fellowship. It is an ideal course for students hoping to conduct a summer research project, preparing for an independent or capstone research experience, or planning to complete a Senior or Honors Thesis. No seniors allowed.

**INCO 505A - Semester in the City**
**Credits:** 12.00
Spend a semester in Boston in a high-impact internship with a leading social change organization - in community development, social justice, health, education, environment, and other areas dedicated to the public good. Students will work under a dedicated mentor, participate in an intensive evening course, engage in Friday workshops, develop an impressive digital portfolio, and build professional networks. Discover your passion and build your skills as a change maker! Taken with INCO 505B. www.unh.edu/sitc. Special fee.
**Co-requisites:** INCO 505B

**INCO 505B - Social Innovator’s Toolbox**
**Credits:** 4.00
This course will expose students to the concepts and practices associated with social innovation and social entrepreneurship - i.e., the development and growth of new, sustainable, and scalable approaches to the major social, economic, and environmental challenges facing society. Students will learn a variety of tools and methods used for the development, implementation, management, and assessment of social solutions that they will be able to use over the course of their careers. Taken with INCO 505A. www.unh.edu/sitc. Permission required.
**Co-requisites:** INCO 505A

**INCO 510 - McNair Introduction Seminar**
**Credits:** 1.00 to 2.00
Course assists newly inducted student scholars in understanding the requirements of participation. Substantive reading and writing on the life of Dr. Ron McNair as the starting point from which to understand program expectations and begin sketching research and graduate school goals. Prereq: Enrollment in McNair Scholars Program and permission. Cr/F.

**INCO 529 - Writing Consultation**
**Credits:** 2.00
Includes instruction in philosophy and techniques of tutoring, theoretical and practical issues in collaborative learning and complex-skill formation, and cross disciplinary conventions of writing. In addition to the classroom portion of course, each student undertakes a supervised practicum experience in the University Writing Center. Permission required. Cr/F.

**INCO 530 - Writing Consultation Across the Curriculum**
**Credits:** 2.00
This course provides the fundamental background for peer writing consultation serving as Writing Fellows in courses across the curriculum. Emphasis is on the application of theoretical assumptions about writing, tutoring, and discipline-specific discourse. Restricted to members of the Writing Fellows Program. Faculty recommendation required. May be repeated for credit. Prereq: ENGL 401, one other Writing intensive course.

**INCO 555 - Peer Education**
**Credits:** 1.00 to 3.00
Students serve as co-instructors for a section of INCO 444, First Year Seminar. Under the supervision of the course coordinator and their co-instructor (a University faculty member or Student Affairs professional), they prepare and present materials and exercises for their section. With their co-instructor, they also grade written and other exercises. Students attend weekly meetings with their section co-instructor and biweekly...
meetings of all section instructors. They also attend a two day workshop on teaching and course facilitation prior to the semester and a one day workshop at the end of the semester. Prereq: permission. May be repeated up to a maximum of 3 credits. Cr/F.

**INCO 585 - Foreign Exchange**  
**Credits:** 16.00  
Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at one of UNH's partner institutions for a semester or academic year. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the Coordinator of Student Programs at the Center for International Education. Special fee.

**INCO 586 - Foreign Exchange**  
**Credits:** 16.00  
Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at one of UNH's partner institutions for a semester or academic year. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the Coordinator of Student Programs at the Center for International Education. Special fee. Cr/F.

**INCO 588 - Study Abroad Experience - Semester**  
**Credits:**  
A Study Abroad Program co-requisite to enroll students in travel insurance and capture the mandatory study abroad fee

**INCO 589 - Study Abroad Experience Short**  
**Credits:**  
For students enrolling in short term study abroad experiences in Fall and Spring semesters. Also for students enrolling in January term and Summer Session study abroad experiences.

**INCO 590 - Student Research Experience**  
**Credits:** 1.00 to 4.00  
Provides hands-on research experience to develop critical thinking, problem solving, and analytical skills. An entry-level research experience that introduces students to research theories, tools, and ethical issues. Each student completes a contract with a faculty mentor identifying the research activities the student will undertake. May be repeated up to a maximum of 8 credits.

**INCO 595 - Winterim Topics**  
**Credits:** 1.00 to 4.00  
Concentrated interdisciplinary exposure to a particular culture or locale off campus during the winter term. Includes anthropological, artistic, biological, cultural, environmental, or geographical, historical, political, sociological, and other aspects of a culture, country or locale. May be repeated to a maximum of 8 credits.

**INCO 595W - Winterim Topics**  
**Credits:** 1.00 to 4.00  
Concentrated interdisciplinary exposure to a particular culture or locale off campus during the winter term. Includes anthropological, artistic, biological, cultural, environmental, or geographical, historical, political, sociological, and other aspects of a culture, country or locale. May be repeated to a maximum of 8 credits. Writing intensive.

**INCO 596 - Summer Topics**  
**Credits:** 1.00 to 4.00
Provides a concentrated interdisciplinary exposure to a particular culture or locale off campus during the summer session. Includes anthropological, artistic, biological, cultural, environmental, geographical, historical, political, sociological, and other aspects of a culture, country or locale. May be repeated to 8 credits.

INCO 604H - Honors Senior Thesis
**Credits:** 4.00 or 8.00
Final requirement for graduation with University Honors. Intended for honors students in majors that do not offer honors work. Open by special permission to other honors students. May be repeated for a maximum of 8 credits. IA (continuous grading). Writing intensive.

INCO 610 - Research Inquiry Seminar
**Credits:** 2.00 to 6.00
With the notion of understanding self as the basis for investigating the world, this seminar focuses on exploring elementary concepts of academic research. Students are engaged in identifying strengths, discovering their passions, discerning the joys and frustrations of research, and developing a sketch of a research project. Prereq: Enrollment in McNair Scholars Program and permission. Cr/F.

INCO 620 - Discovery Fellows
**Credits:** 2.00 to 4.00
A theory-to-practice seminar that explores democratic theory from a deliberative perspective, dialogue and small group facilitation, civic engagement, and social justice. Topics include moral disagreement, skills in public engagement and facilitation, creating social change, and moving from talk to action in the public sphere. Prereq: Acceptance in Discovery Fellowship Program. May be repeated for credit. Cr/F.

INCO 650 - Study Abroad Seminar: Encountering Oneself/Encountering the World
**Credits:** 1.00
This seminar, which meets during the second half of each semester, seeks to prepare outgoing students for the Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and short written assignments will focus on cultural adaptation, cross-cultural communication, practical skills for international living, and especially the implications of global perspectives on a student's major field(s) of study. Students are strongly encouraged to take INCO 651: Studying Abroad/Returning Home in the first half of the semester in which they return to UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 650H - Honors/Encountering Oneself/Encountering the World
**Credits:** 1.00
This seminar, which meets during the second half of each semester, seeks to prepare outgoing students for the Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and short written assignments will focus on cultural adaptation, cross-cultural communication, practical skills for international living, and especially the implications of global perspectives on a student's major field(s) of study. Students are strongly encouraged to take INCO 651: Studying Abroad/Returning Home in the first half of the semester in which they return to UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 651 - Study Abroad Seminar: Returning Home
**Credits:** 1.00
This seminar, which meets during the second half of each semester, offers returning students an opportunity to reflect on their Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and
short written assignments will focus on the experience of re-entry: cultural (re)adaptation, cross-cultural communication, and especially the implications of global perspectives on a student's major field(s) of study. Students should expect to have taken INCO 650: Encountering Oneself/Encountering the World in the second half of the semester before they left UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 651H - Honors/Study Abroad Seminar/Returning Home
Credits: 1.00
This seminar, which meets during the first half of each semester, offers returning students an opportunity to reflect on their Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and short written assignments will focus on the experience of re-entry: cultural (re)adaptation, cross-cultural communication, and especially the implications of global perspectives on a student's major field(s) of study. Students should expect to have taken INCO 650: Encountering Oneself/Encountering the World in the second half of the semester before they left UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 682 - Washington Internship
Credits: 12.00
Internship placements in Washington, D.C., through the Washington Center. Individual internships arranged with legislative and judicial offices, law firms, public interest organizations; in the arts, the media, labor, international affairs, business, consumer affairs. Supervision by agency personnel and faculty sponsor. Students should have above-average academic records before applying. Open to all majors. Applications available in the National Student Exchange Office, Hood House. Prereq: junior or senior. Student must also register for a graded, 4-credit independent study in the student's major. credit variable to 12 credits. Special fee. Cr/F.

Co-requisites:

INCO 685 - Study Abroad
Credits: 16.00
Enables students to pursue a semester, summer, or an academic year of foreign study in programs other than those offered by UNH. Students must provide the University Committee on Study Abroad with detailed information about the curriculum and must receive approval from that committee before registration. Credit awarded only upon successful completion of the course of study and after receipt by the committee of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

INCO 686 - Study Abroad
Credits: 16.00
Enables students to pursue a semester, summer, or an academic year of foreign study in programs other than those offered by UNH. Students must provide the University Committee on Study Abroad with detailed information about the curriculum and must receive approval from that committee before registration. Credit awarded only upon successful completion of the course of study and after receipt by the committee of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

INCO 687 - Study Abroad Experience
Credits: 16.00
Enables students to pursue a summer term of foreign study in programs other than those offered by UNH. Students must meet all university requirements and complete required forms. Credit awarded only upon successful completion of the course of study abroad and after receipt and processing of an official transcript. Interested students should consult the Center for International Education. Prereq: permission.
Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

**INCO 688 - Study Abroad Insurance Program**
**Credits:**
E

**INCO 689 - Study Abroad Insurance - Short**
**Credits:**
E

**INCO 698 - Summer Research Project**
**Credits:** 8.00
Guided independent research or student/faculty collaborative research. Open to recipients of summer undergraduate research fellowships or by permission of the Undergraduate Research Opportunities Program. (Summer only.) Cr/F.

**INCO 699 - McNair Summer Internship**
**Credits:**
McNair Fellows; not graded; Summer only.

**INCO 710 - Introduction to McNair Research**
**Credits:** 2.00 to 4.00
An Introduction to methods and techniques of research design within the social sciences, mathematics and natural sciences, and the humanities. Concepts are tailored to students' research thesis. Students design and construct a research project (execution of project may be allowed for additional credit). A comprehensive written proposal is required. Prereq: Enrollment in McNair Scholars Program. May be repeated up to a maximum of 8 credits. Special fee on Study Abroad sections.

**INCO 720 - McNair Research Experience**
**Credits:** 2.00 to 4.00
This independent study course allows students to work one-on-one with a faculty scholar to execute the research project. The course also provides a forum for faculty mentors and research supervisors to troubleshoot challenges and assist in the completion of the project. Prereq: Enrollment in McNair Scholars Program. Permission required.

**INCO 730 - Writing Consultation Across the Curriculum**
**Credits:** 2.00
This course provides the fundamental background for peer serving as Writing Fellows in courses across the curriculum. Emphasis is on the application of theoretical assumptions about writing, tutoring, and discipline-specific discourse. Restricted to members of the Writing Fellows Program. Faculty recommendation required. May be repeated for credit. Students will be asked to evaluate their discipline-specific writing experience and apply it to their Writing Fellows' work. Prereq: ENGL 401, one other Writing intensive course.

**INCO 740 - McNair Research Abroad**
**Credits:** 1.00 to 6.00
This course focuses on the execution of a comprehensive undergraduate research project in a country other than the U.S. Students learn about the cultural elements entailed in conducting research in a foreign country, They grapple with ethical dilemmas, as well as with the joys and frustration of performing research. In addition, students are asked to identify and examine a particular aspect of the host nation's customs and traditions. Special fee.
INCO 790 - Advanced Research Experience  
**Credits:** 1.00 to 4.00  
Advanced research, scholarly or creative projects developed and conducted under the supervision of a faculty member. Provides students with the opportunity to apply advanced knowledge and techniques of their major to a specific problem or question. Prereq: INCO 590, significant preparatory course work for research, or other research experience approved by the INCO 790 faculty mentor. INCO 790 may be repeated alone or in combination with INCO 590 for a maximum of 8 credits. Graded.

INCO 795 - Washington Center Course  
**Credits:** 4.00  
Four-credit independent study in conjunction with The Washington Center program in Washington DC. For more information, Hood House room 106, http://www.unh.edu/washington or email washington.internship@ unh.edu. Special fee.

INCO 796 - Touching the Limits of Knowledge: Cosmology and Our View of the World  
**Credits:** 1.00  
A seminar analyzing the paradoxes and limits of scientific knowledge and religious understanding, their compatibility or lack of it with respect to contemporary cosmology.
International Affairs

**IA 401 - International Perspectives: Science, Geography, and Politics**  
*Credits: 4.00*  
Provides students with a broad, interdisciplinary overview of international affairs in a dynamic and interconnected world. The course is team-taught in two modules, each of which highlights perspectives from anthropology, geography, political science, or another related discipline. These modules address global concerns such as the environment, inequality, migration, conflict, human rights, development, multiculturalism, and health. Required for IA dual major and minor. Must complete IA 401 before the international experience, preferably during freshmen or sophomore year.

**IA 444A - Philosophy and Politics of Nonviolent Action**  
*Credits: 4.00*  
This course examines nonviolent action --both its philosophical underpinnings and the politics and practical questions surrounding its use. In the first half of the course we read classic authors on the philosophy of nonviolence, exploring its relationship to truth, power, and the "other"; in the second half of the course we examine the dynamics and effectiveness of particular cases of nonviolent action around the world, distinguishing among nonviolent struggle, nonviolent defense, and nonviolent intervention. Writing intensive.

**IA 501 - Global Issues in International Affairs**  
*Credits: 4.00*  
Introduces students to a particular set of global issues and to the process of designing and conducting their own research. Specific topics vary depending on the instructor, but past topics have included war and political violence; international political economy; and post-colonialism, race, and gender in global perspective. This course prepares students for study abroad and helps them conceptualize suitable research topics for IA 701. Students develop research proposals on a topic of interest to them related to the county in which they will be studying; while abroad, they can pursue this research for their capstone projects in IA 701. Each student will be expected to put substantial time into developing the reading, research, and analytical skills necessary for the study of international affairs. Prereq: IA 401. Writing intensive. This course is recommended during sophomore year.

**IA 555 - Summer in Costa Rica Program**  
*Credits: 10.00*  
This UNH/CIE managed program enables International Affairs students and others in disciplines such as nursing, business, environmental studies and more, to spend 8 weeks in a Costa Rican host family and explore global issues like human rights, sustainable tourism and development, or corporate social responsibility. Students take 2 courses to satisfy IA electives and the IA foreign experience, Discovery and/or FL requirements and complete 30 hours of community service for a total of 10 UNH credits. Special fee

**IA 599 - Special Topics**  
*Credits: 4.00*  
Subjects vary. Course descriptions are available at the Center for International Education. Some semesters, this course will satisfy specific requirements for the dual major in international affairs. For specific information in a particular semester, contact the Center for International Education.

**IA 695 - Internship**  
*Credits: 2.00 to 4.00*
Designed to provide research and work opportunities with an international aspect to UNH undergraduates. Internships may involve either research with a faculty member or work with an employer. Prereq: permission. May be repeated up to 8 credit hours. Cr/F.

**IA 699 - Topics**

**Credits:** 4.00

Special topics course with varying subject matter and format. Study of areas and subjects not covered by existing courses. Center for International Education provides information on current offerings. Recommended as a dual major elective. Cr/F.

**IA 701 - Seminar**

**Credits:** 4.00

Capstone of the dual major in international affairs. To be taken after completion of the foreign language and foreign experience requirements. Strong emphasis on research and analysis, use of foreign language skills, writing, and criticism. Students write their senior capstone papers and present them at the Undergraduate Research Conference. Prereq: IA 501; IA major. Writing intensive.
ITAL 401 - Elementary Italian I  
**Credits:** 4.00  
For students without previous training in Italian. Aural comprehension, speaking, writing, reading. Labs. (No credit for students who have had two or more years of Italian in secondary school; however, any such students whose studies of Italian have been interrupted for seven years should consult the section coordinator about possibly receiving credit.) Special fee.

ITAL 402 - Elementary Italian II  
**Credits:** 4.00  
For students who have completed ITAL 401 or equivalent. Aural comprehension, speaking, writing, reading. Labs. (No credit for students who have had two or more years of Italian in secondary school; however, any such students whose studies of Italian have been interrupted for seven years should consult the section coordinator about possibly receiving credit.) Special fee.

ITAL 425 - Introduction to Italian Studies  
**Credits:** 4.00  
The double aim of this course is to provide a working knowledge of Italian cultural and political history and to examine, from a more general and theoretical standpoint, the role of Italian art, literature and history via readings, slides, films, opera and lectures; along the way, they will be encouraged to analyze the interaction between culture and political thought in other countries, including their own.

ITAL 425H - Honors/Introduction to Italian Studies  
**Credits:** 4.00  
Designed for honors students interested in exploring Italian language and culture. Culture learning by means of guest speakers and visuals. Prepares for ITAL 401-402. Taught in English. Does not satisfy foreign language proficiency requirement. Special fee. (Offered summers only, Not offered every summer.) Writing intensive.

ITAL 444A - Italians Come to America: Representing Emigration and Immigration on Both Sides of the Atlantic  
**Credits:** 4.00  
Course is designed around the phenomenon of emigration from Italy to the United States over the last century or so, with particular attention to the time period between the end of the nineteenth century and the mid-twentieth century. While core media under examination are literature and film, we also draw on historical, anthropological, political and sociological readings to help us consider the many issues involved.

ITAL 444B - Mamma Mia! Italian Motherhood from the Virgin Mary to Carmela Soprano  
**Credits:** 4.00  
This course examines motherhood and the special role of the Italian mother - la mamma italiana - in past and present Italian society. Through readings from a wide variety of disciplines - theology, history, medicine, and literature - as well as an examination of art and film, we will analyze the origins and conflicted nature of Italian attitudes toward motherhood. Topics include: maternal love and self-sacrifice, beliefs about generation and their influence on maternal and paternal roles, Italian family structure. Mussolini's promotion of motherhood, the phenomenon of mammismo or "Mama's boys", and Italian-American mothers, including Carmela Soprano. Writing intensive.

ITAL 500 - Selected Topics in World Literature
ITAL 503 - Intermediate Italian I  
Credits: 4.00  
A complete review of the fundamentals of grammar and syntax. Selected readings as a general introduction to Italian civilization and culture. Labs and films. Special fee. Writing intensive.

ITAL 504 - Intermediate Italian II  
Credits: 4.00  
For students who have completed ITAL 503 or an equivalent. A complete review of the fundamentals of grammar and syntax. Selected readings as a general introduction to Italian civilization and culture. Labs and films. Special fee. Writing intensive.

ITAL 521 - Italian Literature in Translation, 13th-16th Centuries  
Credits: 4.00  
Major works of fiction and nonfiction, reflecting ideas and taste during the first three centuries of Italian history. Readings, discussions, papers in English. No more than one course in English may be counted toward the minor. Special fee. (Not offered every year.) Writing intensive.

ITAL 522 - Italian Literature in Translation, 18th-20th Centuries  
Credits: 4.00  
Major trends in post-Renaissance thought and culture in Italy. Readings, discussions, papers in English. No more one course in English may be counted toward the minor. Special fee. (Not offered every year.) Writing intensive.

ITAL 525 - Italian Cinema  
Credits: 4.00  
Acquaints students with major Italian film texts. Through cinema the course explores the culture, society, history, and politics of Italy. Students examine filmmakers, genres, periods, and movements. The course is conducted in English. Special fee.

ITAL 595 - Practicum  
Credits: 2.00  
Practical use of Italian language and culture through special projects outside the classroom. May be repeated for a maximum of 4 credits. Prereq: permission. Special fee. Cr/F.

ITAL 595A - Practicum  
Credits: 2.00 or 4.00  
Practical use of Italian language and culture through special projects outside of the classroom. The Practicum consists of unpaid placement in an approved business, social service, or educational organization in an Italian-speaking context with on-site supervision. The course also includes a classroom component that incorporates readings and assignments pertinent to the Practicum experience. May be repeated for a maximum of 4 credits. permission. Letter Grade.

ITAL 631 - Advanced Conversation and Composition I  
Credits: 4.00  
Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent written compositions and oral presentations using materials on contemporary culture taken from the various media. Phonetics and oral/aural skills development in lab and
ITAL 632 - Advanced Conversation and Composition II
Credits: 4.00
Advanced spoken and written Italian to attain aural-oral fluency. Advanced reading and composition.
Prereq: C or better in ITAL 504 or permission. Special fee. Writing intensive.

ITAL 635 - Food Aesthetics in Italy
Credits: 4.00
Food Aesthetics in Italy acquaints students with the principal of aesthetics as they pertain to our understanding of and relationship to food. It is offered by the UNH-in-Italy Program in Ascoli Piceno. The philosophical aspects of the course are complemented by the experiential components that emphasize the particularity of the Italian environment.

ITAL 645 - Food Technology in Italy
Credits: 4.00
Food Technology in Italy introduces students to modern and traditional technologies employed in the Marches region in the industrial processing of foods. The course examines the environmental impact as well as sustainability in terms of the production of healthful quality food products. It is offered through UNH-in-Italy Program in Ascoli Piceno.

ITAL 651 - Introduction to Italian Culture and Civilization I: Middle Ages, Renaissance, Baroque
Credits: 4.00
Survey of major representative writers and artists, studied against the backdrop of social and cultural history. Dante, Petrarch, Boccaccio, Machiavelli, Marino. Pre- or Coreq: ITAL 631 or permission. Special fee. (Not offered every year.) Writing intensive.

ITAL 652 - Introduction to Italian Culture and Civilization II: Age of Enlightenment, Romanticism, Modernism
Credits: 4.00
Survey of major representative writers and artists, studied against a backdrop of social and cultural history. Parini, Goldoni, Leopardi, Manzoni, Pavese, Calvino. Pre- or co-req: ITAL 631 or permission. Special fee. (Not offered every year.) Writing intensive.

ITAL 675 - Special Topics in Italian Studies
Credits: 4.00
Topics drawn from all aspects and periods of Italian Studies. Prereq: ITAL 631 or permission of the instructor. May be repeated for credit barring duplication of materials.

ITAL 681A - Interdisciplinary Field Seminar in Italian Culture: Ancient and Medieval Italy
Credits: 4.00
Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.
Co-requisites:

ITAL 681B - Interdisciplinary Field Seminar in Italian Culture: Ancient and Medieval Italy
Credits: 4.00
Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.
Co-requisites:
ITAL 682A - Interdisciplinary Field Seminar in Italian Culture: Early Modern and Contemporary Italy
Credits: 4.00
Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.
Co-requisites:

ITAL 682B - Interdisciplinary Field Seminar in Italian Culture: Early Modern and Contemporary Italy
Credits: 4.00
Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.
Co-requisites:

ITAL 684 - UNH-in-Italy Summer Program
Credits:
UNH-in-Italy summer programs in Ascoli Piceno. A) Intensive Italian, B) Italian Cinema and Culture, C) Explorations in Nutrition and Culture, D) EcoGastronomy, E) Music and Language in Italy. These course numbers are placeholders, and differ with regard to the special fee. Students are registered for both this administrative course number and the actual course number(s) of the course(s) being offered on site. Permission required. Special fee. Cr/F.
Co-requisites: INCO 589

ITAL 685 - UNH-in-Italy Study Abroad
Credits:
Provides a unique opportunity to study abroad in Ascoli Piceno, Italy during the fall semester. Special fee. Cr/F.

ITAL 686 - UNH-in-Italy Study Abroad
Credits:
Provides a unique opportunity to study abroad in Ascoli Piceno, Italy during the spring semester. Special fee. Cr/F.
Co-requisites: INCO 588

ITAL 733 - History and Development of the Italian Language
Credits: 4.00
Development of the Italian language from Roman times to the present. Examines the comparative method and internal reconstruction as well as processes of changes in phonology, syntax and lexicon. The course introduces issues in dialect geography, the basic features of paleography and surveys the evolution of scripts. Prereq: ITAL 631 or above or permission of instructor. Special fee.

ITAL 795 - Independent Study in Italian Language and Literature
Credits: 1.00 to 4.00
Individual guided study. Prereq: permission. Special fee.

ITAL 796 - Independent Study in Italian Language and Literature
Credits: 1.00 to 4.00
Individual guided study. Prereq: permission. Special fee.
JPN 401 - Elementary Japanese I  
Credits: 4.00  
Elements of Japanese grammar. Oral practice and written drills designed to achieve a mastery of basic grammatical patterns. Reading of graded exercises introducing the student to written Japanese (Hiragana and Katakana) and Chinese characters used in contemporary Japan. Labs. (No credit for students who have had two or more years of Japanese in secondary school; however, any such students whose studies of Japanese have been interrupted for a significant period of time should consult with the department chairperson about possibly receiving credit.) Special fee.

JPN 402 - Elementary Japanese II  
Credits: 4.00  
Elements of Japanese grammar. Oral practice and written drills designed to achieve a mastery of basic grammatical patterns. Reading of graded exercises introducing the student to written Japanese (Hiragana and Katakana) and Chinese characters used in contemporary Japan. Labs. (No credit for students who have had two or more years of Japanese in secondary school; however, any such students whose studies of Japanese have been interrupted for a significant period of time should consult with the department chairperson about possibly receiving credit.) Special fee. Prereq: JPN 401.

JPN 425 - Introduction to Japanese Culture and Civilization  
Credits: 4.00  
Taught in English and designed for students interested in exploring Japanese culture and society. Learning by means of lectures, discussions, guest speakers, selected readings, and multimedia. Does not fulfill B.A. foreign language requirement, but does fulfill the Group 5 foreign culture general education requirement. Also counts toward the Asian Studies Minor. Special fee. Writing intensive.

JPN 425H - Honors/Introduction to Japanese Culture and Civilization  
Credits: 4.00  
Taught in English and designed for students interested in exploring Japanese culture and society. Learning by means of lectures, discussions, guest speakers, selected readings, and multimedia. Does not fulfill B.A. foreign language requirement, but does fulfill the Group 5 foreign culture general education requirement. Also counts toward the Asian Studies Minor. Special fee. Writing intensive.

JPN 503 - Intermediate Japanese I  
Credits: 4.00  
Review of Japanese grammar. Reading of prose and practice in oral and written expression. Labs. Prereq: JPN 402 with a grade of C (2.00) or better or permission of instructor. Special fee.

JPN 504 - Intermediate Japanese II  
Credits: 4.00  
Review of Japanese grammar. Reading of prose and practice in oral and written expression. Labs. Prereq: JPN 402 with a grade of C (2.00) or better or permission of instructor. Special fee.

JPN 631 - Advanced Japanese I  
Credits: 4.00  
Advanced spoken and written Japanese to attain aural-oral fluency. Advanced reading and composition. Prereq: JPN 504 with a grade of C or better or permission of instructor. Writing intensive. Special fee.
JPN 795 - Independent Study
Credits: 1.00 to 4.00
Open to highly qualified juniors and seniors. To be elected only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit.

JPN 796 - Independent Study
Credits: 1.00 to 4.00
Open to highly qualified juniors and seniors. To be elected only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>JUST 401</td>
<td>Introduction to Justice Studies</td>
<td>4.00</td>
<td>Overview of justice studies as the study of law and law-like systems. Includes literature from both the law and society, and criminology. Topics will include morality versus legality, the American legal civil and criminal system, torts, and adult versus juvenile justice.</td>
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<tr>
<td>JUST 405</td>
<td>Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime</td>
<td>4.00</td>
<td>This course addresses the ways in which technology, crime, and law converge in the wider society in the twenty-first century. While emerging technologies bring great benefits, they also bring unintended and unforeseen consequences. This course uses a social science orientation to explore a new and evolving field of forensic technology.</td>
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<tr>
<td>JUST 410</td>
<td>Sexual Harassment and Rape Prevention (SHARPP) Peer Advocacy</td>
<td>2.00</td>
<td>Provide education and awareness around issues of sexual and intimate partner violence, sexual harassment, and stalking. This course teaches students the skills needed to support survivors and their allies, by providing resources and advocacy, including university systems, medical, legal advocacy, and Title IX issues. This course allows for privileged communication by NH law, and requires a 1 year commitment to SHARPP Peer Advocacy. All majors accepted. Cr/F.</td>
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<tr>
<td>JUST 501</td>
<td>Research Methods</td>
<td>4.00</td>
<td>Overview of the various methodologies used in justice studies research: quantitative, qualitative, and legal. Topics include issues of design such as ethics, reliability, and validity measurement. Students will design and write up research proposals using one of the methods reviewed in the course. Prereq: PSYC 402 or SOC 502 or equivalent. Special fee.</td>
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<tr>
<td>JUST 520</td>
<td>Girls Gone Bad: Delinquent Girls in Cultural Context</td>
<td>4.00</td>
<td>This course explores the important and under-studied intersection between gender/girls and delinquency. Who is the typical female delinquent? What causes her to get into trouble? What happens to her if she is arrested? Topics include the extent and nature of adolescent girl's delinquency and theoretical explanations for delinquency. Focus on social contexts (family, peers, school), developmental and social psychological factors and adolescent girls' experiences with the juvenile system.</td>
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<tr>
<td>JUST 530</td>
<td>Inside the Courtroom: Torn from the Headlines</td>
<td>4.00</td>
<td>JUST 530 provides students an overview of criminal law procedure. The course is expressly aimed to serve students in the humanities and social sciences who may work in law-related fields, pursue advanced course work in academic disciplines that focus on law-related phenomena or go to law school. The course uses a distance education model, which requires students to invest significant amounts of time and effort outside of &quot;class&quot; activities to master the salient concepts presented in the course. The course provides students with a thorough introduction to the major legal categories of crime. The course also provides students with an understanding of the importance and role of the law of criminal procedure through an exploration of current issues and controversies. From time to time the course touches upon comparative views of other legal traditions. Class discussions, readings, and assignments frequently use current New</td>
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Hampshire law and criminal cases as points of reference.

**JUST 550 - Mock Trial**  
**Credits:** 2.00  
Participation in American Mock Trial Association intercollegiate competition. Study and preparation for trial of national case (criminal or civil, alternate years). Year long course, 2 credit hours per semester. May be repeated up to a maximum of 8 credits. Special fee. Permission required.

**JUST 551 - Mock Trial**  
**Credits:** 2.00  
Participation in American Mock Trial Association intercollegiate competition. Study and preparation for trial of national case (criminal or civil, alternate years). Year long course, 2 credit hours per semester. May be repeated up to a maximum of 8 credits. Special fee. Permission required.

**JUST 591 - Forensic Psychology**  
**Credits:** 4.00  
Forensic psychology is one of the fastest growing sub-fields in psychology and in fact one of the fastest growing disciplines in the world of social science. Still, most people in the general population as well as many individuals within the study of psychology know very little about what forensic psychology actually is. This course is designed to cover the various roles ans issues that constitute the science of forensic psychology and to help student deepen their understanding of the various roles forensic psychologists play in the real world. Needless to say, this course will not train you to be a forensic psychologist, but hopefully it will spark your interest about a very exciting topic and encourage you to study some of the issues we touch on, as you move on academically.

**JUST 595 - Special Topics**  
**Credits:** 1.00 to 4.00  
Special topics of advanced study in Justice Studies. Selected offerings reflect faculty expertise in teaching and research. May be repeated in different topic areas.

**JUST 601 - Internship**  
**Credits:** 4.00  
Placement by the justice studies coordinator in a position related to the justice system (e.g., criminal courts, corrections, civil courts, law firms, policy-making agencies, law enforcement agencies); weekly class meetings. Prereq: permission; seniors only.

**JUST 602 - Research Internship**  
**Credits:** 4.00  
Independent research working with Justice Studies faculty on their projects. Includes working with faculty at such research centers as Crimes against Children, Family Research Lab, and Justiceworks. Student/supervisor contract required. Minimum time commitment: 12 hours per week. Prereq: JUST 401, 501; or permission.

**JUST 650 - Special Studies in Comparative Justice Systems**  
**Credits:** 4.00  
This course will involve periodic offerings in comparative analysis of justice systems in an international context. May be repeated for a total of 8 credits provided both course offerings are substantially different. Must be taken with JUST 651 for those students participating in the Justice Studies Budapest Program. Prereq: POLT 507 and/or SOC 515.  
**Co-requisites:** COLA 657, INCO 588, JUST 651

**JUST 651 - Field Studies in the Hungarian Justice System**
Credits: 6.00
This course is designed to provide Justice Studies Budapest Program students with first-hand experience with the workings of the Hungarian justice system. Weekly field trips to agencies in law enforcement, the courts, and correctional facilities in the Budapest area will be arranged, and periodic lectures by Hungarian criminal justice professionals and scholars will compliment these visits. Must be taken with JUST 650 for those students participating in the Justice Studies Budapest Program. Prereq: POLT 507 and/or SOC 515. Cr/F.

Co-requisites: COLA 657, INCO 588, JUST 650

JUST 701 - Senior Seminar
Credits: 4.00
Advanced material in which the instructor has specialized knowledge through research and study. Topics may include the death penalty, terrorism, psychology of the jury, ethics and morality, immigration, therapeutic jurisprudence, and juveniles tried as adults. Prereq: JUST 401, 501.

JUST 765 - Special Topics
Credits: 4.00
New or specialized courses are presented under this listing. Staff present material not normally covered by the course offerings. Cross-listed courses. May be repeated but not duplicate content.

JUST 765W - Special Topics
Credits: 4.00
New or specialized courses are presented under this listing. Staff present material not normally covered by the course offerings. Cross-listed courses. May be repeated but not duplicate content. Writing intensive.

JUST 795 - Reading and Research
Credits: 1.00 to 4.00
An independent study that is arranged by the student and supervised by a Justice Studies faculty member. Course requirements include: assembling and reading a substantial bibliography in the field; completing several written assignments and in some cases participating in hands-on experiences such as data collection and analysis. This course is by permission only and requires a signed agreement/proposal prior to registration. May be taken for 1-4 credits and includes a minimum of 3 hours of coursework per week per credit hour. Writing intensive in some select cases.
Kinesiology

KIN 406 - Intro to Athletic Training
Credits: 1.00
Introduction to the profession of athletic training. Past, present, and future of athletic training in the U.S. and Internationally. Components of the academic and experiential preparation of athletic trainers. Overview of the professional and personal attributes to be successful in a health care profession. Kin: Athletic Training and Undeclared HHS majors only.

KIN 444A - Risk and the Human Experience
Credits: 4.00
Explores the construct of risk in two phases: 1) knowledge building, focusing on the historical development of risk and its current manifestations in contemporary society; and 2) knowledge application, which focuses on applying conceptions of risk to various case study examples. The second phase of the course employs a problem-based learning approach with four distinct modules that ask students to apply, experience, and evaluate risk in a variety of contexts. Each module includes: a) a case study description, b) an experiential exercise, and c) a collaborative debriefing of the experience and reflective application to broader societal issues.

KIN 444B - Coolest Game?:Hockey and History
Credits: 4.00
This course uses hockey as a vehicle for exploration and practice in three critical processes of scholarship: 1) analyzing and framing questions, 2) employing different methods/sources for pursuing answers to the questions, 3) presenting the results of research. Research exercises, discussions, and papers consider hockey's development in larger social and cultural contexts/practices such as ethnicity, nationalism, technology, mass media and marketing, gender relations, labor relations, and regionalism. The course also looks at hockey as a medium of craft, hero formation, community, and collective violence. Students read and analyze interdisciplinary articles and books, and also work with a range of historical sources, including those in the UNH Archives and the Charles Holt Archives of American Hockey. Writing intensive.

KIN 444C - Amped Up: Social and Psychological Perspectives on Adventure
Credits: 4.00
Interest in the topic of adventure has exploded in recent years; with enough money, almost any adventure is available to anyone. The widespread rise in popularity of adventure brings questions, however. What is the role of adventure in modern society? What is its value to individuals? Through lectures, written assignments, group projects, multimedia, and experiential learning, this course surveys psychological, sociological, and anthropological perspectives on these and students' own questions. Special fee.

KIN 500 - Introduction to Health and Physical Education
Credits: 4.00
This is a foundational course for anyone interested in the field of health and physical education (PE). Topics will include the role of health and PE in society, health and PE as a means for improving academic outcomes and the role health and PE teachers contribute to creating a culture of wellness in schools. Other topics for discussion include career considerations and future trends in the profession.

KIN 501 - First Aid: Responding to Emergencies
Credits: 1.00
Covers the nationally accredited American Heart Association HeartSaver First Aid/CPR/AED: Adult, Child, Infant curriculum, the National Association of EMTs Bleeding Control for the injured (BCon) curriculum and
the Run-Hide-Fight Active Shooter Response training. May repeat once for credit. Special fee. Cr/F.

**KIN 505 - Activity, Injuries and Disease**  
**Credits:** 4.00  
Sports and exercise are a part of American society and are used as entertainment, leisure activity as well as a means to better health. Unfortunately while we partake in these activities few individuals are aware of the risks they are exposing themselves to. In addition as more women engage in sports and exercise medical science is realizing that many conditions and injuries are gender specific. It is well known that women athletes deal with reproductive, orthopedic and nutritional issues that differ greatly from men. Also we know that individuals with varying diseases benefit greatly from exercise. This course will join, musculoskeletal anatomy, injuries, gender and special problems together to explain how an individual can enjoy activities safely. In addition this course addresses the interpretation of current medical literature and how to utilize new information.

**KIN 506 - Concepts of Athletic Training for the Professional**  
**Credits:** 4.00  
Introduces techniques for prevention, recognition, treatment, and rehabilitation of common athletic injuries. Course is a prerequisite for beginning clinical experience in athletic training rooms for the athletic training professional. Prereq: BMS 507. Open to Athletic Training and HHS undeclared majors only.  
**Co-requisites:** KIN 507

**KIN 507 - Concepts of Athletic Training Lab**  
**Credits:** 1.00  
Theory and techniques of protective taping and wrapping to prevent common athletic injuries. Techniques of transfer and transportation of injured athletes. Identification of anatomical landmarks. Observation and practice in the University athletic training rooms. Special fee.  
**Co-requisites:** KIN 506

**KIN 515 - History of Outdoor Pursuits in North America**  
**Credits:** 4.00  
Voluntary pursuits in the outdoors have defined American culture since the early 17th century. Over the past 400 years, activities in outdoor recreation an education have reflected Americans' spiritual aspirations, imperial ambitions, social concerns, and demographic changes. This course will give students the opportunity to learn how Americans' experiences in the outdoors have influenced and been influenced by major historical developments of the 17th, 18th, 19th and 20th, and early 21st centuries. This course is cross-listed with RMP 515.

**KIN 521 - Theory of Coaching Basketball**  
**Credits:** 2.00  
Individual and team offense and defense; rules of the game. Problems in team handling and conditioning. Prereq: permission. Pre- or Coreq: KIN 565.

**KIN 522 - Theory of Coaching Football**  
**Credits:** 2.00  
Systems of play; team and individual offensive and defensive fundamentals; theory and strategy of team play; coaching methods, physical conditioning; rules.

**KIN 523 - Theory of Coaching Hockey**  
**Credits:** 2.00  
Basic hockey skills. Fundamentals of individual and team offense and defense; coaching methods; rules. Prereq: student must have basic skating skills prior to taking course. Pre- or Coreq: KIN 565. Special fee.
KIN 525 - Theory of Coaching Soccer  
**Credits:** 2.00  
Fundamental and advanced skills and techniques; offensive and defensive principles of team play; tactical formations and strategy; methods of training and practicing; rules. Prereq: permission. Pre- or Coreq: KIN 565. Only open to KIN: Sport Studies majors.

KIN 527 - Scientific Foundations of Health and Fitness  
**Credits:** 4.00  
Course provides students with practical, scientific, entry-level information relative to physical conditioning, health, and wellness. Students are given theoretical information that will be followed by practical, hands-on experiences offered through laboratories and assessments of the student's personal health status and future wellness goals. No credit given if credit earned for NUTR 506. Special fee. Writing intensive.

KIN 528 - Theory of Coaching Track and Field  
**Credits:** 2.00  
Starting, sprinting, middle-distance and distance running, relay, hurdling, high and broad jumping, pole vault, shot putting, discus, hammer, and javelin. Methods of training and practicing. Prereq: permission. Pre- or Coreq: KIN 565.

KIN 533 - Basic Scuba  
**Credits:** 3.00  
Full semester in the fundamentals of scuba diving. Through a progressive series of classroom lectures and pool sessions, students gain the knowledge and skill necessary to conduct themselves with competence underwater. Emphasizes safety and problem prevention. Once the students are ready, further training takes place in an open ocean environment. NAUI Certification for successful completion of all course requirements and at least five open-water dives. Strong swimming ability required. Special fee. Lab. Credit/Fail.

KIN 540 - Top Rope Rock Climbing  
**Credits:** 4.00  
Provides students with an understanding of the equipment, techniques, and procedures necessary for the setup and management top rope rock climbing and rappelling sites, including advanced rescue skills. Students also develop basic climbing movement techniques and skills, an understanding of the pedagogical techniques used in climbing, and the requisite knowledge/skill development to conduct safe top rope experiences in multiple settings. The format of this course is a combination of demonstration/lecture and "hands-on" learning with the emphasis upon student interaction and practical skill development. Special fee. Lab.

KIN 541 - Management of Challenge Courses  
**Credits:** 4.00  
Provides students with an introduction to the basic facilitation/technical skills to manage a challenge course program. Exposure to intermediate technical skills usually required for lead facilitators. Specific topics include group process, framing, and sequencing, belay methods, participant and instructor equipment, operating procedures for low and high challenge course elements, and industry standards. Permission required for freshmen. Special fee. Lab.

KIN 542 - Sea Kayaking  
**Credits:** 2.00  
An introduction to the technical, teaching, and leadership skills required to lead inland kayaking programs and to assist with coastal canoeing programs. Emphasis on individual kayaking skills, self- and group-assisted rescues, safety and group management in a marine environment, and tactics for ocean travel and navigation. Special fee. Lab.
KIN 543 - Winter Adventure Programming  
Credits: 2.00  
An introduction to winter programming and backcountry travel, including snowshoeing and Nordic skiing, winter interpretation activities, backpacking, and winter camping. Emphasis on teaching of introductory winter programs and trips. Prereq: KIN:OE major, KIN 551 or instructor permission. Special fee. Lab.

KIN 545 - High Angle Rescue  
Credits: 2.00  
Provides students with the skills necessary to perform self and group rescues in a variety of steep terrain and high angle environments. Students also gain the basic skills necessary for the implementation od self- and partner-rescues while in a technical climbing environment. The skills learned from this class will adapt readily to climber rescue, crevasse rescue, big wall rescue, cave rescue, and vertical urban rescue. Prereq: KIN 547 or instructor permission; KIN: Outdoor Education majors only. Special fee. Lab.

KIN 546 - White Water Canoeing  
Credits: 3.00  
Introduces white water canoeing skills. Students gain a basic understanding of the equipment, techniques, and procedures to conduct canoeing activities in flat water, moving water, and white water environments. Emphasizes development of individual paddling skills, safe and conscientious paddling, and group management on moving water and white water. Prereq: Previous canoeing experience or KIN 552. Special fee. Lab.

KIN 547 - Lead Rock Climbing  
Credits: 3.00  
Advanced climbing course designed to provide students with a structured environment to transition from top rope rock climbing or sport climbing to multi-pitch traditional lead climbing. Focuses on the development of the technical skills and judgment associated with leading in a multi-pitch environment. Specific topics include use of artificial protection, belay anchor construction, multi-pitch rappelling, knots, rope/belay station management, climbing technique, and multi-pitch leading considerations. Prereq: KIN 540 or instructor permission. Special fee. Lab.

KIN 548 - Winter Expedition Programming  
Credits: 4.00  
Introduces methods and techniques of winter expedition travel including camping, snowshoeing, alpine climbing skills, technical skiing and ice climbing skills. A variety of teaching styles are used to familiarize students with each topic area, and occur in classroom, basecamp, and wilderness settings. Prereq: KIN OE majors, KIN 551. Special fee. Lab.

KIN 549 - Wilderness Navigation  
Credits: 4.00  
Introduces the methods and techniques of wilderness navigation. Topics include map interpretation, compass use, global positioning systems, and other navigation methods. A variety of teaching styles are used to familiarize the students with each topic area, and occur in both classroom and wilderness settings. Special fee. Lab.

KIN 550 - Outdoor Education Philosophy and Methods  
Credits: 4.00  
Explores the philosophical basis for experiential and outdoor education. Experiential exercises and readings focus on the role of risk, traditional versus progressive education, role of nature, ethics, models of learning and facilitation, and developing a personal philosophy of outdoor education. Includes full-day outdoor education laboratory experiences. Special fee. Writing intensive.
KIN 551 - Adventure Programming: Backcountry Based Experiences  
Credits: 4.00  
Introduces the leadership of land-based backpacking programs. Students develop an understanding of backpacking equipment, trip planning and organization, instruction of basic camping skills, implementation of safety procedures and group management on backpacking trips. Special fee. Lab.

KIN 552 - Adventure Programming: Water Based Experiences  
Credits: 3.00  
Introduces the leadership of canoe expeditions. Students develop an understanding of necessary canoeing equipment, trip planning and organization, instruction of basic canoeing strokes, implementation of safety procedures, and group management on canoe expeditions. Special fee. Lab.

KIN 560 - Sport Psychology  
Credits: 4.00  
Introduction to the discipline of sport psychology. Explores behavioral, cognitive, and social psychology in relation to elite, collegiate, and high school athletes, as well as recreational sport participants.

KIN 561 - History of American Sport and Physical Culture  
Credits: 4.00  
Major individuals, organizations, and trends that influenced the development of an American industry in sports, active recreation, and physical fitness. Readings, discussions, and research projects provide experience in the craft and utility of history.

KIN 561W - History of American Sport and Physical Culture  
Credits: 4.00  
Major individuals, organizations, and trends that influenced the development of an American industry in sports, active recreation, and physical fitness. Readings, discussions, and research projects provide experience in the craft and utility of history. Writing intensive.

KIN 562 - Sports Media Relations  
Credits: 4.00  
A survey of basic concepts of sports media relations for students considering careers in school or college sports coaching or administration, media or related fields. The focus is on developing necessary skills, techniques and recommended media relations practices as well as social implications of the media in sports public relations including print, radio, television, the World Wide Web, and social media.

KIN 565 - Principles of Coaching  
Credits: 4.00  
Overviews current theory and practice in coaching education, including sport pedagogy, physiology, psychology, administration, and risk management. Issues of performance and competition specific to child, youth, and collegiate coaching are addressed.

KIN 570 - Elementary Physical Education Practicum  
Credits: 4.00  
Provides opportunities for developing and refining elementary and special physical education movement content with pedagogical processes. Emphasizes demonstrating competence in teaching and establishing a least-restrictive learning environment. Prereq: KIN 610; KIN:PE Pedagogy majors. Writing intensive.

KIN 580 - Sport Industry  
Credits: 4.00  
Overviews the various segments that make up the sport industry, including governing bodies, the mass media, sporting goods firms, players' and coaches' associations, public regulatory agencies, and...
secondary and higher education. Readings and discussions consider the development and structure of each segment. interaction between segments, legal issues, and policy implications. While the course will focus on the United States, there is some comparison to other countries.

**KIN 585 - Emergency Medical Responder**  
**Credits:** 4.00  
Standards of practice that conform to the content of the U.S. Department of Transportation curriculum for Emergency Medical Responder. Initial evaluation and stabilization of patients at the scene of medical emergencies, CPR, and other basic medical care for illness and injury. Prepares the student for the National Registry of EMT and EMR certifications exams. Prereq: KIN: Athletic Training; KIN: Exercise Science; HHS: undeclared. Lab. Special fee.

**KIN 600 - Movement and Gymnastics Exploration**  
**Credits:** 4.00  
Combines the elements of movement education and gymnastics progressions to develop a basis for students to learn the fundamentals of movement and how to teach efficient and safe movement and gymnastics skills in a variety of settings. Includes fundamental movement skills, movement elements, fundamental gymnastics skills, and fundamental gymnastics spotting skills. Only open to Family Studies, FS: Child and Family Studies, and KIN: PhysEd Pedagogy majors.

**KIN 601 - Lifetime Sports**  
**Credits:** 3.00  
Provides teachers with the technical knowledge as well as the psychomotor and pedagogical skills necessary for instructing lifetime activities, including tennis, golf and cross country skiing, among others.

**KIN 603 - Team Sports**  
**Credits:** 3.00  
Provides teachers with the technical, physical, and pedagogical skills necessary for instructing team sports, including soccer, basketball and volleyball, among others. Prereq: KIN:PE Pedagogy majors.

**KIN 607 - Biology of Aging**  
**Credits:** 4.00  
Biological mechanisms of the aging process, with special emphasis on human aging; changes due to chronic disease.

**KIN 610 - Elementary Physical Education Pedagogy**  
**Credits:** 4.00  
Planning, implementing, and evaluating a movement-based curricular model of instruction relative to teaching preschool and elementary-aged children physical education. Systematic observation, teaching, strategies and styles, lesson design, and methods of integrating academic subject matter into elementary physical education. Prereq: KIN:PE Pedagogy majors; KIN 600, 675.

**KIN 620 - Physiology of Exercise**  
**Credits:** 4.00  
Acute and chronic effects of exercise. Muscle physiology, respiration, cardiac function, circulation, energy metabolism, and application to training. Prereq: BMS 507 and BMS 508.

**KIN 621 - Exercise Laboratory Techniques**  
**Credits:** 4.00  
Laboratory assessment of functional capacity, body composition, anaerobic power, anaerobic threshold, pulmonary function, blood pressure control, muscle strength, and temperature regulation. Field tests are used where appropriate. Extensive out-of-class time is required as each week a detailed lab report is

**KIN 630 - Sport Facility and Event Management**

**Credits:** 4.00

Students learn the principles and processes involved in effective sport facility and event management. In terms of facilities, students explore the concepts of facility design, planning, systems, risk management, marketing, and ownership. In terms of events, students explore the concepts of creation, impact(s) on host communities, marketing/sponsorship, and the potential positive and negative outcomes of sport events. Special fee.

**KIN 643 - Social Media Marketing in Sport**

**Credits:** 4.00

Students examine the use of social media as a tool in the marketing of sport and sport-related products. They are expected to effectively analyze and prescribe different ways in which social media can enhance the marketing profile of such products upon course completion. Student work should facilitate a deep understanding of social media in its constituent forms as they apply to sport and students should be able to examine such use critically.

**KIN 648 - Current Issues in Teaching Health**

**Credits:** 4.00

Designed to assist students in their understanding of issues related to health and health education.

**KIN 650A - Internship in Exercise Science**

**Credits:** 4.00 or 8.00

Individualized experiential training in an external (off-campus) exercise science setting (hospital, health & fitness club, business, physical therapy, or medical (physician assistant) offices, research laboratory) offering programs of prevention, intervention, and/or rehabilitation. The internship requires 400 contact hours and is a full-time commitment (10 weeks at 40 hours per week) usually taken the summer following the senior academic year. Activities may include graded exercise testing, exercise prescription, and exercise leadership. Must have completed all requirements for the option or have permission from the instructor prior to starting the internship. The course may be repeated once with 4 credits taken each time for a total of 8 credits. Cr/F. (IA continuous grading). Only open to KIN: Exercise Science majors.

**KIN 650B - Internship in Outdoor Education**

**Credits:** 2.00 to 8.00

Experiential learning in a setting appropriate to the student's objectives. An 2 credit internship requires a minimum of 400 hours experience. Provides an appropriate transition from undergraduate education to future employment in the field of outdoor education. Generally done after students have completed all other requirements for the option. Prereq: permission. Cr/F. May be repeated up to a maximum of 8 credits. (IA continuous grading).

**KIN 650C - Internship in Sport Studies**

**Credits:** 1.00 to 8.00

Experiential learning in a setting appropriate to the major option and to student's objectives. An 8 credit internship requires a minimum of 600 hours experience; fewer credits will require proportionally fewer hours. Sport Studies: May be on- or off-campus with an approved organization. Student must participate in securing the internship. A journal, bi-weekly reports and a final paper required. Prereq: junior/senior major; permission. May be repeated up to a maximum of 12 credits, with no more than 8 credits taken in any given semester. (IA continuous grading)

**KIN 650D - Internship in Coaching**

**Credits:** 2.00 to 4.00
Experiential learning in a setting appropriate to student's learning objectives in coaching. May be on- or off-campus with an approved organization. Student must participate in securing the assistantship. A journal, bi-weekly reports, and final report required. May be repeated up to a maximum of 4 credits. Prereq: KIN 505, 565. (IA continuous grading).

KIN 652 - Clinical Kinesiology
Credits: 4.00
The science of human movement from biomechanical, neuromuscular, and anatomical perspectives; human muscular, joint, and connective tissue anatomy; and actions of skeletal muscles are detailed. Prereq: BMS 507-508.

Co-requisites:

KIN 653A - Musculoskeletal Assessment
Credits: 2.00
Principles and methodology of joint range of motion, body mechanics, and muscle strength evaluation. Uses muscle palpation, goniometry, manual muscle testing, hand-held dynamometry to facilitate understanding of musculoskeletal anatomy and assessment. Special fee. Prereq: BMS 507-508.

Co-requisites:

KIN 653B - Biomechanical Analysis of Movement
Credits: 2.00
Principles and methodology of analyzing posture and movement. Uses muscle palpation and testing, electromyography, and cinematography to facilitate students' understanding of movement analysis. Special fee. Prereq: BMS 507-508.

Co-requisites:

KIN 655 - Middle School and Secondary Physical Education Pedagogy
Credits: 4.00
Planning, implementing, and evaluating curricular models of instruction, as well as effective teaching strategies and styles relevant to secondary (grades 6-12) physical education is studied. Content and process knowledge is applied through micro-teaching episodes with peers. Systematic observation is introduced for the purpose of reflecting on teaching behaviors. Prereq: EDUC 500. Lab.

KIN 658 - Evaluation and Care of Athletic Training Injury I
Credits: 4.00

Co-requisites: KIN 658L

KIN 658L - Evaluation and Care of Athletic Training Injury I Lab
Credits: 1.00
Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: KIN 507.

Co-requisites: KIN 658

KIN 659 - Evaluation and Care of Athletic Training Injury II
Credits: 4.00
Co-requisites: KIN 659L

**KIN 659L - Evaluation and Care of Athletic Training Injury II Lab**
**Credits:** 1.00
Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: KIN 507.
**Co-requisites:** KIN 659

**KIN 660 - Therapeutic Exercise in Athletic Training**
**Credits:** 4.00
**Co-requisites:** KIN 661

**KIN 661 - Therapeutic Exercise in Athletic Training Laboratory**
**Credits:** 1.00
Students learn and practice psychomotor techniques associated with rehabilitative and conditioning exercise.
**Co-requisites:** KIN 660

**KIN 662 - Therapeutic Modalities in Athletic Training**
**Credits:** 4.00
Rationale, use, and application of therapeutic modalities in athletic injury rehabilitation. Principles of electrophysics and biophysics. Physiological effects on body tissues, indications and contraindications, and clinical applications. Prereq: KIN 506; 507.
**Co-requisites:** KIN 663

**KIN 663 - Therapeutic Modalities in Athletic Training Laboratory**
**Credits:** 1.00
Students use and practice with the devices, machines, and techniques associated with the treatment and rehabilitation of athletic injuries.
**Co-requisites:** KIN 662

**KIN 665 - Laboratory Practicum in Athletic Training**
**Credits:** 2.00
Clinical experience in athletic training under the supervision of UNH approved clinical instructor. Special fees (sections A-E) 2 credits (per section - 5 credits total). KIN 665A Prereq: KIN 506 and KIN 507. KIN 665B Prereq: KIN 658, and KIN 662. KIN 665C Prereq: KIN 659 and KIN 660. KIN 665D Co- or Prereq: KIN 710. KIN 665E Prereq: KIN 665D.

**KIN 666 - Middle School and Secondary Physical Education Practicum**
**Credits:** 4.00
Students observe, assist and teach grades 6 through 12 within a public school. The course emphasizes lesson and unit plan design and implementation. Prereq: KIN 655, KIN: PE Pedagogy majors. Writing intensive.

**KIN 667 - Pharmacology for Athletic Training**
**Credits:** 2.00
Introduces the use of drugs as they pertain to the health care of athletes and their effect on athletic competition. Topics to be covered will include basic drug action, commonly prescribed medications, dealing with the diabetic and asthmatic athlete and performance enhancing substances. Prereq: junior or senior
KIN 668 - Ergogenic Aids in Sports
Credits: 2.00
In sports, faster, higher, stronger, longer, and better is what everyone wants. Athletes and coaches seek out sports ergogenics that will give them a training and performance advantage over their competition. This course introduces the use of sports ergogenics and their use in athletic competition. Prereq: sophomore, junior or senior Standing.

KIN 670 - General Medical Conditions in Athletics
Credits: 4.00
Athletes often sustain non-orthopedic pathologic conditions. An athletic trainer must be able to recognize, assess, and determine appropriate action or referral in an athlete suffering general or systemic illness or disease. Covers conditions affecting the major systems of the body. Prereq: KIN 620.

KIN 675 - Motor Development and Learning
Credits: 4.00
Characteristics of motor behavior across time, and the role of movement in children's and adolescents' total development. Growth processes, stage theory, as well as the relationship of maturation, experience, and the environment to motor development. Prereq: KIN 600; KIN: PE Pedagogy majors; family studies majors.

KIN 676 - Adventure Activities
Credits: 3.00
Provides teachers with the technical, physical, and teaching skills necessary to instruct adventure activities, initiatives, ropes course management, and orienteering. Prereq: KIN: PE Pedagogy majors. Special fee.

KIN #681 - Theory of Adventure Education
Credits: 4.00
An in-depth investigation of the theories that underpin the professional practice of outdoor education. Students examine program applications in corporate, therapeutic, and educational settings, study advanced facilitation techniques, and analyze pertinent outdoor education research. Prereq: KIN 550. Special fee. Writing intensive.

KIN 682 - Outdoor Leadership
Credits: 4.00
Leadership theories applied through field experiences in adventure programming. Students will understand a variety of leadership, teaching, and communication styles, decision-making models, program planning and logistics, and risk management considerations for planning and delivering adventure programming. Prereq: KIN 541, 550, 686, and two technical skills classes. KIN:OE majors or instructor permission. Special fee.

KIN 684 - Emergency Medical Care: Emergency Medical Technician (EMT)
Credits: 3.00
Based on the curriculum established by the U.S. Department of Transportation for Emergency Medical Technician, and authorized by the State of New Hampshire-Bureau of Emergency Medical Services (EMS). Topics covered include trauma; medical, environmental and psychiatric emergencies; childbirth; hazardous materials; and infection control procedures. Students participate in clinical observations in one of the region's hospital emergency departments. Students have the option to take the state of NH-EMS Practical Examination and the National Registry Written Examination for EMT. Passage of both these examinations leads to national certification as an EMT. Pre- or Coreq: ANSC 511/512, ZOOL 401, BMS 507/508.
Co-requisites: KIN 685
KIN 685 - Emergency Medical Care: EMT Lab  
Credits: 2.00  
Basic emergency health care, including trauma patients, medical and environmental emergencies, and childbirth. Includes clinical experience with a local hospital and ambulance service. Prepares the student for the National Registry of EMT's Examination. Prereq: department approval. Pre- or Coreq: ANSC 511/512, ZOOL 401, BMS 507/508. Special fee.  
Co-requisites: KIN 684

KIN 686 - Wilderness Emergency Medical Care  
Credits: 4.00  
Standards of practice for professionals providing emergency medical care in remote areas. Consideration of prolonged transport times, severe environments, and the use of portable and improvised equipment. Topics include wilderness trauma and illness, search and rescue operations, and environmental emergencies. KIN: Outdoor Education majors. Special fee.

KIN 687 - Leadership Practicum  
Credits: 4.00  
Supervised semester-long experience working with an organization external to the university setting to plan, prepare, and implement outdoor education programs and activities. Class sessions involve advanced leadership topics (e.g., current issues in risk management, conflict resolution, social justice issues, adaptive programming). Prereq: KIN OE major. Lab. Special fee.

KIN 690 - Study Abroad in Kinesiology  
Credits: 16.00  
A) Foreign study in, or related to, athletic training. Interested students should contact Program Director, Kinesiology Athletic Training Option. Prereq: KIN: Athletic Training majors only. special fee. Cr/F. Permission.  
B) Foreign study in, or related to, exercise science. Interested students should contact Program Director, Kinesiology Exercise Science Option. Prereq: KIN: Exercise Science majors only. special fee. Cr/F. Permission.  
C) Foreign study in, or related to, outdoor education. Interested students should contact Program Director, Kinesiology Outdoor Education Option. Prereq: KIN: Outdoor Education majors only. special fee. Cr/F. Permission.  
D) Foreign study in, or related to, physical education. Interested students should contact Program Director, Kinesiology Physical Education Option. Prereq: KIN: Physical Education majors only. special fee. Cr/F. Permission.  
E) Foreign study in, or related to, sports studies. Interested students should contact Program Director, Kinesiology Sports Studies Option. Prereq: KIN: Sports Studies majors only. special fee. Cr/F. Permission.  
Co-requisites: INCO 588

KIN 693 - Teaching Assistantship  
Credits: 2.00  
A) Physical Education Pedagogy; B) Exercise Leader; C) Outdoor Education; D) Science Labs; E) Cardiac Rehabilitation; F) Coaching. Students serve as teaching teaching assistants in assigned class activities. Assignments to be made by the class instructor may include teaching assistants' and administrative duties. May take two different sections. May be repeated up to a maximum of 4 credits. Prereq: junior standing; departmental approval. Cr/F.

KIN 694 - Supervised Teaching in Health and Physical Education  
Credits: 4.00 to 6.00  
This student teaching course is the capstone/culminating experience for students desiring teaching certifications in Health Education and Physical Education. All other required KIN courses need to be completed before student teaching. This course is for variable credit - 4 credits for teaching PE only, 6 credits for Health and PE. Students must also register for EDUC 694D for 4 credits. This course is Cr/F.  
Prereq: KIN 666, KIN 648, and KIN 712.
Co-requisites: EDUC 694D

KIN 696 - Independent Study
Credits: 2.00 to 4.00
An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: junior or senior; departmental approval. May be repeated to a maximum of 8 credits. Special fee.

KIN 696W - Independent Study
Credits: 2.00 to 4.00
An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student¿s qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report) This proposal must be approved by option faculty and the department chair prior to the student¿s registration for KIN 696 WI. All KIN 696 WI projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program, available at: http://www.unh.edu/writing/ Prereq: junior or senior; departmental approval. May be repeated to a maximum of 8 credits. Writing intensive.

KIN 699H - Honors Project
Credits: 4.00
Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

KIN 702 - Health Content and Youth Risk Behavior
Credits: 4.00
This course explores the fundamental issues related to health and wellness. Learning outcomes include understanding the seven diemensions of wellness, the overarching foundations of health behaviors, the mind-body connection, how to access social sciences literature, and the eight national health education standards as outlined in the New Hampshire curriculum guidelines. Topics to be considered include adolescence, perception and attitude, self-concept, self-identity, gender, culture, family systems, love and relationships, mental illness and addiction.

KIN 704 - Electrocardiography
Credits: 4.00
Designed to provide exposure to basic interpretation and identification of electrocardiograms (ECGs). Includes detailed heart anatomy, coronary circulation, cardiac conduction system, electrocardiogram development, and all aspects pertaining to normal and abnormal ECGs. Prereq: KIN 621, KIN Exercise Science majors.

KIN 705 - Topics in Applied Physiology
Credits: 4.00
Advanced exercise physiology course dealing with topics both current and relevant to exercise science majors. Includes genetics, environmental influences, immune system, detraining and over-training, epidemiology, ergogenic acids, and the influence of age and gender. Prereq: KIN 620, 621. KIN Exercise Science majors. Special fee.

KIN 706 - Neurology
Credits: 4.00
Development, morphology, internal configuration, physiology, histology, function, and pathology of the human nervous system. Prereq: BMS 507-508 or equivalent.

**Co-requisites:** KIN 707

**KIN 707 - Neurology Lab**

**Credits:** 2.00

Basic histology, neuroanatomy and neurophysiology of the human nervous system. Use of brain specimens, videos and pathology case studies to elucidate cell structure, sensory and motor systems, and spinal cord, brainstem and cortical organization and anatomy. Prereq: BMS 507-508 or COMM 521 or equivalent. Special fee. Cr/F.

**Co-requisites:** KIN 706

**KIN 710 - Organization and Administration of Athletic Training Programs**

**Credits:** 4.00

Principles of organization and administration of athletic training programs; management of personnel; legal aspects; relation of athletic trainer to athletic programs and sports medicine team. Writing intensive.

**KIN 712 - Health Education Practicum**

**Credits:** 3.00

The purpose of this practicum is to provide the prospective educator with an opportunity to observe, develop and practice teaching skills in the health classroom. Students are expected to accumulate 45 hours of observing, assisting and teaching experience in the schools for three credits. In addition, attendance at a bi-weekly seminar will integrate the field experience with general physical education (GPE), nutrition and health education concepts through class discussion, exercises, readings, and written assignments. Prereq: KIN 648, KIN 702. Pre- or Coreq: NUTR 400.

**KIN 715 - Seminar in Athletic Training**

**Credits:** 4.00

Career issues and special topics in athletic training. Students are required to submit and present a term project on assigned topic. Prereq: KIN 665C.

**KIN 718 - Career Preparation in Athletic Training**

**Credits:** 4.00

The last Athletic Training required course, and designated "Capstone Experience", this course is designed to provide the students with means to integrate and augment concepts, skills, and knowledge gained in all previous major course requirements. Students write an evidenced-based-practice paper understanding and appreciating the role of evidence-based medicine in athletic training. Comprehensive practical exam. Prereq: KIN 665, sections A-D. Athletic Training majors only.

**KIN 720 - Science and Practice of Strength Training**

**Credits:** 4.00

Designed to provide students exposure to the knowledge and practical experience necessary for establishing strength development programs in a variety of populations, including healthy, athletic, and higher risk individuals. Program design, correct lifting techniques, physiological adaptations, and organization and administration of programs are highlighted. Includes fundamentals regarding the selection of programs and equipment, spotting techniques, as well as ways to assess strength and power in humans without expensive equipment. Prereq: KIN 620.

**Co-requisites:**

**KIN 722 - Applied Biomechanics**

**Credits:** 4.00

This course provides students with a background in the fundamental biomechanical principles that describe
and govern human movement. Topics of the course will include friction, linear and angular motion, tissue mechanical properties, conservation of energy, work and power, fluid mechanics, stability and center of gravity, walking and running gait analysis. These topics are taught by quantitatively analyzing human movements through the use of modern biomechanical analyses including dynamometry, electromyography, accelerometry, and optical motion analysis. Prereq: BMS 507, BMS 508, KIN 652 or permission. KIN: Athletic Training major or permission.

**KIN 724 - Exercise Metabolism: Acute and Chronic Adaptations**  
**Credits:** 4.00  
Overview of the metabolic processes that occur during exercise and metabolic changes that occur as a result of exercise training. Topics include glycogenolysis and glycolysis in muscle, cellular oxidation of pyruvate, lipid metabolism, metabolism of proteins and amino acids, neural and endocrine control of metabolism, and fatigue during muscular exercise. Prereq: KIN 621; CHEM 404; KIN: Exercise Science majors. Special fee.

**KIN 730 - Research Diving Techniques**  
**Credits:** 4.00  
Takes previously certified divers with the need to assist, or conduct research underwater, and trains them in the methods and specific techniques of scientific diving programs. Progressively builds upon the basic diving skills until the student is knowledgeable and competent. Culminates with a small research project formulated and implemented by the students. Prereq: SCUBA certification, department approval. Special fee. (Also offered as ZOOL 730.

**KIN 731 - Inclusive Teaching Through Sport**  
**Credits:** 4.00  
This hybrid course examines the practical application of inclusion through Paralympic and adapted sports including wheelchair basketball, sitting volleyball, goalball, boccia, table-top games and "traditional" sports. In-class sessions will be held the first three weeks while an on-line/independent portion will be conducted the last two weeks of the course. A variety of sporting activities will be introduced that provide educators with the needed tools to develop and implement physical and recreational programs for all.

**KIN 735 - Advanced Scuba**  
**Credits:** 4.00  
Classroom, pool, and open-water "hands-on" application in advanced diving techniques. The student's diving ability progresses to become safer and highly educated in a variety of diving disciplines. Topics covered are navigation, search and recovery, low visibility/night diving, surface supplied diving, boat diving, accident management hyperbaric medicine, and physiology and scientific research methods for divers. Special fee. Lab.

**KIN 736 - Fitness and Graded Exercise Testing**  
**Credits:** 4.00  
Designed to provide students exposure to the knowledge and practical experience necessary for establishing exercise programs in apparently healthy populations. Topics include fitness testing, test interpretation, and exercise prescription. Prereq: KIN 704, KIN Exercise Science majors. Special fee.

**KIN 737 - Exercise Prescription and Leadership in Healthy and Special Populations**  
**Credits:** 4.00  
Provides exposure to the knowledge and practical experience necessary for establishing exercise and health promotion programs in a variety of populations. Includes fundamentals regarding personal training and program selection, implementation and equipment, legal issues, and budget establishment. Strength training programs and special populations are highlighted. Prereq: CHEM 404. KIN 621; KIN: Exercise Science majors.
KIN 740 - Athletic Administration
Credits: 4.00
Introduces basic management components and processes used in the successful administration of school and college athletic programs. Topics include planning, organizing, and managing sports programs, personnel, and policies; game scheduling; finances and facilities; equipment and event management; student support services; and key legal issues.

KIN 741 - Social Issues in Contemporary Sports
Credits: 4.00
Investigation of interrelationships among sport, culture, and society in an attempt to understand the role and function of sport in contemporary society. Overview of selected socio-cultural factors that influence and result from participation in sports. Prereq: SOC 400 or permission.

KIN 742 - PE Practicum for Students with Disabilities
Credits: 4.00
This experience is part of the required coursework for the Adapted Physical Education (PE/APE) certificate through the Graduate School. As a bi-weekly seminar intergrates the field experience with general physical education (GPE) and adapted physical education (PE/APE) concepts through class discussion, exercises, readings, and written assignments. The seminar format provides an opportunity for refinement and continued development of teacher skills and attributes for working with students with disabilities. Students learn to instruct effectively, to participate in the Individual Education Plan (IEP) process, and to manage their time.

KIN 743 - Sport Marketing
Credits: 4.00
Survey of concepts and processes used in the successful marketing of sport programs and events. Special emphasis on the unique or unusual aspects of sport products, markets, and consumers. Prereq: MKTG 550 or permission.

KIN 761 - Senior Seminar Sport Studies
Credits: 4.00
Discussions of sport studies topics, such as gambling, aggression, media, gender, race, class. Students consider different disciplinary approaches to these topics and develop projects to advance knowledge related to their interests. Prereq: KIN: Sport Studies majors; students must accumulate an aggregate total of 150 hours of work (paid or unpaid) in four approved sport organizations before they are allowed to register for KIN 761. Writing intensive.

KIN 765 - Advanced Topics in Coaching
Credits: 4.00
This course goes beyond the basic principles of coaching and addresses advanced topics in coaching (talent identification, talent development) from both the science and the art of coaching technique and strategies. This course is structured as an upper division course in Sports Studies. Content includes topics related to the development of the field of coaching. The class makes extensive use of case studies and analysis of practical coaching situations for the betterment of coach development. This course combines lecture, small group discussion and practical application of material. Prereq: KIN 565.

KIN 780 - Psychological Factors in Sport
Credits: 4.00
Factors of outstanding athletic achievement; psychological variables in competition; the actions and interactions of sport, spectator, and athlete. Special attention directed to strategies for coaches, teachers, and athletic trainers to utilize sport psychology in their professional practice. Prereq: PSYC 401 or KIN 671.
KIN 781 - Inclusion in Physical Education  
Credits: 4.00  
Overview of special physical education. Addresses modifying instruction, expectations, and learning environment to accommodate physical and motor behaviors of students with disabilities. Lab. Writing intensive.

KIN 782 - Therapeutic Applications of Adventure Programming  
Credits: 4.00  

KIN 786 - Organization and Administration of Outdoor Education Programs  
Credits: 4.00  
Study of administration of outdoor education programs using a variety of organizational models. Students use simulated exercises and work with outdoor agencies on special projects to learn the key factors necessary to manage a program. Kin Outdoor Education majors. Special fee. Writing intensive.

KIN 787 - Theory of Adventure Education  
Credits: 4.00  
Provides an in-depth investigation of the theories that underpin professional practice and research in adventure education. Students examine program applications in different settings, analyze pertinent outdoor education and social science research, and independently complete a research or applied project. KIN 550 or permission of the instructor. Special fee. Writing intensive.

KIN 794 - Cardiopulmonary Pathologies  
Credits: 4.00  

KIN 795 - Practicum in Cardiac Rehabilitation  
Credits: 2.00  
Provides students with practical and theoretical experience in all aspects involving cardiac rehabilitation programs. Prereq: KIN 704, 794. Kin: Exercise Science majors only.

KIN 798 - Special Topics  
Credits: 1.00 to 4.00  
New or specialized courses not normally covered in regular course offerings. May be repeated up to 8 credits. Prereq: departmental approval. Special fee on some sections.
**Languages, Literatures & Cultures**

**LLC #444C - World of Salvador Dali**

**Credits:** 4.00  
Students investigate essential components of modern culture and Western tradition through the mind, art and writing of Salvador Dali. This interdisciplinary course poses fundamental, universal questions about human existence including death, rebirth, eternity and God, sexuality and love as well as the irrational dark side of our psyche. Certain cultural movements such as the Surrealist movement, Freudian psychoanalysis, the Gothic tradition and modern scientific discoveries and concepts are also explored. Special fee. Writing intensive.

**LLC 535 - Professional Culture in the European Union - Case Study/Germany**

**Credits:** 4.00  
Conducted in English. No previous German required. Conducting business with countries of the European Union, with a particular emphasis on Germany. The course focuses on the central role played by professional culture and business practices in the global marketplace.

**LLC 540 - Film History**

**Credits:** 4.00  
Examines the historical development of film from a global perspective and the emergence of national cinemas as well as the cross-cultural influences that have produced the modern transnational film industry. Special fee.

**LLC 551 - Comparative Literature: Masterpieces of World Literature I**

**Credits:** 4.00  
Comparative studies of major authors representative of important periods of literary achievement. Common themes and development of epic and lyric traditions in early Western and non-Western literatures. Introduction to various concepts of literature and genre. Topics and approaches may vary from semester to semester. Special fee. Writing intensive.

**LLC 552 - Comparative Literature: Masterpieces of World Literature II**

**Credits:** 4.00  
Comparative studies of major authors representative of important periods of literary achievement. Renaissance to modern. Studies the age of empires through the colonial and post colonial periods. Introduction to various concepts of literature and genre. Topics and approaches may vary from semester to semester. Special fee. Writing intensive.

**LLC 595 - Language Practicum**

**Credits:** 2.00 to 4.00  
Practical use of language skills outside the classroom through special projects. Prereq: LLC 504 or its equivalent. May be repeated up to a maximum of 4 credits. Cr/F.

**LLC #642 - Theory and Practice of Translation**

**Credits:** 4.00  
This course is designed both as an introduction to various theories and philosophies of translation and as an intensive workshop on different types of translation (literary, technical, professional, business, and health related, etc.). Translation is both a simple matter of transferring content and an intensely complex process of adapting linguistic, tonal, and cultural components of communication. The course works extensively on the craft of translation while developing detailed analyses of the theoretical and
philosophical implications of choices made. Students complete various translation exercises and develop a significant final project. It is open to students at different levels of language ability but requires at least an intermediate competency. Students work at their own level. Taught in English. Prereq: Intermediate language or permission. Special fee.

**LLC 695 - International Internship**

**Credits:** 12.00

Field experience in governmental or nongovernmental organization abroad. Students are responsible for identifying and making arrangements with the sponsoring internship organization. All such arrangements are subject to the approval of the Department of Languages, Literatures, and Cultures. Open to juniors and seniors with at least a 3.2 G.P.A. Permission from the Program Coordinator and the Department chair is required. Approval of the Center for International Education is also required. Only open to European Cultural Studies majors. The internship is for 12 credits (non-variable). Cr/F.

**LLC 791 - Methods of Foreign Language Teaching**

**Credits:** 4.00

Objectives, methods and techniques in teaching foreign languages from elementary grades through college. Discussion, demonstration, preparation of instructional materials, microteaching of the language skills, including developments in computer-aided instruction. Special fee.

**LLC XXX - Special message place holder**

**Credits:**
LATN 401 - Elementary Latin I  
**Credits:** 4.00  
Elements of grammar, reading of simple prose. (No credit for students who have had two or more years of Latin in secondary school; however, any such students whose studies of Latin have been interrupted for a significant period of time should consult the section supervisor about possibly receiving credit.) Special fee.

LATN 402 - Elementary Latin II  
**Credits:** 4.00  
Elements of grammar, reading of simple prose. (No credit for students who have had two or more years of Latin in secondary school; however, any such students whose studies of Latin have been interrupted for a significant period of time should consult the section supervisor about possibly receiving credit.) Special fee.

LATN 403 - Review of Latin  
**Credits:** 4.00  
Intensive review of Latin grammar and vocabulary. Preparation for LATN 503. Designed primarily for those whose study of Latin has been interrupted for a year or more and for those who have had only two years of high school Latin. Special fee.

LATN 503 - Intermediate Latin I  
**Credits:** 4.00  
Review. Readings from Cicero, Caesar, Sallust, Livy, Catullus, Horace, Ovid, Plautus, Terence, and Seneca. Prereq: LATN 402 or equivalent. Special fee.

LATN 504 - Intermediate Latin II  
**Credits:** 4.00  
Review. Readings from Cicero, Caesar, Sallust, Livy, Catullus, Horace, Ovid, Plautus, Terence, and Seneca. Prereq: LATN 402 or equivalent. Special fee.

LATN 595 - Directed Reading  
**Credits:** 2.00 or 4.00  
Independent study of a classical or medieval Latin author. May be repeated to a maximum of 8 credits. Prereq: LATN 503, 504, or equivalent. Special fee. Cr/F.

LATN 596 - Directed Reading  
**Credits:** 2.00 or 4.00  
Independent study of a classical or medieval Latin author. May be repeated to a maximum of 8 credits. Prereq: LATN 503, 504, or equivalent. Special fee. Cr/F.

LATN 605 - Readings in Latin Literature  
**Credits:** 4.00  
Reading and analysis of major works of Latin literature. Focus on improving translation skills and comprehension of Latin grammar and Latin language. Introduction to the critical analysis of Latin literature in the context of Roman civilization and culture. Prereq: Latin 504 or equivalent with a grade of C or better. Satisfies foreign language requirement. Special fee.

LATN 606 - Readings in Latin Literature  
**Credits:** 4.00  
Reading and analysis of major works of Latin literature. Focus on improving translation skills and
comprehension of Latin grammar and Latin language. Introduction to the critical analysis of Latin literature in the context of Roman civilization and culture. Prereq: Latin 504 or equivalent with a grade of C or better. Satisfies foreign language requirement. Special fee.

**LATN 631 - Latin Prose Composition**
**Credits:** 4.00
Grammar review; study of Latin prose style; English to Latin translation. Prereq: permission. Special fee.

**LATN 753 - Advanced Studies in the Literature of the Golden Age**
**Credits:** 4.00
A) Lucretius; B) Catullus; C) Caesar; D) Sallust; E) Vergil; F) Horace; G) Tibullus; H) Propertius; I) Ovid; J) Livy. Major Roman authors from the dictatorship of Sulla to the death of Augustus. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

**LATN 754 - Advanced Studies in the Literature of the Golden Age**
**Credits:** 4.00
A) Lucretius; B) Catullus; C) Caesar; D) Sallust; E) Vergil; F) Horace; G) Tibullus; H) Propertius; I) Ovid; J) Livy. Major Roman authors from the dictatorship of Sulla to the death of Augustus. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

**LATN 755 - Advanced Studies in the Literature of the Silver Age**
**Credits:** 4.00
A) Seneca the Younger; B) Persius; C) Petronius; D) Lucan; E) Statius; F) Quintilian; G) Martial; H) Juvenal; I) Tacitus; J) Pliny the Younger. Major Roman authors from the reign of Nero to the death of Trajan. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

**LATN 756 - Advanced Studies in the Literature of the Silver Age**
**Credits:** 4.00
A) Seneca the Younger; B) Persius; C) Petronius; D) Lucan; E) Statius; F) Quintilian; G) Martial; H) Juvenal; I) Tacitus; J) Pliny the Younger. Major Roman authors from the reign of Nero to the death of Trajan. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

**LATN 795 - Special Studies**
**Credits:** 4.00
A) Minor Authors of the Republic; B) Plautus; C) Terence; D) Minor Authors of the Empire; E) Suetonius; F) Latin Church Fathers; G) Medieval Latin; H) Advanced Latin Composition; I) Introduction to Classical Scholarship; J) Latin Epigraphy; K) Italic Dialects; L) Comparative Grammar of Greek and Latin; M) Roman Law. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

**LATN 796 - Special Studies**
**Credits:** 4.00
A) Minor Authors of the Republic; B) Plautus; C) Terence; D) Minor Authors of the Empire; E) Suetonius; F) Latin Church Fathers; G) Medieval Latin; H) Advanced Latin Composition; I) Introduction to Classical Scholarship; J) Latin Epigraphy; K) Italic Dialects; L) Comparative Grammar of Greek and Latin; M) Roman Law. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.
**Life Sciences & Agriculture**

**LSA 000 - Placeholder Course**

**Credits:**

**LSA 400 - Freshmen Seminar**
**Credits:** 1.00

Assistance to the undeclared student in identifying a major within the College of Life Sciences and Agriculture, including the biological, natural, and social sciences. The goal of this seminar is to support students in developing a sound academic program and assist them in making a successful transition from high school to college. The seminar also covers strategies for being a successful college student. Guest speakers from departments and programs lead discussions on career opportunities. Required for all first-semester LSA undeclared students. Cr/F.

**LSA 401 - Scientific Research Exploration**
**Credits:** 2.00

This course introduces incoming freshmen to the scientific research process via a hands-on approach, which includes case studies, group work, and a two-week research immersion experience under the guidance of the College of Life Sciences and Agriculture (COLSA) faculty. Course readings, discussions, and active participation in local research will facilitate the student's exploration of experimental design, hypothesis testing, data collection and analysis, interpretation of results, and effective communication of research findings. In the context of a group research project, students begin thinking like scientists, as well as strengthening their math, writing, and oral communication skills. Prereq: permission. Open to incoming freshmen only.

**LSA 699 - Special Topics**
**Credits:** 1.00 to 2.00

Seminar on new or specialized topics that involve two or more disciplines in the College of Life Sciences and Agriculture and are not covered in regular course offerings. May be repeated to a maximum of 4 credits.

**LSA 798 - COLSA Capstone Experience**

**Credits:**

Course for COLSA majors completing their capstone requirement with a non-course experience. Must receive advisor's permission and sign up in department office. Cr/F.
**LING 405 - Introduction to Linguistics**  
**Credits:** 4.00  
Overview of the study of language: universal properties of human language, Chomsky's innateness hypothesis, language acquisition in children, dialects and language variation, language change. Includes an introduction to modern grammar (phonology, syntax, and semantics) and to scientific linguistic methodology. (Also offered as ENGL 405.)

**LING 405H - Honors/Introduction to Linguistics**  
**Credits:** 4.00  
Overview of the study of language: universal properties of human language, Chomsky's innateness hypothesis, language acquisition in children, dialects and language variation, language change. Includes an introduction to modern grammar (phonology, syntax, and semantics) and to scientific linguistic methodology. (Also offered as ENGL 405.)

**LING 605 - Intermediate Linguistic Analysis**  
**Credits:** 4.00  
Analysis and problem solving in phonology, morphology, and syntax using data from many languages. Emphasis is both practical (learning how to describe grammar and sound system of a language) and theoretical (understanding languages' behavior). Prereq: LING/ENGL 405, or permission. (Also offered as ENGL 605.)

**LING 606 - Languages of the World**  
**Credits:** 4.00  
A survey of the languages of the world from genetic, areal, and typological perspectives. Students learn about the geographic and demographic distribution of language families and language isolates, as well as about structural characteristics of languages, language families and language areas. Additional topics include language endangerment and the question of linguistic universals. Students work collaboratively on a project investigating a particular language family, giving in class presentations and writing up a final project report. Some prior knowledge of phonetics, phonology, morphology, and syntax is necessary. Prereq: ENGL/LING 605 or ENGL/LING 405 and permission of the instructor.

**LING 620 - Applied Experience in Linguistics**  
**Credits:** 1.00 to 4.00  
Students who have an opportunity for appropriate career-oriented work experience may arrange with a faculty sponsor to add an academic component. The work must be related to the linguistics major, and nonacademic employers must normally be an established organization approved by Career Services. Research and writing required in addition to the job experience. Registration requires permission of employer, faculty sponsor, and major adviser. May be repeated with permission to a maximum of 8 credits. Up to 4 credits may count toward the linguistics major requirements, with permission of the program coordinator. Prereq: LING 505; permission. Cr/F.

**LING 695 - Senior Honors**  
**Credits:** 4.00  
Open to senior LING majors who, in the opinion of the department, have demonstrated the capacity to do superior work. Prereq: permission.

**LING 719 - Sociolinguistics Survey**
**LING 779 - Linguistic Field Methods**

**Credits:** 4.00

Study of a non-Indo-European language by eliciting examples from an informant, rather than written descriptions of the language. Students learn how to work out the grammar of a language from raw data. Prereq: ENGL/LING 405. (Also offered as ENGL 779.) (Not offered every semester.) Writing intensive.

**LING 790 - Special Topics in Linguistics Theory**

**Credits:** 4.00

Advanced course on a topic chosen by the instructor. Inquire at the English department office for a full course description each time the course is offered. Topics such as word formation, dialectology, linguistic theory, and language acquisition, history of linguistics, language and culture, cross-disciplinary studies relating to linguistics. Barring duplication of subject, may be repeated for credit. (Also offered as ENGL 790.) Writing intensive.

**LING 793 - Phonetics and Phonology**

**Credits:** 4.00

Sound system of English and of other languages viewed from the standpoint of modern linguistic theory, including the following topics: the acoustic and articulatory properties of speech sounds, the phonemic repertoires of particular languages, phonological derivations, and prosodic phenomena such as stress and intonation. Prereq: a basic linguistics course or permission. (Also offered as ENGL 793.)

**LING 794 - Syntax and Semantic Theory**

**Credits:** 4.00

Relationship of grammar and meaning viewed from the standpoint of modern linguistic theory. Emphasis on the syntax and semantics of English, with special attention to the construction of arguments for or against particular analyses. Prereq: a basic linguistics course or permission. (Also offered as ENGL 794.) Writing intensive.

**LING 795 - Independent Study**

**Credits:** 1.00 to 4.00

A) Synchronic Linguistics, B) Diachronic Linguistics, C) Linguistic Theory. For students showing a special aptitude for linguistics who desire to pursue a line of inquiry for which no appropriate course is offered. All requests must be forwarded by the faculty sponsor to the director of the Inter-departmental Linguistics Committee.

**LING 796 - Independent Study**

**Credits:** 1.00 to 4.00

A) Synchronic Linguistics, B) Diachronic Linguistics, C) Linguistic Theory. For students showing a special aptitude for linguistics who desire to pursue a line of inquiry for which no appropriate course is offered. All requests must be forwarded by the faculty sponsor to the director of the Inter-departmental Linguistics Committee.
Management

MGT 444 - Meaning of Entrepreneurship
Credits: 4.00
This course explores the idea and ideals of entrepreneurship, the creating of value through individual initiative, creativity, and innovation. The idea of entrepreneurship is of significant relevance in the highly dynamic and competitive 21st century global economy. It is an idea that is important for students to understand and to critically consider and apply. The course encourages the development of multiple views of entrepreneurship, and uses a broad, not just business, approach to the study as it engages students in the subject matter. Open to freshmen from all majors. (Also offered as DS 444 in alternating terms). Writing intensive.

MGT 580 - Introduction to Organizational Behavior
Credits: 4.00
Application of behavioral science concepts to work settings in profit and nonprofit organizations. Individual settings behavior, interpersonal relations, work groups, relations among groups studied in the context of organizational goals and structure. Experiential focus. For non-business administration majors and minors. No credit for students who have had ADMN 575.

MGT 598 - Topics
Credits: 4.00
Special topics; may be repeated.

MGT 614 - Organizational Leadership and Structure
Credits: 4.00
How structural characteristics in an organization (e.g., the design of roles, reporting relationships, coordinating mechanisms, communication systems, and processes, etc.) affect whether leader actions and choices enable or prevent high performance. An open systems framework is used to assess how reactions to change occurring inside and outside an organization determine whether individuals, groups, and organizations position themselves to adapt, grow and develop, or decline. Examination of individual roles in organizations. Prereq: ADMN ADMN 575.

MGT 647 - Business Law I
Credits: 4.00
Law of contracts, agency, sales, negotiable instruments, real and personal property, partnership and corporations, with application of the Uniform Commercial Code. Prereq: Junior standing, ECON 401, ECON 402, and ADMN 420.

MGT 701 - Business, Government, and Society
Credits: 4.00
Managerial problem solving and decision making relative to economic, ethical, legal, political, social, and technological aspects of an organization's environment. Case discussion, stakeholder analysis, managerial values and ethics, and social issues management are important course components. Open to WSBE majors only. Prereq: ADMN 575; at least two of ADMN 570 or ADMN 580 and ADMN 585.

MGT 713 - Leadership Assessment and Development
Credits: 4.00
Activities and exercises to help students determine their ideal job upon graduation as well as their career goals for the next three to five years. Students learn a matrix of key leadership behaviors and skills that
distinguish high-performing managers and executives. Each student's behavior is assessed using this model so that students can determine the leadership behaviors and skills they most need to develop to meet their early career goals. Faculty assist students in developing a personal leadership development plan to focus professional energy, efforts, and achievements over the next three to five years. Prereq: ADMN 575.

**MGT 732 - Exploration in Entrepreneurial Management**
**Credits:** 4.00
Examines the management of change and innovation, especially the role of entrepreneur in managing new ventures. Uses case analysis, guest speakers, and business plan preparation to study the characteristic behavioral, organizational, financial, and marketing problems of entrepreneurs and new enterprises. Prereq: ADMN 570, ADMN 575, and ADMN 585. Writing intensive.

**MGT 742 - Internship in Entrepreneurial and Management Practice**
**Credits:** 4.00
Involves working for leading companies and dynamic entrepreneurs, as well as classroom instruction. The priority experiential, real-world, and real-time learning in the high growth environment of entrepreneurial ventures. Focuses on several topic areas, including venture capital. Prereq: senior standing; permission. (Also listed as DS 742.

**MGT 755 - International Management**
**Credits:** 4.00
Develops an understanding of international ventures and partnerships from the viewpoint of management, leadership, human resource management, and organizational structure and strategy. Emphasizes the impact of culture on business practices and on interpersonal skills and global perspectives needed for personal effectiveness in international and multicultural environments. Prereq: ADMN 575. Writing intensive.

**MGT 798 - Topics**
**Credits:** 4.00
Special topics; may be repeated. Prereq: permission.

**MGT 798W - Topics**
**Credits:** 4.00
Special topics; may be repeated. Prereq: permission. Writing intensive.
MEFB 401 - Marine Estuarine and Freshwater Biology: Freshmen Seminar  
**Credits:** 1.00  
The purpose of this course is threefold: First to acquaint freshmen MEFB majors to the wide range of topics that are included in the broad area of marine, estuarine and freshwater biology. Second, to introduce new UNH students to many of the MEFB faculty at UNH and give them the opportunity to become aware of the types of research that is being conducted at UNH. Finally, to begin teaching freshmen how to read the primary literature, write concise summaries of papers they read, give oral presentations to their peers, and understand how scientific knowledge is acquired and disseminated. Students attend a series of seminars presented by a wide range of MEFB faculty. The topics presented vary from year to year depending on the faculty that agree to participate. In addition students are required to read the current literature, write short papers and give presentations to the class. Cr/F.

MEFB 403 - Investigative Marine Biology Laboratory  
**Credits:** 2.00 to 4.00  
This course in an intensive marine-based introduction to the scientific method and experimental biology taught at a Shoals Marine Laboratory. The course takes advantage of the unique learning opportunities afforded by the pristine marine environment (especially the intertidal) around Appledore Island. The overall course philosophy is to allow students to learn the scientific method by doing it themselves under the guidance of veteran marine biologists. The course is structured around two class projects that are designed to expose students to concepts and techniques in marine ecophysiology and biomechanics. Permission required. Special fee.

MEFB 410 - Marine Immersion  
**Credits:** 2.00  
An intensive 2-credit course for incoming freshmen, surveying a range of marine-related fields (with an emphasis on biology and ecology), research approaches, and organisms. The course is based at the Shoals Marine Laboratory on Appledore Island, where students, and some faculty, will be in residence. "Marine Immersion" introduces students to the breadth, excitement, and challenges of marine sciences through lectures, demonstrations, and field experiences offered by a cohort of UNH faculty, and through short research projects carried out on the island. It also introduces them to resources and opportunities available at UNH, provides an opportunity to get to know some of their professors, and lets them begin building a network among their peers even before they arrive in Durham. Special fee.

MEFB 500 - Coastal Habitat Field Research Methods  
**Credits:** 2.00  
A one-week introduction to research and assessment methods of terrestrial and aquatic plant communities of the Isles of Shoals in the context of island biogeography. GIS-based mapping of plant communities, rare plant species, and the management of invasive plant species. Through both field and classroom exercises, we use a varied of sampling protocols to document the existing plant communities, investigate the floristic changes the Isles experienced from past and to present, and use data we collect in the field to predict trends into the future to help preserve their unique flora. Prereq: BIOL 411 or 412. Permission required. Special fee.

MEFB 504 - Field Wildlife Forensics  
**Credits:** 2.00  
Introduction to forensic science and the utilization of marine biology within the justice system. Comprehensive instruction concerning the recognition, documentation, collection, and preservation of
physical evidence. Students develop practical incident response, scene management, and forensic teamwork skills. Prereq: BIOL 411 or 412. Special fee. Permission required.

**MEFB 510 - Field Ornithology**  
**Credits:** 4.00  
Introduces field ornithology focusing on the biology, ecology, and behavior of avifauna on the Isles of Shoals. Includes such ornithological field methods as censuring techniques, territory mapping, banding, behavioral observation, and creating a field notebook. Fieldwork is designed to supplement many classroom concepts, including territoriality, breeding biology, and survivorship. Prereq: one year of college-level biology. Lab. (Summers only at Shoals Marine Lab.) Special fee. Permission required.

**MEFB 515 - Marine Environmental Science and Conservation**  
**Credits:** 4.00  
Focuses on the major principles of conservation biology and methods to bring human communities into a better relationship with natural resources: Coastal ecosystem processes; coastal biodiversity; threats to coastal ecosystems; species conservation conserving ecosystem function and services. Projects: construct management goals/actions for local land owners. Prereq: BIOL 411 or 412. Special fee. Permission required.

**MEFB 525 - Introduction to Aquatic Botany**  
**Credits:** 4.00  
This team-taught course introduces students to microalgae, seaweeds, and vascular aquatic plants with an emphasis on unique habitats and plant adaptations to the aquatic environment. Students survey the diversity of algae and aquatic plants spanning fresh, estuarine, and marine habitats through a combination of lecture, field, and laboratory exercises. Special fee.

**MEFB 527 - Aquatic Animal Diversity**  
**Credits:** 4.00  
Provides a survey of aquatic animal groups from the simplest multicellular forms to birds and mammals. The emphasis is on comparing the basic functional systems (i.e., skeletal, digestive, reproductive, etc.) between groups and to illustrate how they change with increasing complexity and to describe adaptations to freshwater, estuarine and marine environments and the roles the groups play in aquatic communities. Special fee.

**MEFB 530 - Evolution and Marine Diversity**  
**Credits:** 4.00  
Patterns of diversity and processes of evolution. Topics include the diversity of life, the fossil record, macro-evolutionary patterns, the genetics and developmental basis of evolutionary change, processes at the population level, evolution by natural selection, modes of speciation, long-term trends in evolution, and human evolution. Prereq: BIOL 411 or 412. Special fee. Permission required.

**MEFB 535 - Marine Mammal Biology**  
**Credits:** 4.00  
This course explores the biology and conservation of the whales and seals, with a particular focus on species of the Gulf of Maine. Lectures examine many facets of marine mammal science including: taxonomy and species diversity, morphological and physiological adaptations for life in the sea, foraging ecology and behavior, reproductive cycles, bio-acoustics, anthropogenic interactions, and management of threatened species. Land and open water observations of whale and seal behavior give students hands on opportunities to study marine mammals in the field. Prereq: BIOL 411 or 412. Special fee. Permission required.

**MEFB 540 - Introductory Field Oceanography**
Credits: 2.00 or 4.00
Over 70% of the earth's surface is covered by oceans. Students in this course will gain familiarity with the basic concepts and field techniques (and equipment) used by biological oceanographers as we explore the Gulf of Maine waters using the Isles of Shoals as our base. Minimal lecture time, maximum boat time is the theme of this field immersion course. Special fee. Prereq: BIOL 411 or BIOL 412. Permission required.

MEFB #609 - Biology of the Lobster
Credits: 3.00
An introduction to the biology of the American lobster, Homarus americanus. The course includes an overview of this ecologically and economically important species, and covers several major topics in depth, each taught by a lobster biologist expert in that field. Topics may include life history, larval development and metamorphosis, anatomy, physiological adaptation, fisheries and fishing methods, feeding mechanisms, ecology, and behavior. Lecture, laboratory, discussion, and field work. Special fee. (Summers only at Shoals Marine Lab.) Prereq: one year college level biology.

MEFB #615 - Field and Experiment Oceanography
Credits: 3.00
Intended for mid-upper division undergrads, this course provides a foundation in oceanography (the four oceanographic disciplines: geological, chemical, physical, and biological) applied in experimental and field settings. Includes two oceanographic trips in the Gulf of Maine. Student groups develop a small oceanographic project while on Appledore Island, carry it out, and present their study to the Shoals academic community. The course integrates investigative, practical, and theoretical aspects of oceanography. Prereq: one term college biology or permission. Special fee.

MEFB 616 - Tropical Coastal Plant Ecology
Credits: 4.00
A field-based course taught on location in Grenada, West Indies, providing an introduction to the physical chemical and biological processes that form and sustain tropical coastal plant communities with an emphasis on mangroves and seagrasses. Plant adaptations to various environmental stresses will be examined over a range of habitats spanning a gradient of salinity from fresh to saline environments. As a dynamic ecosystem affected by both natural and anthropogenic disturbances from hurricanes to large-scale development, major environmental impacts and pressures will be examined first hand, and conservation and management actions will be discussed. A variety of on-going, community-based coastal habitat restoration and ecological monitoring sites will be visited throughout Grenada. Student participation in management actions will be encouraged through interaction with students from St. Georges University, local volunteers, and representatives from governmental environmental agencies and local non-governmental organizations. The course material is relatively specialized and is appropriate for juniors and seniors with interest/background in botany, coastal ecology and restoration, and conservation. Prereq: BIOL 411/412.
Co-requisites: INCO 589

MEFB 630 - Biodiversity and Biology of Marine Invertebrates
Credits: 4.00
An introduction to the biology and evolution of the major invertebrate phyla, concentrating on marine representatives. Emphasis placed on the evolution of form and function, and the ecology, behavior, physiology, chemical ecology, and natural history of invertebrates. Appledore Island's unique location provides an excellent venue for the study of freshly collected and in situ representatives of most of the major phyla. Special fee. (Summers only at Shoals Marine Lab.) Prereq: one year college level biology. Permission required.

MEFB 674 - Ecology and Marine Environment
Credits: 4.00
Introduces the marine sciences with an emphasis on field work in natural habitats. Examines aspects of the systematics, morphology, physiology, behavior, and ecology of marine organisms, including intertidal plants and invertebrates, fishes, marine mammals and birds; fisheries biology; oceanography, marine geology; and human impacts on the marine environment. Sessions include lectures, discussions, field work, experience aboard a coastal research vessel, and excursions to distinctive habitats. Offered in cooperation with Cornell University. Students may not take Field Marine Science after taking Field Marine Biology and Ecology. Prereq: one full year of college-level biology/or permission. Special fee. (Summers only at Shoals Marine Lab.) Permission required.

**MEFB 702 - Sustainable Marine Fisheries**  
**Credits:** 4.00  
An intensive course for undergraduate students that introduces students to the complex challenges facing today's fishing industry, which is being asked to simultaneously sustain the livelihood of fishermen while meeting long-term conservation goals. The course is held both at the UNH Campus and at the Shoals Marine Laboratory. New England fisheries are used as a case-study for this course through global fishing management, trends, and issues are also discussed. Special fee. Permission required.

**MEFB 714 - Field Animal Behavior**  
**Credits:** 4.00  
An animal's behavioral patterns represent its abilities to deal with the environment dynamically. Course focuses on ecological and evolutionary significance of behavioral patterns found in all organisms, particularly those animals that inhabit coastal marine environments. Strong emphasis on methods of behavioral research and interpretation of behavioral patterns using field observations of diverse fauna of Appledore Island and surrounding waters. Prereq: one year college biology or permission. Special fee. (Summers only at Shoals Marine Lab.) Permission required.

**MEFB 730 - Underwater Research**  
**Credits:** 4.00  
Hypothesis testing and experimental design, theoretical and practical aspects of sampling, and critiques of current research papers. Includes special problems of conducting research underwater (diving physics and physiology, theory and use of diving tables, hyperbaric medicine) and underwater techniques (underwater photography and video, photo quadrates, tagging and marking, cages and enclosures). Students must supply their own equipment. Students with special research interests are encouraged to enroll in an additional third week of independent underwater research. Prereq: recognized scuba certification, a medical examination, one year of biology or other supporting science. (Summers only at Shoals Marine Lab.) Special fee. Permission required.

**MEFB #734 - Diversity of Fishes**  
**Credits:** 3.00  
Emphasizes the diversity of fishes in two aspects: diversity of evolutionary solutions to problems faced by fishes and the great diversity of different types of fishes that inhabit the world. Prereq: one full year of college level biology; background in vertebrate biology is recommended, but not required. Special fee. (Summers only at Shoals Marine Lab.)

**MEFB 751 - Research in Marine Biology**  
**Credits:** 4.00  
Introduces the adaptations of organisms to marine environments and the role these adaptations have in structuring marine communities using an experimental approach. Emphasizes experimental design, implementation, data analysis, and scientific presentations. Prereq: one year of college-level biology or permission. Additional experience in biology, ecology or physiology is recommended. Prereq: BIOL 411, BIOL 412. Special fee. (Summers only at Marine Lab.)
MEFB 754 - Anatomy and Function of Marine Vertebrates

Credits: 4.00

The course is designed to introduce students to a comparative study of the principal organ systems of vertebrates (i.e., fishes, sea turtles, marine birds, marine mammals) that are specifically adapted to the marine environment. Rather than focusing only on description of anatomical structure, the anatomy of structures are investigated with function, biological role, and evolutionary relationships. Laboratory exercises cover osteology, dissection, behavior and biomechanics. Special fee. (Summers only at Shoals Marine Lab.) Prereq: one year college biology/or permission. Permission required.
Marketing

MKTG 550 - Survey of Marketing  
Credits: 4.00  
Focuses on marketing as the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational objectives. For business administration minors and non-business administration majors. No credit for students who have had ADMN 585 or HMGT 600.

MKTG 557 - Promotion and Advertising  
Credits: 4.00  
Focuses on advertising and promotions while providing coverage of other marketing communication tools (direct marketing, point-of-purchase, personal selling, public relations). Examines both traditional and electronic/online/digital approaches to advertising and promotions as means to reach audiences with messages that support the organization's goals. Prereq: MKTG 550.

MKTG 598 - Topics in Marketing  
Credits: 1.00 to 4.00  
Special topics covering a variety of marketing principles. Topics may include promotion and advertising; retail and retail management; sales and sales management. Certain topics may have pre- or co-requisite courses. May be repeated up to 12 credits. Certain topics may have a special fee.

MKTG 598T - Topics in Marketing/Study Away  
Credits: 1.00 to 4.00  
Study away. May be repeated up to 12 credits. Special fee. Co-requisites: INCO 589

MKTG 750 - Marketing Strategy  
Credits: 4.00  
An integrative marketing course designed to provide the student with a cohesive understanding of marketing decision making through the exploration of marketing problems with an emphasis on qualitative analysis and strategy formulation. Through the use of case studies, the students will apply concepts and tools marketing decision-makers employ in practice. Prereq: ADMN 585 or HMGT 600.

MKTG 752 - Marketing Research  
Credits: 4.00  
Examines marketing information management and decision-making. MR is an essential business process and an integral part of marketing management, a process by which marketing information is collected, analyzed, disseminated, and acted upon. Course provides the tools, techniques, data sources and research approaches commonly used for market research and analysis. Hands-on analysis of marketing data sets is provided by using leading statistical software packages. Prereq: ADMN 585 or HMGT 600.

MKTG 753 - Consumer/Buyer Behavior  
Credits: 4.00  
Covers concepts, models, and theories from the behavioral sciences applied to consumer decision making and purchasing behavior. Examines consumer behavior from economic, psychological, sociological, and anthropological perspectives. Topic coverage includes discussion of marketing strategies and tactics to influence consumer choice. Prereq: ADMN 585 or HMGT 600. Writing intensive.

MKTG 756 - International Franchising
Credits: 4.00
Designed to provide an understanding of franchising as a system of distribution and business expansion. Franchising is studied from both the perspectives of the franchise and the franchiser. In addition, economic, financial, and legal issues associated with franchising are covered. By the end of the course, students have skills and sources of information that permit sound assessment of the business opportunities available in franchising. Prereq: ADMN 585 or HMGT 600. (Also offered as HMGT 756.)

MKTG 757 - Integrated Marketing Communication
Credits: 4.00
Provides balanced coverage of all marketing communication tools: advertising, sales promotion, public relations, direct marketing, personal selling, POP, packaging, sponsorships, licensing, customer service. Emphasizes the integration of these tools to send target audiences a consistent, persuasive message that promotes the organization's goals. Prereq: ADMN 585 or HMGT 600.

MKTG 760 - International Marketing
Credits: 4.00
Environmental factors affecting international trade: culture and business customs, political and legal factors and constraints, economic and technological development, and the international monetary system. Integration of these with the marketing management functions of market research and segmentation; product, promotion, distribution, and pricing decisions. Prereq: ADMN 585 or HMGT 600.

MKTG 762 - Marketing Workshop
Credits: 4.00
Integrative study of a real marketing situation in a business, nonprofit institution, or government agency. Student teams identify problem, collect appropriate data, suggest alternative solutions, and submit a recommended course of action. Prereq: senior standing; at least two of MKTG 752, 753, and 763. Writing intensive.

MKTG 763 - Market Opportunity Analysis
Credits: 4.00
Introduces students to the analysis of the business environment in which a company operates and provides key inputs into strategic marketing planning and decision-making. Students learn the process, concepts, and techniques commonly used in the identification, assessment, and forecasting of market opportunities. Prereq: ADMN 585 or HMGT 600. Pre- or Coreq: ADMN 580.

MKTG 764 - New Product Development
Credits: 4.00
Tactical and strategic issues concerned with the development and marketing of product and service innovations. Equips students with the concepts, tools, and approaches useful in the development, management, and marketing of products and services. Provides an integrated experience of the process of uncovering customer problems, understanding these problems, and providing superior solutions. Prereq: ADMN 585 or HMGT 600.

MKTG 798 - Topics
Credits: 4.00
Special topics; may be repeated. Prereq: ADMN 585 OR HMGT 600. Special fee on some topics.

MKTG 798T - Topics/Study Away
Credits: 4.00
Special topics study away; may be repeated. Prereq: ADMN 585 or HMGT 600. Special fee.
Co-requisites: INCO 589
MKTG 798W - Topics
Credits: 4.00
Special topics; may be repeated. Prereq: ADMN 585 or HMGT 600. Writing intensive.
Materials Science

MS 401 - Science of Stuff
Credits: 4.00
Materials Science is a relatively new and fast growing field that studies all types of materials, including metals, ceramics, polymers, semiconductors, and composites. Material Science explores how stuff is put together, how to change stuff and make it better, the properties and applications of stuff, and even how to make totally brand new stuff. This course explores materials from various topic areas, including sports, forensics, medicine and health, fashion, architecture and construction, music and art, food and transportation from the perspective of materials science. Students explore additional materials independently as well as practice the process of science through simple experimentation and data analysis. Special fee.

MS 402 - Nanoscience in Energy
Credits: 4.00
An introduction to nanomaterials, or matter with important structural features that are nanometers in size. A nanometer is very small—a billionth of a meter; a sugar molecule is only about 1 nm wide. Scientists and engineers are now building materials by manipulating atoms or groups of atoms. The course explores how materials with nanoscale features demonstrate novel and beneficial properties for energy applications. the growing energy demands of the planet require timely, if not urgent, innovative multidisciplinary solutions. These solutions require an informed citizenry knowledgeable about the various perspectives related to powering our planet. This course is a means to inform the non-scientist student about the physical science aspects of energy, nanomaterial solutions for our energy needs, along with some historical, economic, and environmental perspectives. The energy discussion provides a backdrop for our exploration of the structure and properties of nanomaterials. Special fee.

MS 762 - Electronic Materials Science
Credits: 4.00
Provides students with a foundation in the materials science of modern electronic devices. Examples are taken primarily from the fields of semiconductor electronics and nanotechnology. Prereq: PHYS 408, MATH 527.
Mathematics & Statistics

MATH 000 - Placeholder Course
Credits:

MATH 301 - Elementary Math I
Credits: 4.00
Beginning algebra including integer operations, solving linear equations, graphing linear functions, solving linear inequalities, systems of linear equations, polynomials, rational expressions and equations, and exponents and radicals. May not be taken for credit toward a bachelor's degree.

MATH 302 - Elementary Math II
Credits: 4.00
Review of elementary algebra, exponents, polynomials, factoring, rational exponents, and absolute value. Solving linear and quadratic equations and inequalities; systems of equations; radical equations. Linear functions and related notions; quadratic functions. May not be taken for credit toward a bachelor's degree. Prereq: MATH 301 or the equivalent.

MATH 400 - Freshman Seminar
Credits: 1.00
A seminar experience that presents a mathematical culture associated with first-year college mathematics, including the ideas of abstraction, theorem and proof, and that provides a perspective of the diversity of mathematical areas of research and their interrelationships. Emphasis is on reading and writing mathematics. Cr/F.

MATH 418 - Analysis and Applications of Functions
Credits: 4.00
Analysis and applications of algebraic and transcendental functions, with special emphasis on exponential, logarithmic, and trigonometric functions. Graphical analysis. Written projects are required on some or all of the following topics: rates of change, optimization, logarithmic or exponential modeling, and trigonometric functions. Intended for students planning to take MATH 425. Prereq: MATH 302 or equivalent. Not offered for credit if credit is received for MATH 424 or MATH 425.

MATH 420 - Finite Mathematics
Credits: 4.00
Topics selected from probability, systems of linear equations, matrix algebra, linear programming, mathematics of finance. Not a preparation for calculus. Prereq: MATH 302 or the equivalent. Not offered for credit to mathematics majors.

MATH 421 - Pathways between Mathematics and the Arts
Credits: 4.00
Exploration of the interaction between mathematics and the arts on numerous levels. The course builds on basic knowledge of elementary number systems to illuminate such topics symmetry, fractals, light, color, sound structures and musical materials. Student immediately apply new knowledge and techniques to make computer generated 2-D and 3-D images, animations and sound/music.

MATH 424A - Calculus for Social Sciences
Credits: 4.00
Rational, exponential and logarithmic functions; associated derivatives and their applications; associated
antiderivatives and their applications. Applications focus on contexts relevant to majors in the College of Liberal Arts and the Paul College. Not offered for credit to CEPS majors. Not offered for credit if credit is received for MATH 425. Students wanting a two-semester calculus course are strongly advised to take MATH 425-426. Those students who successfully complete MATH 424A and subsequently wish to continue their study of mathematics with MATH 426 are encouraged to complete supplementary modules available from the Mathematics Center (MaC).

**MATH 424B - Calculus for Life Sciences**  
**Credits:** 4.00  
Rational, exponential and logarithmic functions; associated with derivatives and their applications; associated with antiderivatives and their applications. Applications focus on contexts relevant to majors in the College of Life Sciences and Agriculture. Not offered for credit for CEPS majors. Not offered for credit if credit is received for MATH 425. Students wanting a two-semester calculus course are strongly advised to take MATH 425-426. Those students who successfully complete MATH 424B and subsequently wish to continue their study of mathematics with MATH 426 are encouraged to complete supplementary modules available from the Mathematics Center (MaC).

**MATH 425 - Calculus I**  
**Credits:** 4.00  
Calculus of one variable covering limits, derivatives of algebraic, trigonometric, exponential, and logarithmic functions; applications include curve sketching, max-min problems, related rates, and volume and area problems. Prereq: completing MATH 418 with a grade of C or better or qualifying with the placement evaluation. (Not offered for credit if credit is received for MATH 424.)

**MATH 425H - Honors/Calculus I**  
**Credits:** 4.00  
Calculus of one variable covering limits, derivatives of algebraic, trigonometric, exponential, and logarithmic functions; applications include curve sketching, max-min problems, related rates, and volume and area problems. Prereq: completing MATH 418 with a grade of C or better or qualifying with the placement evaluation. (Not offered for credit if credit is received for MATH 424.) Enrollment in MATH 425H requires concurrent enrollment in PHYS 407H.

**MATH 426 - Calculus II**  
**Credits:** 4.00  
Second course in calculus of one argument, techniques and applications of integration, polar coordinates, and series. Prereq: MATH 425.

**MATH 426H - Honors/Calculus II**  
**Credits:** 4.00  
Second course in calculus of one argument, techniques and applications of integration, polar coordinates, and series. Prereq: MATH 425. Enrollment in MATH 426H requires concurrent enrollment in PHYS 408H.

**MATH 439 - Statistical Discovery for Everyone**  
**Credits:** 4.00  
Introduces the framework and concepts for learning with data. Emphasis on statistical discovery in everyday life and on drawing valid conclusion from data. Topics include: good and bad data, data ethics, how to conduct a valid survey, how to describe a population distribution; when to believe a poll; how to design an experimental study; how to avoid ambiguous results caused by "lurking" variables; how to make inference about an entire population based on a sample; how to describe relationships among variables; an understanding of the question of causation and chance in everyday life and in scientific studies, as well as the use and misuse of statistics in explaining what is statistical significance. This course has an activity-based learning component with lab exercises using statistical software for calculations without assuming a
calculus background. The course may be used as a preparation for a more technical introductory statistics course. Not offered for credit if credit is received for ADM 430, ADMN 420, BIOL 528, EREC 525, HHS 540, MATH 539, MATH 644, PSYC 402, SOC 502. Science and Engineering students should take MATH 539 or MATH 644 according to their programs.

**MATH 444 - Excursions in Quantitative Reasoning**  
**Credits:** 4.00  
Problems involving quantitative reasoning (most are nontraditional, some are fun, while others are interdisciplinary) designed to inspire curiosity encourages students to formulate and evaluate questions, all the while slowly drawing them into the process of scholarly investigation. In this regard, in addition to traditional mathematics homework, students need to do research outside of class to write and present projects.

**MATH 445 - Mathematics and Applications with MATLAB**  
**Credits:** 4.00  
Through the use of the MATLAB computation software, this course reinforces and builds on a student's mathematics foundation and previews more advanced mathematical concepts. The power and limitations of modern computational algorithms to solve real world problems are introduced and shown to influence nearly every aspect of modern society. The state-of-the-art computational tools afforded by MATLAB provide the student with a strategy for enhancing their knowledge and comprehension in subsequent Science, Engineering, or Technology themed courses. Prereq: MATH 418 or permission.

**MATH 525 - Linearity I**  
**Credits:** 6.00  
Examines the fundamental role that linear models play in science and engineering; and the role of linearization in understanding nonlinear phenomena. Models are considered along several conceptual axes: discrete to continuous, one-dimensional to multidimensional, and static to dynamic, with an emphasis on the former. Mathematical areas of coverage include matrix algebra, concepts from calculus of several variables, difference equations, and linear transformations. Prereq: MATH 426, permission. Lab.

**MATH 526 - Linearity II**  
**Credits:** 6.00  
Continuation of study of linear models and the process of linearization begun in MATH 525, with an emphasis on models of dynamic phenomena. Additional mathematical areas of coverage include differential equations, eigenvalue and eigenvector analysis, phase plane analysis, and additional concepts from vector calculus. Prereq: MATH 525, permission. Lab.

**MATH 527 - Differential Equations with Linear Algebra**  
**Credits:** 4.00  
Fundamental methods of solving first-order equations, essentials of matrix algebra; higher-order linear equations, and linear systems; series solutions; Laplace transforms; selected applications. Prereq: MATH 426.

**MATH 528 - Multidimensional Calculus**  
**Credits:** 4.00  
Partial differentiation; composite functions and chain rules; maximum and minimum; transformations; vector algebra; vector functions; gradient, divergence, and curl; curves and surfaces; multiple, line, and surface integrals; divergence, Green's and Stoke's theorem. Prereq: MATH 426.

**MATH 531 - Mathematical Proof**  
**Credits:** 4.00  
Introduces reading and writing proofs in mathematics. The basic language of mathematics common to all
branches of the subject, especially set theory and basic logic. Prereq: MATH 425; or permission. Writing intensive.

**MATH 532 - Discrete Mathematics**  
**Credits:** 4.00  
Counting principles (including permutations, combinations, pigeonhole principle, inclusion-exclusion principle); big-O relation; graphs, trees, and related topics. Prereq: MATH 531.

**MATH 539 - Introduction to Statistical Analysis**  
**Credits:** 4.00  
A first course introducing concepts of probability and scientific methods for data analysis. Exploratory data analysis, survey sampling, probability, discrete and continuous distributions, confidence intervals, hypothesis testing, comparing samples, linear regression, analysis of variance. Statistical software is used. Prereq: MATH 425; or permission. Not offered for credit if credit is received for MATH 644. Offered primarily for mathematics majors; engineering majors should take MATH 644.

**MATH 545 - Introduction to Linear Algebra**  
**Credits:** 4.00  
Designed to reinforce ideas seen throughout the mathematics curriculum. Centered on a study of vector spaces and linear systems, beginning with a brief focus on systems of linear equations and progressing to a full discussion of linear transformation and vector spaces. The course includes a survey of properties of matrices, such as rank, kernel, eigenvalues, eigenvectors, and diagonalization. Prereq: MATH 426 Writing intensive. No credit offered if credit is received for MATH 645 or MATH 762.

**MATH 601 - Exploring Mathematics for Teachers I**  
**Credits:** 4.00  
Provides prospective elementary teachers with the opportunity to explore and master concepts involving number systems and operations, data analysis and probability. Additional topics may include geometry, measurement, and algebraic thinking. Mathematical reasoning, problem solving, and the use of appropriate manipulatives and technology are integrated throughout the course. Readings, class discussions, and assignments focus on mathematics content as well as applicable theories of learning, curriculum resources, and state and national recommendations. The course models instructional techniques that can be adapted to the elementary curricula. (Not offered for credit if credit is received for MATH 621 or 623; not offered for credit to CEPS majors.)

**MATH 621 - Number Systems for Teachers**  
**Credits:** 4.00  
Ways of representing numbers, relationships between numbers, number systems, the meanings of operations and how they relate to one another, and computation within the number system as a foundation for algebra; episodes in history and development of the number system; and examination of the developmental sequence and learning trajectory as children learn number concepts. Prereq: permission.

**MATH 622 - Geometry for Teachers**  
**Credits:** 4.00  
Explorations of the foundations of informal measurement and geometry in one, two and three dimensions. The van Hiele model for geometric learning is used as a framework for how children build their understanding of length, area, volume, angles and geometric relationships. Visualization, spatial reasoning and geometric modeling are stressed. As appropriate, transformational geometry, congruence, similarity and geometric constructions will be discussed. Prereq: permission.

**MATH 623 - Probability and Statistics for Teachers**  
**Credits:** 4.00
An introduction to probability, descriptive statistics and data analysis; exploration of randomness, data representation and modeling. Descriptive statistics will include measures of central tendency, dispersion, distributions and regression. Analysis of experiments requiring hypothesizing, experimental design and data gathering. Prereq: permission.

MATH 624 - Analysis of Secondary School Mathematics
Credits: 4.00
Examines concepts from calculus and pre-calculus mathematics with an emphasis on connecting and logically refining the concepts of function, limit, sequences, series, and probability. Includes a deeper analysis of problems and topics drawn from secondary school mathematics with the kind of mathematical knowledge and sophistication that the student has gained from other collegiate mathematics courses. Proofs for many of the theorems that are typically introduced in a non-rigorous fashion in calculus are studied. Prereq: EDUC 500, MATH 425 and 545 (or equivalent); or permission. Offered in alternate years in the spring semester following MATH 623.

MATH 644 - Statistics for Engineers and Scientists
Credits: 4.00
Introduces the design of controlled experiments and the collection and analysis of scientific data. Use of a statistical software package is an integral part of the course; interpreting and drawing conclusions from standard software output is emphasized. Graphical data analysis, statistical process control, regression and correlation, multifactor experimental designs, confidence intervals, hypothesis testing. Not offered for credit if credit is received for MATH 539. Prereq: MATH 426.

MATH 645 - Linear Algebra for Applications
Credits: 4.00
Fundamental notions of vector space theory, linear independence, basis, span, scalar product, orthogonal bases. Includes a survey of matrix algebra, solution of systems linear equations, rank, kernel, eigenvalues and eigenvectors, the LU- and QR-factorizations, and least squares approximation. Selected applications in mathematics, science, engineering and business. Prereq: MATH 426. (Not offered for credit if credit is received for MATH 545 or MATH 762.)

MATH 647 - Complex Analysis for Applications
Credits: 4.00
Complex numbers, analytic functions, Cauchy-Riemann equations, conformal mapping, contour integration, Cauchy's integral formula, infinite series, residue calculus, Fourier and Laplace transforms. Prereq: MATH 528. (Not offered for credit if credit is received for MATH 788.)

MATH 656 - Introduction to Number Theory
Credits: 4.00
Unique factorization, arithmetic functions, linear and quadratic congruence's, quadratic reciprocity law, quadratic forms, introduction to algebraic numbers. Prereq: MATH 531. Offered in alternate years.

MATH 658 - Topics in Geometry
Credits: 4.00
Topics selected from among projective geometry, finite geometrics, convexity, transformational geometry, non-Euclidean geometry, and other areas of elementary geometry within the framework of modern mathematics. Prereq: MATH 657. Offered in alternate years.

MATH 696 - Independent Study
Credits: 1.00 to 4.00
Individual projects of study developed by the student and a faculty sponsor. Intended for students with superior scholastic achievement. May be repeated up to 8 credits. May be taken as writing intensive.
Prereq: a written proposal, including goals and assessment, endorsed by a faculty sponsor and approved by the department chairperson.

**MATH 696W - Independent Study**  
**Credits:** 1.00 to 4.00  
Individual projects of study developed by the student and a faculty sponsor. Intended for students with superior scholastic achievement. May be repeated up to 8 credits. May be taken as writing intensive. Prereq: a written proposal, including goals and assessment, endorsed by a faculty sponsor and approved by the department chairperson. Writing intensive.

**MATH 699 - Internship Experience**  
**Credits:** 1.00  
Provides the opportunity to apply and enhance knowledge in a setting associated with future professional employment. A written mid-semester report is required as well as a final report along with an oral presentation that is open to other undergraduates. Prereq: A written proposal, endorsed by a faculty sponsor and approved by the department chairperson (or designee), that outlines the goals, academic merit and assessment of the work experience. May be repeated up to 4cr. Only open to Math majors. Cr/F.

**MATH 700 - Introduction to Mathematics Education**  
**Credits:** 4.00  
General background information about mathematics education, such as theories of learning and teaching mathematics, mathematics curricula, classroom management, and techniques for the teaching and learning of mathematics that are common to all levels of mathematics education K-12. Prereq: MATH 426 and EDUC 500; or permission.

**MATH 703 - Teaching of Mathematics, K-6**  
**Credits:** 4.00  
Methods of teaching mathematics at the elementary school level; uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; assessment; instructional formats; teaching reading and writing in mathematics. Prereq: MATH 621 (or MATH 601) and MATH 700; or permission.

**MATH 708 - Teaching Middle School Mathematics**  
**Credits:** 4.00  
Methods of teaching mathematics at the middle school level; uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; assessment; instructional formats; teaching reading and writing in mathematics. Prereq: MATH 700; or permission. Offered in alternate years in the spring semester.

**MATH 709 - Teaching of Mathematics, 7-12**  
**Credits:** 4.00  
Methods of teaching content at the secondary school level; uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; assessment; instructional formats; teaching reading and writing in mathematics. Prereq: MATH 700; or permission. Offered in alternate years in the spring semester.

**MATH 736 - Advanced Statistical Methods for Research**  
**Credits:** 4.00  
An introduction to multivariate statistical methods, including principal components, discriminant analysis, cluster analysis, factor analysis, multidimensional scaling, and MANOVA. Additional topics include generalized linear models, general additive models, depending on the interests of class participants. The use of statistical software, such as JMP, S PLUS, or R, is fully integrated into the course. Prereq: MATH 739.
MATH 737 - Statistical Methods for Quality Improvement and Design  
**Credits:** 4.00  
Six Sigma is a popular, data-focused methodology used worldwide by organizations to achieve continuous improvement of their existing processes, products and services or to design new ones. This course provides a thorough introduction to the Six Sigma principles, methods, and applications for continuous improvement (DMAIC process) and an overview of Design for Six Sigma (DFSS). Both manufacturing and non-manufacturing (transactional Six Sigma) applications are included. Emphasis is placed on the use of case studies to motivate the use of, as well as the proper application of, the Six Sigma methodology. Formal Six Sigma Green Belt certification from UNH may be attained by successfully completing TECH 696. Prereq: MATH 539, MATH 644; or permission.

MATH 738 - Data Mining and Predictive Analytics  
**Credits:** 4.00  
An introduction to supervised and unsupervised methods for exploring large data sets and developing predictive models. Unsupervised methods include: market basket analysis, principal components, clustering, and variables clustering. Important statistical and machine learning methods (supervised learning) include: Classification and Regression Trees (CART), Random Forests, Neural Nets, Support Vector Machines, Logistics Regression and Penalized Regression. Additional topics focus on metamodeling, validation strategies, bagging and boosting to improve prediction or classification, and ensemble prediction from a set of diverse models. Required case studies and projects provide students with experience in applying these techniques and strategies. The course necessarily involves the use of statistical software and programming languages. Undergraduate students are required to have junior or senior status to enroll in this course. Prereq: MATH 539 (or MATH 644); or permission.

MATH 739 - Applied Regression Analysis  
**Credits:** 4.00  

MATH 740 - Design of Experiments I  
**Credits:** 4.00  
Course in design of experiments with applications to quality improvement in industrial manufacturing, engineering research and development, or research in physical and biological sciences. Experimental factor identification, statistical analysis and modeling of experimental results, randomization and blocking, full factorial designs, random and mixed effects models, replication and sub-sampling strategies, fractional factorial designs, response surface methods, mixture designs, and screening designs. Focuses on various treatment structures for designed experimentation and the associated statistical analyses. Use of statistical software. Prereq: MATH 539 (or 644); or permission.

MATH 741 - Survival Analysis  
**Credits:** 4.00  
Explorations of models and data-analytic methods used in medical, biological, and reliability studies. Event-time data, censored data, reliability models and methods, Kaplan-Meier estimator, proportional hazards, Poisson models, loglinear models. The use of statistical software, such as SAS, JMP, or R, is fully integrated into the course. Prereq: MATH 739. (Offered in alternate years in the spring semester.)

MATH 743 - Time Series Analysis  
**Credits:** 4.00
An introduction to univariate time series models and associated methods of data analysis and inference in the time domain and frequency domain. Topics include: auto regressive (AR), moving average (MA), ARMA and ARIMA processes, stationary and non-stationary processes, seasonal ARIMA processes, auto-correlation and partial auto-correlation functions, identification of models, estimation of parameters, diagnostic checking of fitted models, forecasting, spectral density function, periodogram and discrete Fournier transform, linear filters, parametric spectral estimation, dynamic Fournier analysis. Additional topics may include wavelets and long memory processes (FARIMA) and GARCH analysis. The use of statistical software, such as JMP, or R, is fully integrated into the course. Prereq: MATH 739. Offered in alternate years in the spring semester.

**MATH 744 - Design of Experiments II**
**Credits: 4.00**
A second course in design of experiments, with applications in quality improvement and industrial manufacturing, engineering research and development, research in physical and biological sciences. Covers experimental design strategies and issues that are often encountered in practice: complete and incomplete blocking, partially balanced incomplete blocking (PBIB), partial confounding, intra and inter block information, split plotting and strip plotting, repeated measures, crossover designs, Latin squares and rectangles, Youden squares, crossed and nested treatment structures, variance components, mixed effects models, analysis of covariance, optimizations, space filling designs, and modern screening design strategies. Prereq: MATH 740; or permission.

**MATH 745 - Foundations of Applied Mathematics I**
**Credits: 4.00**
An introduction to Partial Differential Equations (PDEs) and associated mathematical methods and the analytical foundation for applied mathematics. Topics include: PDE classification, superposition, separation of variables, orthonormal functions, completeness, convergence, Fourier Series, Sturm-Liouville eigenvalue problems, and eigenfunctions. Methods are introduced for the analysis and solution of boundary value problems, in particular, the Heat, Wave, and Laplace equations. Prereq: MATH 527 and 528; or equivalent.

**MATH 746 - Foundations of Applied Mathematics II**
**Credits: 4.00**
An introduction to special functions, asymptotic analysis, and transform methods applied to partial differential equations. Topics include: Boundary value problems in cylindrical coordinates, the Bessel equation and Bessel functions, Fourier-Bessel expansions in cylindrically symmetric spatial domains, the Fourier Transform, the Hilbert Transform, Cosine and Sine Transforms, problems on semi-infinite intervals, and Asymptotic Analysis. Prereq: MATH 527 and MATH 528; or equivalent.

**MATH 747 - Introduction to Nonlinear Dynamics and Chaos**
**Credits: 4.00**
The mathematics of chaos and nonlinear dynamics. Topics include linear and nonlinear systems of ordinary differential equations, discrete maps, chaos, phase plane analysis, bifurcations and computer simulations. Prereq: MATH 527, 528, and 645.

**MATH 753 - Introduction to Numerical Methods I**
**Credits: 4.00**
Introduces mathematical algorithms and methods of approximation. Topics include a wide survey of approximation methods. Methods examined include polynomial interpolation, root finding, numerical linear algebra, numerical integration, and the approximation of differential equations. Included in each case is a study of the accuracy and stability of a given technique, as well as its efficiency. Prereq: MATH 426; MATH 445 (or CS 410 or IAM 550).

**MATH 755 - Probability with Applications**
Credits: 4.00
Introduces the theory, methods, and applications of randomness and random processes. Probability concepts, random variable, expectation, discrete and continuous probability distributions, joint distributions, conditional distributions; moment-generating functions, convergence of random variables. Prereq: MATH 528 and 539 (or 644).

MATH 756 - Principles of Statistical Inference
Credits: 4.00
Introduces the basic principles and methods of statistical estimation and model fitting. One- and two-sample procedures, consistency and efficiency, likelihood methods, confidence regions, significance testing, Bayesian inference, nonparametric and re-sampling methods, decision theory. Prereq: MATH 755; or permission.

MATH 760 - Geometry
Credits: 4.00
Advanced approach to fundamental properties of Euclidean and other geometries through deductive reasoning and proof. Prereq: MATH 531. Writing intensive.

MATH 761 - Abstract Algebra
Credits: 4.00
This course establishes the axiomatic framework that underlies number systems and similar mathematical structures, investigating basic properties of groups, rings, fields and their homomorphisms. Prereq: MATH 531. Writing intensive.

MATH 762 - Linear Algebra
Credits: 4.00
Vector spaces over arbitrary fields, linear transformations and their relationship with matrices, eigenvalues and eigenvectors, the rational and Jordan canonical forms for linear transformations. Prereq: MATH 761

MATH 763 - Abstract Algebra II
Credits: 4.00
This course extends the investigations of MATH 761 into more specialized situations related to old and new problems in mathematics, such as the nature of solutions of polynomial equations. It presents advanced properties of groups, rings, fields and their applications. Prereq: MATH 761.

MATH 765 - Introduction to Commutative Algebra and Algebraic Geometry
Credits: 4.00
Methods of determining solution sets of polynomial systems; affine varieties and their ideals; the 'algebra-geometry correspondence'; theory and applications of Grobner bases. Prereq: MATH 531, MATH 761 or permission of instructor.

MATH 767 - One-Dimensional Real Analysis
Credits: 4.00

MATH 768 - Real Analysis II
Credits: 4.00
Theory of integration; series; power series and uniform convergence of power series. Prereq: MATH 767.

MATH 769 - Introduction to Differential Geometry
Credits: 4.00
Introduction to the study of geometric properties of curves and surfaces in 3-dimensional space. Prereq:
MATH 527, MATH 528, MATH 645.

**MATH 770 - Foundations of Number Theory**  
**Credits:** 4.00  
Factorization and prime numbers, arithmetic functions, congruences, reciprocity laws, quadratic forms, Diophantine equations, computational number theory. Prereq: MATH 531. Offered in alternate years.

**MATH 772 - Combinatorics**  
**Credits:** 4.00  
Graph theory (including planar graphs, graph coloring, Hamiltonian circuits, trees); counting principles (including permutations, combinations, pigeonhole principle, inclusion-exclusion principle); and related topics. Prereq: MATH 531.

**MATH 776 - Logic**  
**Credits:** 4.00  
Examination of the basic notions of soundness and completeness, first for sentential and then for propositional logic. Turning to the question of decision procedures for logical formulae, the concept of recursive function, which emerges in the work of Church and Turing, provides the essential link between logic and theory of computation. The course culminates with Godel's Incompleteness Theorems, which demonstrate the intrinsic limitations of the logical method. Prereq: MATH 531. Offered in alternate years.

**MATH 783 - Set Theory**  
**Credits:** 4.00  
Axiomatic set theory, including its history. Cantor's theory of infinite cardinal and ordinal numbers seemed laden with contradictions and paradoxes. A satisfactory treatment of these difficulties came with the axiomatic set theory of Zermelo and Fraenkel. This course develops the Zermelo-Fraenkel axioms and examines cardinal and ordinal arithmetic in the context they provide. The course then investigates the consequences of various additional axioms extending Zermelo-Fraenkel, such as the Axiom of Choice, the Continuum Hypothesis, large cardinal axioms of determinacy. Prereq: MATH 531. Offered in alternate years.

**MATH 784 - Topology**  
**Credits:** 4.00  
Open sets, closure, base, and continuous functions; connectedness, compactness, separation axioms, and metrizability. Prereq: MATH 531. Writing intensive.

**MATH 788 - Complex Analysis**  
**Credits:** 4.00  
Complex functions, sequences, limits, differentiation and Cauchy-Riemann equations, elementary functions, Cauchy's theorem and formula, Taylor's and Laurent's series, residues, conformal mapping. Prereq: MATH 767. Not offered for credit if credit is received for MATH 647.

**MATH 790 - Historical Foundations of Mathematics**  
**Credits:** 4.00  
Historical development of number theory, geometry, probability, algebra, and analysis. Study of the significant mathematical contributions to these topics made by prominent mathematicians spanning several historical periods. Prereq: MATH 531 or 545. Writing intensive.

**MATH 796 - Topics**  
**Credits:** 1.00 to 4.00  
New or specialized courses not covered in regular course offerings. Prereq: permission of instructor. May be repeated.
MATH 797 - Senior Seminar  
Credits: 4.00  
Exploration of mathematical topics beyond the student's previous coursework in the seminar format. The course focus is on independent research, collaborative work and classroom engagement; oral presentations and written work are required. Prereq: senior standing.

MATH 798 - Senior Project  
Credits: 4.00  
Students work either individually or as a group under the direction of a faculty sponsor to plan and carry out an independent research project resulting in a written report and presentation to the department. Prereq: Senior standing in the department; a written proposal approved by a faculty sponsor and by the department chairperson (or designee).

MATH 799 - Senior Thesis  
Credits: 2.00 or 4.00  
Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Prereq: senior standing; a written proposal endorsed by a faculty sponsor and approved by the department chairperson (or designee). May be repeated up to 4 credits. Writing intensive.
ME 441 - Introduction to Engineering Design and Solid Modeling  
**Credits:** 4.00  
Why are some products better than others? What is the definition of "better"? This course uses an inquiry-guided approach to explore the product design process via team design projects and laboratory exercises. Everyday products are examined from historical, societal, design, safety and manufacturing perspectives. Topics include ideation, sketching, design constraints, solid modeling, decision making, statistical quality control, manufacturing methods and engineering analysis. Students develop an appreciation for good design and the ability to communicate design ideas via 3-D solid models, written and oral reports. Prereq: MATH 418 or equivalent. Writing intensive.

ME 477 - Introduction to Solid Modeling  
**Credits:** 1.00  
Introduction to solid modeling and engineering drawings using computer-aided design software. For Mechanical Engineering students, this course can only be taken with permission as an alternative to the required ME 441 Introduction to Engineering Design and Solid Modeling for students with extensive engineering design experience (e.g., high school or another university course), an engineering project based program (e.g., FIRST Robotics or Project Lead the Way), or similar experience (e.g., working in the industry). Students should not take both ME 441 and ME 477. Lecture and Lab.

ME 503 - Thermodynamics  
**Credits:** 3.00  
Properties of a pure substance, work and heat, laws of thermodynamics, entropy, thermodynamic relations, cycles. Prereq: PHYS 407. Pre- or Coreq: CHEM 405; MATH 528.

**Co-requisites:**

ME 523 - Introduction to Statics and Dynamics  
**Credits:** 3.00  
Overview of statics and dynamics applying concepts to particles then to rigid bodies. Topics include two- and three-dimensional force systems; laws of equilibrium; analyses of trusses and frames; friction; relative motion; impulse-momentum principles; work-energy relationships. Prereq: MATH 426; PHYS 407. Not for ME majors.

ME 525 - Statics  
**Credits:** 3.00  
Introduces statics. Two- and three-dimensional force systems, the concept of equilibrium, analysis of trusses and frames, centroids, bending moment and shear force diagrams, and friction. Prereq: PHYS 407 and MATH 426. Writing intensive.

**Co-requisites:**

ME 526 - Mechanics of Materials  
**Credits:** 3.00  
Introduces strength of materials. Analysis of members under torsion, axial, shear and bending stresses, superposition of stresses, stability of columns. Prereq: ME 525. Writing intensive.

ME 561 - Introduction to Materials Science  
**Credits:** 4.00  
The concepts of materials science and the relation of structure of material properties. Atomic structure,
bonding material transport, mechanical properties of materials, solidification, phase diagrams, solid state transformations, and corrosion and oxidation. Laboratory exercises are carried out to demonstrate the basic concepts of the course. Prereq: one semester of introductory chemistry with a lab or equivalent; MATH 425. Writing intensive.

**ME 603 - Heat Transfer**  
**Credits:** 3.00  
Analysis of phenomena; steady-state and transient conduction, radiation, and convection; engineering applications. Prereq: MATH 527, ME 608.

**ME 608 - Fluid Dynamics**  
**Credits:** 3.00  
Dynamics and thermodynamics of compressible and incompressible fluid flow; behavior of fluids as expressed by hydrostatic, continuity, momentum, and energy equations. Prereq: ME 503. Pre- or Coreq: MATH 527, IAM 550.  
**Co-requisites:** ME 627

**ME 627 - Dynamics**  
**Credits:** 3.00  
Introduction to particle and rigid body dynamics. Rectilinear and curvilinear motion, translation and rotation, momentum and impulse principles, and work-energy relationships. Prereq: ME 525 or permission. Writing intensive.

**ME 643 - Machine Design**  
**Credits:** 3.00  
Analysis, synthesis, and design of machine elements and systems. Development of engineering judgment; selection of materials stress and failure analysis; kinematic arrangement design for finite and infinite life. Open-ended design problems unify course topics. Prereq: ME 526, ME 561, ME 627. Writing intensive.

**ME 646 - Experimental Measurement and Data Analysis**  
**Credits:** 4.00  
Basic and advanced techniques of engineering and scientific parameter measurement including statistical data and error analysis, curve fitting, calibration and application of transducers, and technical writing. Laboratory experiments draw on concepts from mechanics, thermodynamics, and fluid mechanics. Prereq: ME 526. Pre - or Co-req: ME 608. Writing intensive.

**ME 670 - Systems Modeling, Simulation, and Control**  
**Credits:** 4.00  
Lumped parameter models for mechanical, electrical, thermal, fluid, and mixed systems. Matrix representation, eigenvalues, eigenvectors, time domain solutions, frequency response plots, and computer simulations are used to explore system response. Design of system for desired responses. Introduces feedback control, stability, and performance criteria. Prereq: ECE 537, ME 627, MATH 527. Writing intensive.

**ME 695 - Special Topics**  
**Credits:** 2.00 to 4.00  
Course topics not offered in other courses. May be repeated for credit. Lab. Prereq: permission.

**ME 696 - Projects**  
**Credits:** 1.00 to 4.00  
Analytical, experimental, or design projects undertaken individually or in teams under faculty guidance. May be repeated for credit.
ME 699 - Engineering Internship
Credits: 1.00
Internship experience provides on-the-job reinforcement of academic programs in mechanical engineering. Contact the Mechanical Engineering department office for guidelines. May be repeated to a maximum of 3 credits. Prereq: appropriate class standing in major, 2.5 grade point average, and permission. Cr/F.

ME 705 - Thermal System Analysis and Design
Credits: 4.00
Engineering design of thermal systems that involve real problems and analysis of performance of the design. Design criteria include function, performance, optimization, economy, safety, and others as appropriate for the system. Required for ME seniors. Prereq: ME 503. Writing intensive.
Co-requisites: ME 608

ME 706 - Renewable Energy: Physical and Engineering Principles
Credits: 3.00
The goal of this course is to become "Fluent in energy" and to learn about the engineering fundamentals of renewable energy technologies. The course will begin by giving an overview of U.S. energy usage and sources, as well as history and trends. Various renewable energy topics will then be discussed. Where applicable, topics will be discussed in detail from a fluid and thermal sciences point of view. Guest lecturers and a field trip may be included. This course is open to all engineering seniors. Prereq: ME 503 - Thermodynamics, ME 608 - Fluid Dynamics, or equivalent, or instructor permission.

ME 707 - Analytical Fluid Dynamics
Credits: 4.00
Kinematics of flow; constitutive relationships; development of the Navier-Stokes equations; vorticity theorems; potential flow. Prereq: ME 608.

ME 709 - Computational Fluid Dynamics
Credits: 3.00
Review of matrix methods; basics of finite differences, basics of spectral methods, stability, accuracy, Navier-Stokes solvers. Prereq: ME 603 or permission.

ME 712 - Waves in Fluids
Credits: 3.00
Linear and nonlinear dynamics of hyperbolic and dispersive wave systems with application to acoustic waves, surface and internal gravity waves, Rossby waves, and capillary waves. Key physical concepts include wave-generation mechanisms, wavelength and amplitude dispersion, group velocity and energy propagation, steady streaming, and mode interactions. Prereq: ME 608 or equivalent.

ME 724 - Vibration Theory and Applications
Credits: 4.00
Discrete vibrating systems. Linear system concepts; single-degree-of-freedom system with general excitation. Matrix theory and eigenvalue problems. Many degrees of freedom, normal mode theory for free and forced vibration. Numerical methods; introduction to continuous systems; applications to structural and mechanical systems. Prereq: ME 526; 627 or permission.

ME 727 - Advanced Mechanics of Solids
Credits: 4.00
Stress, strain, stress-strain relations, anisotropic behavior, introduction to elasticity, plane stress/strain, bending and torsion of members with general cross-sections introduction to thin plates and shells, energy methods. Prereq: ME 526 or permission.
ME 730 - Mechanical Behavior of Materials  
Credits: 4.00  
Elastic and inelastic behavior of materials in terms of micro- and macro-mechanics. Stress, strain, and constitutive relations related to recent developments in dislocation theory and other phenomena on the atomic scale and to the continuum mechanics on the macroscopic scale. Elasticity, plasticity, visoelasticity, creep, fracture, and damping. Anisotropic and heterogeneous materials. Prereq: ME 526; 561 or permission.

ME 731 - Fracture and Fatigue Engineering Material  
Credits: 4.00  
Reviews fundamentals of linear elastic fracture mechanics and strain energy release rate analyses. Discusses basic methods of design for prevention of failure by fast fracture and fatigue for metals, ceramics, and polymers with attention to the effect of material properties and subsequent property modification on each design approach. Prereq: ME 526; 561 or permission.

ME 735 - Mechanics of Composite Materials  
Credits: 4.00  

ME 743 - Satellite Systems, Dynamics, and Control  
Credits: 3.00  
General satellite systems with emphasis on spacecraft dynamics and control. Topics include general satellite information such as types of satellites, missions, and orbits, as well as satellite subsystems. Basic spacecraft dynamics and orbital mechanics topics are covered. Advanced topics include attitude and orbit estimation, and automatic attitude control. Prereq: ME 670 or permission.

ME 744 - Corrosion  
Credits: 4.00  
The course is split into three parts. The first part reviews and develops basic concepts of electro-chemistry, kinetics, and measurement methods. The second part covers the details of specific corrosion mechanisms and phenomena including passivity, galvanic corrosion, concentration cell corrosion, pitting and crevice corrosion, and environmentally induced cracking. The third part focuses on the effects of metallurgical structure on corrosion, corrosion in selected environments, corrosion prevention methods, and materials selection and design. Prereq: CHEM 405 or 403; ME 561 or permission. Lab. (Also listed as CHE 744 and OE 744.)

ME 747 - Experimental Measurement and Modeling of Complex Systems  
Credits: 4.00  
Experimental measurements for evaluation, design, and control of mechanical, electrical, and thermal/fluid phenomena. Emphasizes the dynamic response of both sensors and systems and the interactions between physical processes. Experimental examples are drawn from mechanics, material science, thermal-fluid science and controls. Prereq: ME 561; 646; 670. Writing intensive.

ME 755 - Senior Design Project I  
Credits: 2.00  
Part I of this two-part sequence emphasizes problem definition, analysis, development of alternative concepts, decision-making processes, synthesis of an optimum solution and the development of a conceptual design. Lectures on these and other topics are combined with seminars given by professionals from industry, government, and academia. Related topics include ISO9000 quality systems, engineering management, design review process, engineering economics, team building and communications.
Students are organized into project teams to develop a conceptual design. Formal design reviews are conducted. A formal proposal documents the semester's work. Prereq: Senior standing in ME. Lab. Writing intensive.

**ME 756 - Senior Design Project II**  
**Credits:** 2.00  
Continuation of Senior Design Project I, in which the proposal submitted in the previous course is developed into a prototype system. Part II emphasizes the development, assembly, testing and evaluation of the system designed in Part I. Lectures and seminars focus on the prototype development process, design verification and industry practices. A formal report documents the semester's work. Prereq: ME 755. Writing intensive.

**ME 757 - Coastal Engineering and Processes**  
**Credits:** 3.00  
Introduces small amplitude and finite amplitude wave theories. Wave forecasting by significant wave method and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave structure interaction. Introduces mathematical and physical modeling. Prereq: ME 608 or permission. (Also offered as CIE 757 and OE 757.)

**ME #760 - Physical Metallurgy I**  
**Credits:** 4.00  
Introduction to physical metallurgy; dislocations; thermodynamics of materials, diffusion, phase transformations, and strengthening mechanisms in solids. Prereq: ME 561 or permission. Lab.

**ME 761 - Diffraction and Imaging Methods in Materials Science**  
**Credits:** 4.00  
Introduces x-ray diffraction and electron microscopy. Basic crystallography, reciprocal lattice, x-ray and electron diffraction, x-ray methods, transmission and scanning electron microscopy. Prereq: CHEM 403; PHYS 408 or permission. Lab.

**ME 770 - Design with Microprocessors**  
**Credits:** 4.00  
Basic operation of microprocessors and micro-controllers is explained, and interfacing these devices to sensors, displays and mechanical systems is explored. Topics include: number systems, architecture, registers, memory mapping, interrupts and interfacing for system design. Methods of programming and interfacing with mechanical/electrical systems are covered in class, and then implemented in lab. Prereq: ECE 537 or permission. Lab.

**ME 772 - Control Systems**  
**Credits:** 4.00  
Development of advanced control system design concepts such as Nyquist analysis, lead-lag compensation, state feedback, parameter sensitivity, controllability, observability, introduction to non-linear and modern control. Includes interactive computer-aided design and real-time digital control. Prereq: ME 747 or permission. (Also offered as ECE 772.) Lab.

**ME 773 - Electromechanical Analysis and Design**  
**Credits:** 4.00  
Analysis and design of electromechanical systems using lumped parameter models and magnetic finite element analysis (FEA). Electrostatic and magnetic field equations are discussed and used to derive magnetic and electric lumped model elements. Brushless dc motor is analyzed using lumped models and FEA. Various drive types are discussed and the motor system analyzed to obtain torque-speed curves. Design principles are given and utilized in a design project. Prereq: ME 670 or permission.
ME 777 - Computer Aided Engineering  
Credits: 4.00  
In this course, modules of Solid Works (beyond its basic solid modeling capabilities) and other software is used to demonstrate how computer based tools can be used in engineering practice, in particular design analysis and optimization. Emphasis placed on using knowledge from past engineering courses to obtain theoretical calculations to compare with the results from the computer software package. Prereq: ME 526 Strength of Materials; ME 627 Mechanics III; ME 603 Heat Transfer; and ME 608 Fluid Dynamics (or equivalent).

ME 785 - Solid Mechanics in Manufacturing  
Credits: 4.00  
Characterization of material properties are studied with emphasis on plastic deformation. Also, numerical approaches to solve for the forces, stresses, and strains in manufacturing processes are covered. In particular, two prominent mass production manufacturing areas, metal forming and cutting, are examined. Prereq: ME 561; ME 627.

ME 786 - Introduction to Finite Element Analysis  
Credits: 4.00  
Topics include basic matrix theory, potential energy approach, direct stiffness method, calculus of variations, development of finite element theory, and modeling techniques. Applications in solid mechanics, heat transfer, fluids, and electromagnetic devices, via both commercially available codes and student-written codes. Prereq: ME 526, ME 603 or permission. Lab.

ME 795 - Special Topics  
Credits: 1.00 to 4.00  
New or specialized courses and/or independent study. May be repeated for credit.

ME 797 - Honors Seminar  
Credits: 1.00  
Course enrichment and/or additional independent study in subject matter pertaining to a 600- or 700-level ME course other than ME 695, 696, 697, or 795.
Military Science

MILT 401 - Leadership Laboratory I
Credits:
Open only to students taking another Military Science class, with different roles offered for students at different levels of the program. Involves leadership responsibilities for the planning, coordination, execution, and evaluation of various training programs. Students develop, practice and refine leadership skills by serving and being evaluated in a variety of supervisory positions. Specific events include a team-building leader reaction course, orientation to military weapons, basic tactical movement, and land navigation. Cr/F.

MILT 402 - Leadership Laboratory II
Credits:
Open only to students taking another Military Science class, with different roles offered for students at different levels of the program. Involves leadership responsibilities for the planning, coordination, execution, and evaluation of various training programs. Students develop, practice and refine leadership skills by serving and being evaluated in a variety of supervisory positions. Specific events include basic marksmanship, advanced tactical movement, orienteering and land navigation. Cr/F.

MILT 403 - United States Army History
Credits: 3.00
Develops an understanding of the effects the US military and society have on each other through the establishment and background of the United States Army. Presented in the context of broader US Military history and military strategy and global involvement. Through readings, oral and written presentations, and exams, students describe the role of the US Army, its evolution and its impact on society and technology; and critically analyze an armed conflict using the principles of war. This is a pre-commissioning requirement for professional military education (PME) required by the United States Army Cadet Command. It is open to non-ROTC students.

MILT 413 - Introduction to ROTC
Credits: 2.00
Make your first new peer group at college one committed to performing well and enjoying the experience. Increase self-confidence through team study and activities in physical fitness, rappelling, first aid, basic marksmanship, and basic drill. Learn fundamental concepts of leadership in both classroom and outdoor laboratory environments. One hour and a required leadership lab (MILT 401L) plus optional (mandatory for scholarship cadets) participation in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is also required for all cadets. Open to all college students, no military commitment required.

MILT 414 - Introduction to ROTC II
Credits: 2.00
Learn and apply principles of effective leadership. Reinforce self-confidence through participation in physically and mentally challenging exercises with other ROTC cadets. Continued activities in basic drill, physical fitness, rappelling, first aid, and basic marksmanship. Develop communication skills to improve individual performance and group interaction. One hour and a required leadership lab (MILT 402L) plus optional (mandatory for scholarship cadets) participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required for all cadets. Open to all college students; no military commitment required.
MILT 501 - Self/Team Development I  
**Credits:** 2.00  
Learn and apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, planning of events, advanced first aid, physical fitness, and land navigation. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab (MILT 401L), plus optional participation (mandatory for scholarship cadets) in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is required. Additional weekend exercises may be offered for optional participation. Open to all college students, no military commitment required.  
**Co-requisites:** MILT 401

MILT 502 - Individual/Team Military Tactics  
**Credits:** 2.00  
Introduces individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security, and methods of pre-execution checks. Practical exercises with other ROTC students. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab (MILT 402L), plus optional participation (mandatory for scholarship cadets) in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is required. Additional weekend exercises may be offered for optional participation. Open to all college students, no military commitment required.  
**Co-requisites:** MILT 402

MILT 550 - Camp Challenge  
**Credits:** 4.00  
Five-week leadership training course at Fort Knox, Kentucky during the summer that exposes students to intensive leadership evaluation and development. Students learn fundamental military skills such as land navigation using a map and compass, principles of leadership, first aid, drill and ceremony, team building exercises, etc. in preparation for future training as ROTC cadets. Students gain professional knowledge in management and organization and experience group interaction and interpersonal communications through total immersion in a military type environment. Open only to students who have not completed all of the following: MILT 401, 402, 501, and 502. Airfare, lodging, and expenses are paid by the Army. Student incurs no military obligation; program offers opportunities to earn a two-year scholarship and qualifies students to take MILT 601.

MILT 601 - Leading Small Organizations I  
**Credits:** 4.00  
Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Plan and conduct training for other ROTC students in small unit offensive and defensive operations. Three hours and required leadership lab (MILT 401L) plus required participation in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is also required. Other weekend exercises are offered for optional participation. Prereq: Cadet completes MILT 550 or completes MILT 413, 414, 501, and 502.

MILT 602 - Leading Small Organizations II  
**Credits:** 4.00  
Continues the methodology from MILT 601. Analyze tasks; prepare written and oral guidance for team members to accomplish tasks. Delegate tasks and supervise. Plan for and adapt to the unexpected in organizations under stress. Examine and apply lessons from leadership studies. Examine importance of ethical decision making in setting a positive climate that enhances team performance. Three hours and a required leadership lab (MILT 402L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend
exercises may be offered for optional participation.

**MILT 611 - Seminar on Leadership and Management I**

**Credits:** 4.00

Plan, conduct and evaluate activities of the ROTC cadet organization. Articulate goals and put plans into action to attain them. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various Army policies and programs in this effort. Three hours and a required leadership lab (MILT 401L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation. Prereq: MILT 601 and MILT 602.

**MILT 612 - Transition to Lieutenant**

**Credits:** 4.00

Continues the methodology from MILT 611. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as related to leading as an officer in the Army. Prepare for a future as a successful Army lieutenant. Three hours and a required leadership lab (MILT 402L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation. Prereq: MILT 611.

**MILT 695 - Officer Internship**

**Credits:** 1.00 to 4.00

Experiential learning through fieldwork in a military-type unit. Written analysis required. Prereq: MILT 611 (may be taken concurrently). By permission only. Coreq: MILT 401. May be taken up to a total of 8 credits.
MUSI 401 - Introduction to Music  
**Credits:** 4.00  
Fundamental approach to perceptive listening based on a detailed study of several masterpieces representing different periods and forms. Historical perspective, but main emphasis is on confronting significant works of musical art on their own terms. Some participation in musical life of the University required. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

MUSI 401H - Honors/Introduction to Music  
**Credits:** 4.00  
Fundamental approach to perceptive listening based on a detailed study of several masterpieces representing different periods and forms. Historical perspective, but main emphasis is on confronting significant works of musical art on their own terms. Some participation in musical life of the University required. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

MUSI 402 - Survey of Music History  
**Credits:** 4.00  
The study of the development of musical styles and idioms in the context of selected historical and cultural aspects of Western civilization. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

MUSI 402H - Honors/Survey of Music History  
**Credits:** 4.00  
The study of the development of musical styles and idioms in the context of selected historical and cultural aspects of Western civilization. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

MUSI 403 - Roots of Rock  
**Credits:** 4.00  
This course examines the musical styles, traditions, and social circumstances that produced a distinctive form of American popular music in the 1950s and '60s. Through assigned listening, reading, and film viewing, students are expected to develop critical listening skills that allow them to discern subtle distinctions among styles and sub styles, as well as to recognize connections among seemingly disparate styles. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

MUSI 404 - An Introduction to Music, Media, and the Moving Image  
**Credits:** 4.00  
Through selected readings, attentive listening, viewing, and discussion of a variety of films and multi-media productions, students develop a common vocabulary for analyzing music accompanying moving images. Students develop an understanding of the western and non-western musical conventions that work, often at a subconscious level, in conjunction with images to shape and cue audience responses to, and interaction with, visual cues. Media includes canonic Hollywood films, independent and foreign cinema, with explorations of non-Western films, video game scoring, television, and animation. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.
MUSI 405 - Survey of Music in America  
Credits: 4.00  
From colonial times to the present, including various European influences, the quest for an American style, and the emergence of such indigenous phenomena as jazz. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program. (Formerly MUSI 511)

MUSI 406 - Country Music  
Credits: 4.00  
This course surveys the rich musical, cultural, and economic history of country music in the United States. Since its inception, country music has embodied a tension between tradition and progress. Country music thereby reflects a basic feature of the American story, valorizing our history while valuing social and technological development. Throughout the course, we consider this tension as it affects the musical content and cultural meaning of country music.

MUSI 411 - Fundamentals of Music Theory  
Credits: 4.00  
Elements of music theory for the non-music major; principles of musical structure, analysis, elementary written counterpoint and harmony, and ear training. May not be counted for credit toward a music major. Prereq: ability to read music and permission of the instructor.

MUSI 412 - Fundamentals of Music Theory  
Credits: 4.00  
Elements of music theory for the non-music major; principles of musical structure, analysis, elementary written counterpoint and harmony, and ear training. May not be counted for credit toward a music major. Prereq: ability to read music and permission of the instructor. Prereq: MUSI 411 or permission of instructor.

MUSI 441 - Concert Choir  
Credits: 1.00  
A mixed chorus that studies and performs classical and modern literature. Recommended for voice majors. Open to all students. May be repeated for a maximum of 8 credits.

MUSI 442 - Chamber Singers  
Credits: 1.00  
A specialized mixed chamber choir that concentrates on the a cappella repertoire from the Renaissance to the present. Prereq: Audition.  
Co-requisites: MUSI 441

MUSI 444 - Music and Social Change  
Credits: 4.00  
The connections between music and social change with a twofold goal: 1) to heighten critical listening skills so as to become more aware of ways in which music can express social attitudes; and 2) to introduce the social, cultural, and political issues surrounding the music being studied. Course work consists of listening to selected repertoires, reading scholarly and popular essays about those repertories, and extensive in-class (and on-line) discussion about issues raised by the listening and reading. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program. Writing intensive.

MUSI 448 - Opera Workshop  
Credits: 1.00  
Operatic singing, acting, and production techniques; performance of both complete operas and operatic excerpts. Prereq: audition.
MUSI 450 - Symphony
Credits: 1.00
Presents several concerts during the year of repertoire ranging from the great, standard symphonic literature to large modern works. Prereq: audition.

MUSI 451 - Concert Band
Credits: 1.00
The Concert Band performs serious, concert music, ranging from transcriptions of works for other mediums, to the 20th century "classics" of the wind band repertoire and music written for wind band. Anyone with previous band experience is welcome. Auditions are for chair placement only. May be repeated up to a maximum of 12 credits.

MUSI 452 - Wind Symphony
Credits: 1.00
Select wind ensemble which performs difficult classical and contemporary literature. Prereq: audition.

MUSI 453 - Symphonic Band
Credits: 1.00
Original band music, transcription, marches, etc. For students whose program does not permit music as a major interest, but who are interested in maintaining their playing proficiency and continuing their study of music. May be repeated for a maximum of 8 credits. Prereq: audition

MUSI 454 - UNH Marching Band
Credits: 1.00
Open to all students; performs during football games. Rehearsals conclude at the end of the football season. May be repeated up to a maximum of 8 credits. 0 or 1 credit.

MUSI 455 - Piano Ensemble
Credits: 1.00
Drawing from available student instrumentalists and singers, pianists learn the art of performing in trios, duo sonatas, and two-piano works, and gain experience in Lieder accompaniment.

MUSI 456 - String Ensemble
Credits: 1.00
Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.

MUSI 457 - Woodwind Ensemble
Credits: 1.00
Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.

MUSI 458 - Brass Ensemble
Credits: 1.00
Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.

MUSI 459 - Percussion Ensemble
Credits: 1.00
Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.
MUSI 460 - Jazz Band
Credits: 1.00
Two jazz bands perform a wide spectrum of big band literature. May be repeated up to a maximum of 8 credits. Prereq: audition.

MUSI 461 - Vocal Jazz Ensemble
Credits: 1.00
Singers perform a wide spectrum of vocal jazz literature. May be repeated up to a maximum of 8 credits. Open to all students pending an audition during the first week of the semester. Contact the Department of Music for further information.

MUSI 462 - Pep Band
Credits: 1.00
Rehearsal and performance of a broad range of band music at hockey and basketball games. May be repeated up to a maximum of 8 credits. 0 or 1 credit.

MUSI 463 - Jazz Combo
Credits: 1.00
Groups of instrumentalists gain experience in the performance of literature for the smaller jazz ensemble. May be repeated up to a maximum of 9 credits. Prereq: permission.

MUSI 464 - Guitar Ensemble
Credits: 1.00
Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. May be repeated up to a maximum of 9 credits. Prereq: permission.

MUSI 471 - Theory I
Credits: 3.00
Introduces the tonal system; species counterpoint; principles of voice leading and harmonic progression through the analysis, realization, and composition of one-, two-, and four-voiced textures. Concept of triad inversion and consonant diatonic harmonies of the major and minor modes. Students should register for MUSI 473-474 concurrently. Prereq: permission.

MUSI 472 - Theory I
Credits: 3.00
Introduces the tonal system; species counterpoint; principles of voice leading and harmonic progression through the analysis, realization, and composition of one-, two-, and four-voiced textures. Concept of triad inversion and consonant diatonic harmonies of the major and minor modes. Students should register for MUSI 473-474 concurrently. Prereq: permission. Prereq: MUSI 471.

MUSI 473 - Ear Training I
Credits: 1.00
Laboratory exercises to develop aural skills; sight-singing and dictation. Students should register for MUSI 471-472 concurrently. Prereq: permission.

MUSI 474 - Ear Training I
Credits: 1.00
Laboratory exercises to develop aural skills; sight-singing and dictation. Students should register for MUSI 471-472 concurrently. Prereq: permission. Prereq: MUSI 473.

MUSI 475 - Functional Piano I
Credits: 1.00
Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission.

**Co-requisites:** MUSI 471, MUSI 473

**MUSI 476 - Functional Piano I**

**Credits:** 1.00

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission. Prereq: MUSI 475. **Co-requisites:** MUSI 472, MUSI 474

**MUSI 501 - History and Literature of Music**

**Credits:** 3.00

Styles, forms, and techniques of composition in Western music. Prereq: completion of MUSI 472 or MUSI 412; permission.

**MUSI 502 - History and Literature of Music**

**Credits:** 3.00

Styles, forms, and techniques of composition in Western music. Prereq: completion of MUSI 472 or MUSI 412; permission.

**MUSI 515 - Music in World Cultures**

**Credits:** 4.00

An introduction to musicking (participating in any way, including listening, in musical performance) beyond the Western tradition, this course offers students an opportunity to explore the music and culture of diverse regions from an ethnomusicological perspective. Through listening to and analyzing music, readings, lecture, discussion, and individual fieldwork projects, students discover how music functions within different world cultures and gain understanding of the ways people "make music meaningful and useful in their lives," as, through musicking, they articulate, resist, and transform cultural norms.

**MUSI 520 - Diction for Singers I**

**Credits:** 2.00

Application of International Phonetic Alphabet (IPA) to English, French, German, and Italian. Emphasizes both written and spoken performance.

**MUSI 521 - Diction for Singers II**

**Credits:** 2.00

Application of International Phonetic Alphabet (IPA) to English, French, German, and Italian. Emphasizes both written and spoken performance. Prereq: MUSI 520.

**MUSI 536 - Early Wind Instruments**

**Credits:** 1.00 to 4.00

Private instruction in Renaissance and Baroque wind instruments. May be repeated. Special fee.

**MUSI 541 - Piano**

**Credits:** 1.00 to 4.00

Private instruction in piano. May be repeated. Special fee for non-majors.

**MUSI 545 - Voice**

**Credits:** 1.00 to 4.00

Private instruction in voice. May be repeated. Special fee for non-majors.
MUSI 546 - Violin
Credits: 1.00 to 4.00
Private instruction in violin. May be repeated. Special fee for non-majors.

MUSI 547 - Viola
Credits: 1.00 to 4.00
Private instruction in viola. May be repeated. Special fee for non-majors.

MUSI 548 - Violoncello
Credits: 1.00 to 4.00
Private instruction in violoncello. May be repeated. Special fee for non-majors.

MUSI 549 - String Bass
Credits: 1.00 to 4.00
Private instruction in string bass. May be repeated. Special fee for non-majors.

MUSI 550 - Classical Guitar
Credits: 1.00 to 4.00
Private instruction in classical guitar. Special fee.

MUSI 551 - Flute
Credits: 1.00 to 4.00
Private instruction in flute. May be repeated. Special fee for non-majors.

MUSI 552 - Clarinet
Credits: 1.00 to 4.00
Private instruction in clarinet. May be repeated. Special fee for non-majors.

MUSI 553 - Saxophone
Credits: 1.00 to 4.00
Private instruction in saxophone. May be repeated. Special fee for non-majors.

MUSI 554 - Oboe
Credits: 1.00 to 4.00
Private instruction in oboe. May be repeated. Special fee for non-majors.

MUSI 555 - Bassoon
Credits: 1.00 to 4.00
Private instruction in bassoon. May be repeated. Special fee for non-majors.

MUSI 556 - French Horn
Credits: 1.00 to 4.00
Private instruction in French horn. May be repeated. Special fee for non-majors.

MUSI 557 - Trumpet
Credits: 1.00 to 4.00
Private instruction in trumpet. May be repeated. Special fee for non-majors.

MUSI 558 - Trombone
Credits: 1.00 to 4.00
Private instruction in trombone. May be repeated. Special fee for non-majors.

MUSI 559 - Euphonium
Credits: 1.00 to 4.00
Private instruction in euphonium. May be repeated. Special fee for non-majors.

MUSI 560 - Tuba
Credits: 1.00 to 4.00
Private instruction in tuba. May be repeated. Special fee for non-majors.

MUSI 561 - Percussion
Credits: 1.00 to 4.00
Private instruction in percussion. May be repeated. Special fee for non-majors.

MUSI 562 - Jazz Piano
Credits: 1.00 to 4.00
Private instruction in jazz piano. May be repeated. Special fee for non-majors. Permission required.

MUSI 563 - Jazz Guitar
Credits: 1.00 to 4.00
Private instruction in jazz guitar. May be repeated. Special fee for non-majors.

MUSI 564 - Drum Set
Credits: 1.00 to 4.00
Private instruction in drum set. May be repeated. Special fee for non-majors.

MUSI 571 - Theory II
Credits: 3.00
Continuation of MUSI 471-472. Compositional and analytical work stresses the treatment of dissonance within the tonal system; accessory tones, seventh chords, tonicization, modulation, basic principles of chromatic harmony, and harmonization of chorale melodies are covered. Students should register for MUSI 573-574 concurrently. Prereq: MUSI 472; 474.

MUSI 572 - Theory II
Credits: 3.00
Continuation of MUSI 471-472. Compositional and analytical work stresses the treatment of dissonance within the tonal system; accessory tones, seventh chords, tonicization, modulation, basic principles of chromatic harmony, and harmonization of chorale melodies are covered. Students should register for MUSI 573-574 concurrently. Prereq: MUSI 472; 474. Prereq: MUSI 571.

MUSI 573 - Ear Training II
Credits: 1.00
Laboratory exercises to develop aural skills further. Students should register for MUSI 571-572 concurrently. Prereq: MUSI 472; 474; permission.

MUSI 574 - Ear Training II
Credits: 1.00
Laboratory exercises to develop aural skills further. Students should register for MUSI 571-572 concurrently. Prereq: MUSI 472; 474; permission.

MUSI 575 - Functional Piano II
Credits: 1.00
Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission. Prereq: MUSI 476.
Co-requisites: MUSI 571, MUSI 573

**MUSI 576 - Functional Piano II**
**Credits:** 1.00
Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission. Prereq: MUSI 575.
Co-requisites: MUSI 572, MUSI 574

**MUSI 595 - Special Topics in Music Literature**
**Credits:** 1.00 to 4.00
Open to music majors and non-majors; topics in areas not easily covered in historical courses. Prereq: permission. May be repeated for credit.

**MUSI 610 - Popular Music and Rebellion in the 1960's**
**Credits:** 4.00
Examines the ways in which popular music helped form the youth culture, was used as an act of rebellion, and came to be a focal point of generational conflict and protest in the United States during the 1960s.

**MUSI 703 - Music of the Renaissance**
**Credits:** 3.00
Works of the 15th- and 16th-century composers from Dunstable to Palestrina. Prereq: MUSI 501 and 502 or permission. Writing intensive.

**MUSI 705 - Music of the Baroque**
**Credits:** 3.00
Music of Europe from de Rore to Bach. Prereq: MUSI 501 and 502 or permission. Writing intensive.

**MUSI 707 - Music of the Classical Period**
**Credits:** 3.00
Growth of musical styles and forms from early classicism through the high classicism of Haydn, Mozart, and the young Beethoven. Prereq: MUSI 501 and 502 or permission. Writing intensive.

**MUSI 709 - Music of the Romantic Period**
**Credits:** 3.00
A survey of romanticism in music from Beethoven's late period to the end of the 19th century. The works of Schubert, Berlioz, Schumann, Mendelssohn, Chopin, Wagner, Verdi, Brahms, Austrian symphonists, French pre-impressionists, and national styles in European music. Prereq: MUSI 501 and 502 or permission.

**MUSI 709W - Music of the Romantic Period**
**Credits:** 3.00
A survey of romanticism in music from Beethoven's late period to the end of the 19th century. The works of Schubert, Berlioz, Schumann, Mendelssohn, Chopin, Wagner, Verdi, Brahms, Austrian symphonists, French pre-impressionists, and national styles in European music. Prereq: MUSI 501 and 502 or permission. Writing intensive.

**MUSI 711 - Music of the 20th and 21st Centuries**
**Credits:** 3.00
Styles and techniques of composers from Debussy to the present. Special emphasis on tonal music before World War I, neoclassical trends, the emergence of atonality and serial techniques, electronic music. Prereq: MUSI 501 and 502 or permission. Writing intensive.
MUSI 713 - Art Song
Credits: 3.00
History and literature of the solo song with piano accompaniment. Survey of national styles of the 19th and 20th centuries and deeper study of the central core of the art song—the German Lied. Prereq: MUSI 501 and 502 or permission. Writing intensive.

MUSI 715 - Survey of Opera
Credits: 3.00
History of the genre from Monteverdi to the present. Prereq: MUSI 501 and 502 or permission. Writing intensive.

MUSI 731 - Conducting
Credits: 2.00
Physical aspects, equipment of conductor, fundamental gestures and beats, baton techniques. Reading and analysis of full and condensed scores, study of transposition, psychology of rehearsal. Prereq: MUSI 571.

MUSI 732 - Conducting
Credits: 2.00
Physical aspects, equipment of conductor, fundamental gestures and beats, baton techniques. Reading and analysis of full and condensed scores, study of transposition, psychology of rehearsal. Prereq: MUSI 571. Prereq: MUSI 731.

MUSI 736 - Early Wind Instruments
Credits: 1.00 to 4.00
Private instruction in Renaissance and Baroque wind instruments. May be repeated. Special fee.

MUSI 741 - Piano
Credits: 1.00 to 4.00
Private instruction in piano. May be repeated. Special fee for non-majors.

MUSI 745 - Voice
Credits: 1.00 to 4.00
Private instruction in voice. May be repeated. Special fee for non-majors.

MUSI 746 - Violin
Credits: 1.00 to 4.00
Private instruction in violin. May be repeated. Special fee for non-majors.

MUSI 747 - Viola
Credits: 1.00 to 4.00
Private instruction in viola. May be repeated. Special fee for non-majors.

MUSI 748 - Violoncello
Credits: 1.00 to 4.00
Private instruction in violoncello. May be repeated. Special fee for non-majors.

MUSI 749 - String Bass
Credits: 1.00 to 4.00
Private instruction in string bass. May be repeated. Special fee for non-majors.

MUSI 750 - Classical Guitar
Credits: 1.00 to 4.00
Private instruction in classical guitar. Special fee.

MUSI 751 - Flute
Credits: 1.00 to 4.00
Private instruction in flute. May be repeated. Special fee for non-majors.

MUSI 752 - Clarinet
Credits: 1.00 to 4.00
Private instruction in clarinet. May be repeated. Special fee for non-majors.

MUSI 753 - Saxophone
Credits: 1.00 to 4.00
Private instruction in saxophone. May be repeated. Special fee for non-majors.

MUSI 754 - Oboe
Credits: 1.00 to 4.00
Private instruction in oboe. May be repeated. Special fee for non-majors.

MUSI 755 - Bassoon
Credits: 1.00 to 4.00
Private instruction in bassoon. May be repeated. Special fee for non-majors.

MUSI 756 - French Horn
Credits: 1.00 to 4.00
Private instruction in French horn. May be repeated. Special fee for non-majors.

MUSI 757 - Trumpet
Credits: 1.00 to 4.00
Private instruction in trumpet. May be repeated. Special fee for non-majors.

MUSI 758 - Trombone
Credits: 1.00 to 4.00
Private instruction in trombone. May be repeated. Special fee for non-majors.

MUSI 759 - Euphonium
Credits: 1.00 to 4.00
Private instruction in euphonium. May be repeated. Special fee for non-majors.

MUSI 760 - Tuba
Credits: 1.00 to 4.00
Private instruction in tuba. May be repeated. Special fee for non-majors.

MUSI 761 - Percussion
Credits: 1.00 to 4.00
Private instruction in percussion. May be repeated. Special fee for non-majors.

MUSI 762 - Jazz Piano
Credits: 1.00 to 4.00
Private instruction in jazz piano. May be repeated. Special fee for non-majors. Permission required.

MUSI 763 - Jazz Guitar
Credits: 1.00 to 4.00
Private instruction in jazz guitar. May be repeated. Special fee for non-majors.

**MUSI 764 - Drum Set**  
**Credits:** 1.00 to 4.00  
Private instruction in drum set. May be repeated. Special fee for non-majors.

**MUSI 771 - Counterpoint**  
**Credits:** 3.00  
Contrapuntal techniques of tonal music. Melodic construction and dissonance treatment through work in species counterpoint and studies in harmonic elaboration and prolongation. Analysis of selected compositions emphasizes the connection between fundamental contrapuntal techniques and the voice-leading of composition. Prereq: MUSI 572 or permission.

**MUSI 775 - Composition**  
**Credits:** 1.00 to 4.00  
Construction of phrases, periods, and short compositions following classical models. Problems of text-setting. Prereq MUSI 572 or permission.

**MUSI 776 - Composition**  
**Credits:** 1.00 to 4.00  
Construction of phrases, periods, and short compositions following classical models. Problems of text-setting. Prereq MUSI 572 or permission. Prereq: MUSI 775 or permission.

**MUSI 777 - Advanced Composition**  
**Credits:** 1.00 to 4.00  
Continuation of MUSI 776. Individual compositional projects. Prereq: MUSI 776 and permission. May be repeated for credit.

**MUSI 778 - Topics in Electronic Music**  
**Credits:** 1.00 to 4.00  
Introduces and develops skills in the fundamentals of musical acoustics, and the principal compositional resources of digital/electronic music. Permission required.

**MUSI 779 - Orchestration**  
**Credits:** 3.00  
Characteristics of band and orchestral instruments both individually and in small (homogeneous) and large mixed groupings. Students study scores, write assignments, and have arrangements performed if possible. Prereq: MUSI 572 or permission.

**MUSI 781W - Analysis: Form and Structure**  
**Credits:** 3.00  
Introduces analytical techniques through the study of representative masterworks: formal and structural elements and their interrelationships. Analysis of 18th- and 19th century works. Prereq: MUSI 572 or permission. Special fee. Writing intensive.

**MUSI 782W - Analysis: Form and Structure**  
**Credits:** 3.00  
Introduction to analytical techniques through the study of representative masterworks: formal and structural elements and their interrelationships. Analysis of 20th- and 21st-century works. Prereq: MUSI 572 or permission. Writing intensive.

**MUSI 795 - Special Studies**
Credits: 1.00 to 4.00

MUSI 795W - Special Studies/Cardiff
Credits: 3.00
Advanced Music History or Advance Music Theory for Cardiff U. Study Abroad. Prereq: permission. Writing intensive.
Music Education

MUED 595 - Special Projects
Credits: 1.00 to 4.00
Individual investigation, research, or study. Creative projects may be included. Prereq: permission.

MUED 741 - Techniques and Methods in Choral Music
Credits: 2.00
Problems in the organization and performance of high school, college, and community choruses. Techniques of choral conducting and rehearsal, repertory and materials.

MUED 743 - Materials and Methods in Piano Music
Credits: 2.00
Gives potential piano teachers a coherent but flexible approach to the instruction of students of different ages and levels of talent through evaluation of methods and materials and discussion of the role of the private teacher.

MUED 745 - Techniques and Methods in String Instruments
Credits: 2.00
Class and individual instruction. Intensive training on the violin, viola, cello, and double bass. Classroom procedures, establishment of string programs, and evaluation of available methods materials. Permission required.

MUED 746 - Techniques and Methods in String Instruments
Credits: 2.00
Class and individual instruction. Intensive training on the violin, viola, cello, and double bass. Classroom procedures, establishment of string programs, and evaluation of available methods materials. Permission required.

MUED 747 - Techniques and Methods in Woodwind Instruments
Credits: 2.00 or 3.00
Basic course in embouchure formation, tone production, tonguing, fingering and instrument care as applied to each of the woodwinds: flute, oboe, clarinet, bassoon and saxophone. Methods, studies, solos and ensembles most useful with school players of woodwind instruments. Permission required.

MUED 749 - Techniques and Methods in Brass Instruments
Credits: 2.00
Basic course in embouchure formation, tone, tonguing, fingering, flexibility, accuracy, and range development as applied to the trumpet or baritone horn, French horn, and trombone. Methods, studies, solos, and ensembles most likely to be useful with school players of brass instruments. Permission required.

MUED 751 - Techniques and Methods in Percussion Instruments
Credits: 2.00
Basic performance skills on snare drum, timpani, mallet instruments, and other percussion instruments used in bands and orchestras. Materials and methods of instruction. Permission required.

MUED 755 - Vocal Pedagogy
Credits: 1.00 or 2.00
A study of vocal anatomy, vocal function, and teaching methods, with an emphasis on application for
singers and voice teachers.

**MUED 763 - Jazz Music Methods**  
**Credits:** 2.00  
Organization and delivery of instruction in jazz. Historical development of jazz styles and the role of each instrument/voice in jazz combos and large ensembles. Reading jazz notation and teaching improvisation. Examination of appropriate literature. Prereq: piano proficiency. Permission required.

**MUED 765 - Instrumental Music Methods**  
**Credits:** 2.00  
Organization and delivery of instruction to groups of instrumental music students. Examination of appropriate curricula and materials, application of instrumental and conducting techniques, structure of rehearsals, assessment of student progress. Prereq: junior standing.

**MUED 771 - Marching Band Methods**  
**Credits:** 2.00  
Role of marching band in the school music program. Design and execution of field shows and parade marching. Understanding of marching percussion and auxiliary units. Examination of appropriate music. Prereq: MUSI 454 and 571.

**MUED 790 - Teaching Elementary School Music**  
**Credits:** 3.00  
Experiential approach toward learning creative strategies for teaching elementary school music. Includes various curricula and methods; philosophy and psychology of music; demonstration of materials and instruments. Observation and teaching in schools. Prereq: piano proficiency.

**MUED 791 - Teaching Secondary School Music**  
**Credits:** 2.00  
Assembling, managing, and teaching junior/senior high school music curriculum. Academic issues of philosophy, curriculum building, application of learning theories, administration, evaluation, motivation, and classroom management combined with field experience in lesson planning and teaching/rehearsal techniques. Prereq: piano proficiency; MUSI 731-732.

**MUED 795 - Special Studies**  
**Credits:** 1.00 to 4.00  
Allows upper-level students to explore individually or in groups areas related to their specific professional interests. Prereq: permission.
Natural Resources

**NR 400 - Professional Perspectives in Natural Resources**
**Credits:** 1.00
Lectures by departmental faculty provide an informal look at the various natural resource disciplines and professions represented by the Department of Natural Resources. These presentations acquaint students with our faculty and inform them of some of the exciting research being undertaken in the department. Students also learn of opportunities for professional involvement. Required for all first-semester Natural Resources majors. Cr/F.

**NR 401 - Introduction to Natural Resources**
**Credits:** 4.00
Overview of the history, politics, economics, ethics, and ecology involved with the conservation and management of living and non-living natural resources. Sets the stage for subsequent natural resource courses by introducing the scientific basis for natural resource conservation and management. Labs build confidence in map and compass work and provide hands on field experience within the various natural resource disciplines. Debates and discussions of natural resource related hot topics provide opportunities to practice public speaking, problem solving, and critical thinking skills. Restricted to NR majors or by Permission. Lab. Special fee.

**NR 403 - Introduction to Environmental Science**
**Credits:** 3.00
A multi-disciplinary introduction to Environmental Sciences, presenting basic concepts and controversies in geology, meteorology/hydrology, global biology and biogeochemistry, integrated through the study of the Earth as system. Intended primarily for declared or perspective majors in Environmental Sciences and related programs. Combines lecture and discussion with discovery and presentation experiences to address the history of ideas, and major questions and controversies, both settled and active.

**NR 410 - Insects and Society**
**Credits:** 4.00
Insects have had a major impact on human culture throughout the centuries as source of food, an inspiration in literature and art, and a driving force behind social change. We study basic insect biology and ecology with a focus on their relationships to humans. Special fee. Lab.

**NR 415 - Natural Resources Field Methods**
**Credits:** 2.00
This course is intended to serve first or second year students in Forestry, Wildlife and Conservation Biology, and Environmental Conservation and Sustainability. After taking this course, students are able to navigate successfully in wild terrain using pacing, map, compass, GPS; can conduct a simple planar survey including cartography; and can sample a forest in order to characterize the abundance and quality of forest resources. Moreover, students know the fundamental principles of navigation, surveying, and field sampling.

**NR 425 - Field Dendrology**
**Credits:** 4.00
Students study forest trees in natural communities and urban settings. Identification and nomenclature of important North American trees and shrubs is emphasized. Environmental factors influencing tree growth, combined with study of disturbance history, provide the context for understanding why tree species grow where they do. Students are introduced to the major forest regions of North America. Restricted to NR
majors; others by permission. Special fee.

**NR 433 - Wildlife Ecology**  
**Credits:** 4.00  
Historical, biological, ecological, and sociological factors influencing the wildlife resource and its management. Concepts in populations, communities, habitat, and contemporary wildlife issues. Special fee. Lab.

**NR 435 - Contemporary Conservation Issues and Environmental Awareness**  
**Credits:** 4.00  
Explores the impacts of technology and human activity on our environment and natural resources. Key conservation issues are used as examples of past and present biological, social, and environmental conflicts.

**NR 435H - Honors/Contemporary Conservation Issues and Environmental Awareness**  
**Credits:** 4.00  
Explores the impacts of technology and human activity on our environment and natural resources. Key conservation issues are used as examples of past and present biological, social, and environmental conflicts.

**NR 437 - Principles of Sustainability**  
**Credits:** 4.00  
In this course, we investigate the foundational principles of the concept of sustainability. Our objectives include: understanding the many integrated dimensions of sustainability; examining illustrations of unsustainable human-environment relations; recognizing the complexity of sustainability problems and the challenges to finding solutions; comprehending that human-environment relations are a multi-level, complex and dynamic system, and appreciating that the sustainability of ecosystems is necessarily embedded in social, cultural and historical trends.

**NR 439 - Environmental Biology**  
**Credits:** 4.00  
Environmental biology focuses on the origins, functions, and interactions of populations, communities, species and ecosystems in relation to dynamic environmental processes. The main course objective is to provide a basic understanding of ecosystem function and the ecological, evolutionary, and genetic principles necessary to understand biological diversity and its distribution. Special fee.

**NR 444B - The Real Dirt**  
**Credits:** 4.00  
Explores sustainable agriculture, regional and local food supply and systems, land ethics and agrarian thought as a natural resource and environmental conservation issue. Focusing on northern and central New England, the course uses the teaching of Aldo Leopold and includes hands-on study of UNH's new initiatives in sustainable and organic agriculture and the on-campus food system. A visit to University farms is included. Writing intensive.

**NR 444E - Eye of Newt and Toe of Frog: The World of Poisonous Animals**  
**Credits:** 4.00  
Course examines a variety of animal poisons and venoms in different contexts. Historical, cultural, physiological, pharmacological, and evolutionary viewpoints are explored. Readings, guest lectures, and peer blog entries are used to refine critical thinking skills and form the basis of in-class discussions.

**NR 444F - Does Extinction Matter**  
**Credits:** 4.00
This course examines the causes and potential consequences of biodiversity loss. By considering ecological, economic, and ethical perspectives students will be asked to develop an informed personal answer to the question Does extinction matter? Development of critical thinking as well as written and oral communication skills will be stressed through a variety of in-class and outside class activities.

NR 458 - The Science of Where  
**Credits:** 4.00  
This online course introduces the principles and practices of spatial thinking through lectures, readings, discussions, and hands-on laboratory exercises. Students learn not only to think spatially, but also how to apply this knowledge in their own fields of study.

NR 501 - Studio Soils  
**Credits:** 4.00  
An overview of physical, chemical, and biological properties of soil. Sub-disciplines of soil chemistry, soil physics, soil microbiology, soil genesis, and classification. Prereq: CHEM 403 or equivalent. Special fee. Lab.

NR 502 - Forest Ecosystems and Environmental Change  
**Credits:** 4.00  
Forest ecosystems cover a large fraction of the Earth's land surface and account for most of its terrestrial biological productivity. This course introduces forest ecosystems around the world and explores both the natural processes that regulate them and the environmental factors that cause change over time. Topics include tree growth strategies, successional change, nutrient cycling, and human-induced stressors such as air pollution and climate change. Special fee.

NR 504 - Freshwater Resources  
**Credits:** 4.00  
Major determinants of freshwater resources including hydrologic cycle and water balance, precipitation, stream-flow measurement, pollution, water supply and sewage treatment, water resource management and regulation. Special fee. Lab/field trips.

NR 506 - Forest Entomology  
**Credits:** 4.00  
Introduces insect biology, behavior, ecology, and control, focusing on the forest environment. Labs include identification to the family level and an insect collection. Special fee. Lab. Writing intensive.

NR 507 - Introduction to our Energy System and Sustainable Energy  
**Credits:** 4.00  
This course introduces students to our domestic energy system and the expanding efforts to develop our use and acceptance of sustainable energy. It provides a historical context of our system that explains where we are today in terms of the grid, technologies, energy use and production and energy markets, primarily for electricity and building use. The course examines how our current impedes and enhances opportunities for innovation in renewable technologies and financing.

NR 527 - Forest Ecology  
**Credits:** 4.00  
Introduces basic and applied ecology of forests, with emphasis on ecosystem processes, including water, energy, and nutrient cycles; biological interactions, including biodiversity and plant-plant, plant-animal, and plant-microbe relationships; and human impacts, including forest management, land-use/land cover-change, and changes in atmospheric chemistry. Prereq: PBIO 412 or BIOL 411. Restricted to NR majors or by Permission. Special fee. Lab.
NR 542 - Forestland Measurement and Mapping  
Credits: 1.00  
Elementary measuring equipment and techniques; preparation of maps; public land survey; court-house deed search. (Forestry and Wildlife majors only.) Special fee.

NR 600 - Work Experience  
Credits:  
As part of their degree program, students are expected to engage in a work experience or internship under professional supervision and approved by natural resources faculty. This experience may occur at any time during their sophomore through senior years. Students are responsible for arranging their own experience in consultation with their advisor and NREN faculty members. Permission. Cr/F.

NR 601 - Environmental Conservation and Sustainable Living Internship  
Credits: 4.00  
Practical internship and field experience in a location removed from the University milieu to give the environmental conservation student a dimension and insight into sustainable resource management systems not available in the campus experience. Prereq: permission. Cr/F.

NR 602 - Natural Resources and Environmental Policy  
Credits: 4.00  
Contemporary natural resource and environmental policy problems/issues are addressed from a policy sciences perspective with emphasis on domestic policy solutions. Critical assessment of major policy initiatives and their implementation toward sustainable resource use and a healthy environment. Public policies are analyzed to determine the extent to which their implementation strategies have succeeded, and to assess their adequacy within a bioregional or ecosystem approach, and/or capacity to integrate economic and environmental decisions. Cases include national and local policies in their global context. Students apply public policy analysis and decision tools in laboratory sessions. Prereq: junior/senior; Restricted to NR majors or by Permission. Special fee. Writing intensive.

NR 603 - Landscape Ecology  
Credits: 4.00  
This course focuses on the relationships between scale, spatial patterns and ecological processes. Through lecture, discussion and lab exercises students learn about scale and scaling techniques, the abiotic and biotic processes creating landscape patterns, how landscape patterns are characterized, and the application of landscape ecology theory to contemporary issues in conservation and management. Emphasis placed on landscape perspectives and practices as they relate to understanding and managing populations and communities. Prereq: BIOL 541, NR 527 or permission of instructor.

NR 606 - International Energy Topics  
Credits: 4.00  
This course introduces students to international energy topics. Students will be exposed to a historical context and current status of several energy-related issues from an international perspective. Topics range from energy poverty, energy and climate change and global fossil fuel subsidies. Studies of specific technologies will be delivered through the context of international leaders, Iceland and geothermal, the UK and offshore wind and solar in Germany.

NR 615 - Wildlife Habitats  
Credits: 4.00  
Introduces animal-habitat associations, including an examination of spatial and temporal features of wildlife habitat, the evolution of habitat selection, and how habitat suitability/productivity is evaluated. Prereq: woody plant identification; limited to wildlife management majors and minors. Permission. Special fee. Writing intensive.
NR 620 - Farm to Table: A Case Study in the Northern Beauce Region of France  
Credits: 4.00  
Course provides students a unique study abroad experience that blends the study of agroecology with an on-farm stay that allows them to see how food moves from the field to table. Students participate in lectures, fieldtrips, readings, and discussions on topics including agricultural sustainability, agriculture and environmental health (soil/water quality, biodiversity), the influence of agriculture on the local ecology, and the relationship between French agriculture and the current local food movement in the U.S. They also get practical, on-farm experience by assisting with the harvest and transport of vegetables and edible flowers for the Paris market. Permission required. Special fee.

NR 621 - Field Description of Soils  
Credits: 3.00  
Description of soils in the field. Application of soils properties to forestry, plant science, and community planning. Strong orientation to fieldwork. Special fee. Lab.

NR 625 - Physiological Ecology  
Credits: 4.00  
Course examines the physiological mechanisms and adaptive responses of organisms that facilitate their survival in changing natural environments. Following an introduction to homeostasis and general physiological principles, topics focus on adaptations to the marine and freshwater environments, to estuarine challenges, and the specific requirements of terrestrial and aerial environments. Additional topics center on adaptations to extreme habitats and to parasitic life styles. Furthermore, the physiological bases of migrations, sleep, and mating/life history strategies are also explored. Examples are drawn from invertebrates, vertebrates, and plants. Prereq: one year college level biology.

NR 637 - Practicum in Environmental Conservation  
Credits: 4.00  
Independent participation in an environmental conservation activity in the area of the student's specialization. Individual or group projects may be developed under the supervision of any faculty member within or outside natural resources or with supervisors in public and private agencies, upon approval of the course instructor. Research projects not acceptable. Prereq: senior standing in the environmental conservation program. Cr/F.

NR 640 - Wildlife Population Ecology  
Credits: 3.00  
An overview of the mechanisms that influence the characteristics of terrestrial wildlife populations, especially factors that influence rates of natality and morality. Additional attention paid to community interactions (especially predation, competition, and invasive species) the roles of exploitation and the influences of habitat loss and fragmentation. The course concludes with an examination of populations and efforts to restore them. Prereq: one course in general ecology; wildlife major or permission of the instructor.

NR 642 - Introduction to Biogeography  
Credits: 4.00  
Biogeography is an integrative field of inquiry that unites concepts and information from evolutionary biology, ecology, systematics, geology, and physical geography. Students are introduced to the distribution patterns of wild animals and plants and to the factors that determine these patterns. In this course, the emphasis is on evolutionary aspects of biogeography, biodiversity, and implications for conservation issues.

NR 643 - Economics of Forestry  
Credits: 4.00
Intermediate-level analysis of supply and demand for forest-based goods and services, managerial economics, taxation, capital investments. Prereq: EREC 411 or ECON 402.

**NR 650 - Principles of Conservation Biology**  
**Credits:** 4.00  
Examines the major issues relevant to conservation of biodiversity from the genetic to the ecosystem level. In addition to addressing ecological and biological principles, the interdisciplinary nature and challenges of managing for conservation biology, including the role of economic and social factors are examined. Prereq: one semester of biology, botany, or zoology. Special fee.

**NR 655 - Vertebrate Biology**  
**Credits:** 4.00  
Introduces the diversity and evolution of vertebrates. Topics span the morphological, physiological, behavioral, and ecological diversity among the major vertebrate taxa. Labs stress identification of vertebrate taxa based on specimens and morphological structures. Permission. Prereq: BIOL 411; 412; or equivalent. Special fee. Lab.

**NR 658 - Introduction to Geographic Information Systems**  
**Credits:** 4.00  
Introduces the use of geographic information systems (GIS) for natural resources and related fields. Data models/structures, map projections, data input/output/storage, data analysis/modeling, interpolation, and data quality/standards. Hands-on lab using ArcGIS software. Restricted to NR majors or permission. (Also offered as GEOG 658.)

**NR 660 - Ecology and Biogeography of New Zealand**  
**Credits:** 5.00  
Covers the principles of ecology and biogeography, with a distinct focus on New Zealand. Students investigate the processes that have shaped the New Zealand landmass and its biota. Impact of human settlement on New Zealand's ecosystems is explored in-depth. Methods and techniques of scientific research are incorporated in this course. Field exercises focus on topical case studies in a variety of ecosystems and are designed to strengthen students' conceptual knowledge, enable students to apply this knowledge, as well as develop field skills including classification systems, mapping, habitat assessment, field identification, and sampling techniques. Prereq: junior/senior; permission. Coreq: NR 661, NR 662, and NR 663. Special fee.  
**Co-requisites:** INCO 588, NR 661, NR 662, NR 663

**NR 661 - Restoration Ecology and Ecosystem Management in New Zealand**  
**Credits:** 4.00  
Current restoration projects and strategies for management of natural resources in New Zealand form the framework for this course. Solving problems related to introduced species, changes in habitat, the preservation of ecological processes and watershed management are the major foci of this course. Management of resources for multiple uses, as well as primary and extractive industries is included. Field exercises focus on topical case studies in a variety of terrestrial and coastal-marine ecosystems and include the identification of habitats and communities, stresses on the environment, and risk analysis. Prereq: junior/senior; permission. Coreq: NR 660, NR 662, and NR 663.  
**Co-requisites:** NR 660, NR 662, NR 663

**NR 662 - Environmental Policy, Planning and Sustainability in New Zealand**  
**Credits:** 3.00  
Introduces students to politics in New Zealand. Investigating policy pathways and planning forms part of the curriculum. Students assess scope of legislation, including the Resource Management Act (1991), for the economic and socio-political environment in New Zealand. Government obligations to the Treaty of
Waitangi, and customary uses of resources are included as part of this course. Students are exposed to diverse perspectives of local authority planners and policy makers, local iwi (tribes), the Department of Conservation, and community groups. Students examine case studies involving the resource consent process at several levels of decision-making. Case studies provide a comprehensive overview of the interactions between the environment and people and their cultural and socio-economic needs. Prereq: junior/senior; permission. Coreq: NR 660, NR 661, and NR 663

**Co-requisites:** NR 660, NR 661, NR 663

**NR 663 - Applied Directed Research in New Zealand**

**Credits:** 4.00

Working closely with faculty, student teams investigate selected ecological, resource management or policy issues. All projects have scientific and societal relevance, and contribute to ongoing/existing projects in the region. Students use the scientific method to design and carry out their projects. Development of rigorous field investigations, experimental design, data analysis, and scientific writing are emphasized. Students prepare a research report and present their findings in a seminar that includes stakeholders and people from the local community. Prereq: junior/senior; permission. Coreq: NR 660, NR 661, and NR 662. Writing intensive.

**Co-requisites:** NR 660, NR 661, NR 662

**NR 664 - Conservation Genetics**

**Credits:** 4.00

Conservation genetics is the application of genetics to preserve species as dynamic entities capable of coping with environmental change. Includes genetic management of small populations, resolution of taxonomic uncertainties, defining management units within species, and the use of molecular genetic analyses to forensics and the understanding of the biology of species. Topics include methods of measuring genetic diversity in populations, identification of the units of biodiversity to which conservation efforts are directed, genetics of population fragmentation, genetic management of wild and captive populations, reintroduction of organisms back into the wild, and the role of forensics in enforcement and development of species recovery plans. Recitation. No credit if credit received for GEN 705 or ZOOL 705.

**NR 701 - Ecological Sustainability and Values**

**Credits:** 4.00

Deeper more fundamental philosophical questions, including spiritual values questions, are being asked concerning the ecological/environmental challenge of our time; its causes and resolution. Aspects of this challenge--environmental education, energy, food, agriculture, and natural resources--analyzed with ethics and values approaches. Students develop ways of responding to problem identification and resolution. Writing intensive.

**NR 702 - Workshops**

**Credits:** 1.00 to 4.00

Short-term courses (generally a few days to two weeks) offered off campus, covering a broad variety of environmental and natural resource topics. May be repeated. Special fee required depending on topic. Prereq: permission required.

**NR 703 - Watershed Water Quality Management**

**Credits:** 4.00

Principles of land use as they relate to water quality and quantity. Lectures focus on biogeochemical cycles and the watershed approach to land and water resource management. Labs and field trips focus on methods of water sampling and analysis. One year of chemistry is recommended. Prereq: NR 504 or 604 or permission. Special fee. Lab/field trips. Writing intensive.

**NR 706 - Soil Ecology**
Credits: 4.00
Examines the ecological relationships between soil microorganisms and their biotic and abiotic environment, with emphasis on the role of soil microorganisms in biogeochemical cycling. Specific objectives are to examine the biodiversity present in soil systems, factors controlling microbial community composition and diversity, and linkages between soil microbial communities, soil physical properties, and soil organic matter and nutrient cycling dynamics. Prereq: BIOL 412 or PBIO 412, CHEM 403, or equivalent, or permission. Special fee. Lab. Writing intensive.

NR 707 - Environmental Modeling
Credits: 4.00
Environmental Modeling introduces students to a range of key mathematical and computer modeling concepts and the ways they can be used to address important scientific questions. The course is divided into four topical sections: Population and Community Ecology, Hydrology, Biogeochemistry, and Ecosystems. In each section, modeling concepts and skills are presented together with environmental information to emphasize the linkage between quantitative methods and relevant scientific results. Prereq: MATH 425.

NR 710 - Endangered Species Seminar
Credits: 2.00
Provides students with an interactive class of student presentations and guest lectures by endangered-species biologists. Emphasizes on biological, sociological, economic, and political factors that influence endangered-species policy. Prereq: basic ecology/biology; permission. Special fee.

NR 711 - Wetland Ecology and Management
Credits: 4.00
Analysis of the natural resources of coastal and inland wetlands and environmental problems caused by human use and misuse of these ecosystems. Groups collect field data to summarize the structure and function of four wetland types within a management context. Special fee. Lab. Prereq: BIOL 541, or NR 703, or permission. Writing intensive.

NR 712 - Mammalogy
Credits: 4.00
Evolution, ecology, behavior, physiology and diversity of mammals. The focus of the course is on conceptual issues, such as the relation of structure, function, physiology and ecology of species; reproductive physiology and life history strategies; and the evolution of mating systems and social structure. Familiarity of mammalian groups to the family level and identification of local fauna to species will be required. Prereq: BIOL 411-412 or equivalent. Lab. (Not offered every year.)

NR 713 - Quantitative Ecology
Credits: 4.00
Basic quantitative concepts applied to ecological systems including: population and community dynamics, experimental design, spatial patterns, species abundance and diversity, community organization, metapopulations, and landscapes. Prereq: intro. courses in statistics, and ecology.

NR 716 - Wetland Delineation
Credits: 4.00
Examines the soils, vegetation, and hydraulic functions of coastal and central New England wetlands. Students are responsible for the collection and identification of aquatic plant species, description of wetland soils, and delineation of wetland boundaries. Lectures and fieldwork. For juniors, seniors, and working professionals. Field trips. Special fee. (Offered summer session only.)

NR 718 - Law of Natural Resources and Environment
Credits: 3.00
Federal and state environment statutory and administrative law, its application, strengths and weaknesses, and options for future amendment.

NR #719 - Wetlands Restoration and Mitigation
Credits: 3.00
Assesses the problems of wetlands loss and learning how to repair the damage. Asks what steps can be taken. Does restoration work, can habitat value be replaced, what constitutes equivalent mitigation? Field experience and theoretical background in restoring marine and freshwater environments. First half of course involves field trips to visit and sample mitigation and restoration sites. Second half focuses on student projects using the scientific method to address wetlands issues. Prereq: NR 711 or permission. Special fee. Lab/field trips. (Not offered every year.)

NR 720 - International Environmental Politics and Policies for the 21st Century
Credits: 4.00
Students examine policies for managing human activities to sustain the health of regional ecosystems and planetary life-support systems. Selected problems of the international commons (oceans, marine resources, atmosphere, migratory species); global and regional carrying capacity (population, resource consumption), internationally shared ecosystems (transboundary watersheds and waterbodies, tropical forests); and the relevant international institutions and politics for policy formation, conflict resolution, and implementation. Using a policy-analytic framework, students develop case studies to assess international policies and institutional arrangements to achieve the objectives of Agenda 21--Earth Summit Strategy to Save the Planet. Prereq: permission. Writing intensive.

NR 724 - Resolving Environmental Conflicts
Credits: 4.00
Theories and practices of environmental dispute settlement. Roles of public, non-governmental and governmental organizations. Effectiveness of public participation initiatives in influencing public policy decisions and/or resolving environmental conflicts. Alternative approaches to consensus (policy dialogues, joint problem solving; strategic planning; negotiation, mediation) as well as litigation. Specific cases are critiqued and evaluated; conflict resolution skills are developed. Students observe and/or participate in ongoing local decision processes. Prereq: second-semester juniors, seniors; permission. Lab. Special fee. Writing intensive.

NR 729 - Silviculture
Credits: 4.00
The science and art of establishing, growing, and tending forests to meet multiple objectives. Basics of forest stand dynamics applied to the problems of timber management, wildlife habitat, water quality, and carbon sequestration. Prereq: NR 425 and NR 527 or permission. Special fee.

NR 730 - Terrestrial Ecosystems
Credits: 4.00
Processes controlling the energy, water, and nutrient dynamics of terrestrial ecosystems; concepts of study at the ecosystem level, controls on primary production, transpiration, decomposition, herbivory; links to earth-system science, acid deposition, agriculture. Prereq: NR 527 and PBIO 412 or BIOL 411, or permission.

NR 734 - Tropical Ecology
Credits: 4.00
This course introduces students to the ecology of different tropical ecosystems, and involves students in analyzing and interpreting ecological field data and remotely sensed data. An important emphasis is to understand patterns and processes across scales - from individual plants to ecosystems and landscapes.
The course also addresses important global issues in the tropics, including climate change, land use change, diverse ecosystem services, and sustainable resource management.

**NR 735 - Land Conservation Principles and Practices**  
**Credits:** 4.00  
Students gain practical knowledge, understanding and experience in land conservation planning and implementation of options for land protection based on current practice in New Hampshire. By interacting with practitioners, students learn what it takes to implement successful land conservation projects, and conservation stewardship requirements and practices. Prereq: senior standing in the Department of Natural Resources and permission. Special fee. Lab. Writing intensive.

**NR 736 - Tropical Ecology and Conservation**  
**Credits:** 4.00  
This intensive field course in Costa Rica introduces students to the science and practice of tropical ecology and conservation. The course includes visits to major tropical biomes, including cloud forest, rainforest, dry forest, and diverse aroecosystems. A focus is on understanding how ecological information is scaled from trees to ecosystems and landscapes, and the impact of climate change and land management. Students conduct a project on a topic of interest, involving data collection, analysis, and interpretation. Special fee.

**NR #738 - Wildlife Policy and Management**  
**Credits:** 4.00  
Local, regional, and national issues and strategies in policy and administration. Contemporary issues including land management, commercialization of wildlife, overpopulation, endangered species, wildlife diseases, and professionalism. Prereq: senior wildlife majors or permission. Special fee. Lab. Writing intensive.

**NR 740 - Inventory and Monitoring of Ecological Communities**  
**Credits:** 4.00  
Provides an introduction to the major concepts associated with monitoring change in ecological communities. Students develop an appreciation for such issues as: identification of appropriate baselines for comparison; use of indicator species; the tools used to inventory common, rare, and secretive species; how trend data are analyzed; and the implications of failing to detect an indicator species. Restricted to senior wildlife majors others by permission. Special fee. Lab. Writing intensive.

**NR 744 - Biogeochemistry**  
**Credits:** 4.00  
Examines the influence of biological and physical processes on elemental cycling and geochemical transformations from the molecular to the global scale, involving microorganisms, higher plants and animals and whole ecosystems; factors that regulate element cycles including soils, climate, disturbance and human activities; interactions among the biosphere, hydrosphere, lithosphere, and atmosphere; transformations of C, N, S, and trace elements. Prereq: one semester biology and two semesters of chemistry or permission.

**NR 745 - Forest Management**  
**Credits:** 4.00  
Forest land ownership, management objectives, forest inventory regulation and policy, forest administration, professional responsibilities and opportunities. Restricted to Natural Resources majors. Lab. Special fee.

**NR 749 - Forest Inventory and Modeling**  
**Credits:** 4.00  
Applied sampling and statistical techniques for assessing current forest conditions and predicting future
growth, yield, and structure. Topics include plot and point sampling, ecological inventory, and evaluation of site quality and stand density. Prereq: MATH 420 and BIOL 528. Special fee.

**NR 750 - Sustaining Biological Diversity**  
**Credits:** 4.00  
This course examines the approaches to recover and restore declining populations and at-risk communities. Major concepts addressed include: population viability analysis; use of simulation models to explore conservation alternatives; integrating the political, economic, and social realities that affect natural resource management; the adaptive nature of any restoration of rare organisms and communities; and preparing for the challenges associated with invasive organisms and climate change. Prereq: NR 650 and BIOL 528. Only open to Wildlife & Conservation Biology majors.

**NR 751 - Aquatic Ecosystems**  
**Credits:** 4.00  
Energy flow and nutrient cycling in streams, rivers and lakes, with an emphasis on understanding the control of primary productivity, decomposition and community structure by both hydrologic and biotic drivers. Role of aquatic ecosystems in carbon and nitrogen budgets at watershed, regional, and global scales. Impacts of environmental changes such as global climate change and suburbanization on aquatic ecosystems. Prereq: General Ecology. Lab. Special fee.

**NR 753 - Critical Issues in Sustainability: Sustainability as an Abundance Paradigm**  
**Credits:** 2.00  
After 30 years in common parlance, the success of "Sustainability" still seems far from its goal. In part, this is because sustainability is typically applied as another way to manage scarcity, a paradigm informing economic and social policy for well over a century. Underlying this dominant view of sustainability, an increasing number of approaches to sustainability projects, some of longstanding are entering the mainstream as pieces of an identifiable, and distinctly novel, paradigm based on the assumption of abundance, rather than scarcity. These include ideas of the Natural Step and Natural Capital, as well as Cradle to Cradle and Biomimicry. The goals of this seminar are (1) to survey and discuss this growing literature and its application to the solution of sustainability problems; and (2) research and analysis towards transforming scarcity-based to abundance-based solutions. To be considered as a capstone option for majors in Environmental and Conservation Sustainability, students must also register for NR 754 in the Spring semester.

**NR 754 - Critical Issues in Sustainability: Sense of Place**  
**Credits:** 2.00  
Costa Rica is the happiest country on Earth. Bhutan is a living laboratory for education. Bolivia has a Law of Mother Earth in its constitution. Cities and towns in the US create local solutions to problems of resource sustainability while the national dialogue stagnates. What drives some places to lay the foundations for sustainable futures, while others do not? Sense of Place is a powerful lens through which to view the relative achievements of places and organizations toward creating a sustainable future. The goals of this seminar are (1) to survey the Sense of Place literature and to analyze case studies of the role of Sense of Place in the success of sustainability efforts nationally and internationally; and (2) to research the role of Sense of Place in our local community environment and to relate it to stated goals in existing sustainability plans. To be considered as a capstone option for majors in Environmental and Conservation Sustainability, students must also register for NR 753 in the Fall semester.

**NR 757 - Remote Sensing of the Environment**  
**Credits:** 4.00  
Practical and conceptual presentation of the use of remote sensing and other geospatial technologies for mapping and monitoring the environment. This course begins with the use of aerial photographs (photogrammetry, and photo interpretation) and includes measures of photo scale and area, parallax and
stereo viewing, object heights, flight planning, photo geometry, the electromagnetic spectrum, camera systems and vegetation/land cover mapping. The course concludes with an introduction to other geospatial technologies including digital image analysis, global positioning (GPS), and geographic information systems (GIS). Conceptual lectures are augmented with practical homework assignments and hands-on lab exercises. Prereq: algebra. Special fee. Lab. (Also offered as GEOG 757.)

NR 759 - Digital Image Processing for Natural Resources  
Credits: 4.00  
Introduces digital remote sensing including multispectral scanners (Landsat and SPOT) radar, and thermal imagery. Hands-on image processing including filtering, image display, ratios, classification, registration, and accuracy assessment. GIS as it applies to image processing. Discussion of practical applications. Use of ERDAS image-processing software. Knowledge of PCs required. Prereq: NR 757 or equivalent and permission. (Also offered as GEOG 759.)

NR 760 - Geographic Information Systems in Natural Resources  
Credits: 4.00  
Theory, concepts, and applications of geographic information systems (GIS) for use in natural resources and related fields. Discussion of database structures, sources of data, spatial data manipulation/analysis/modeling, data quality standards and assessment, and data display/map production including many examples and practical applications. Hands-on lab exercises using ArcGIS 8.x software. Permission. Lab. (Also offered as GEOG 760.)

NR 761 - Environmental Soil Chemistry  
Credits: 4.00  
Chemical transformations in soils are the basis for soil fertility and plant productivity in natural and managed ecosystems, and also influence key ecosystem processes including soil organic matter turnover and soil-atmosphere exchange of trace gases. This class will explore soil chemistry processes and transformations related to soil nutrient cycling, plant nutrient acquisition, and other critical environmental services. Prereq: a course in soil science or instructor permission.

NR 765 - Community Ecology  
Credits: 4.00  
Properties of biotic communities, especially biodiversity. Effects of physical stress, disturbance, competition, predation, positive interactions, and dispersal on community properties. Community dynamics, including succession and stability. Prereq: applied biostatistics and general ecology. Lecture and discussion.

NR 782 - Monitoring Forest Health  
Credits: 4.00  
Provides the field and remote sensing tools and experience needed by students to assess forest conditions at the individual tree and stand levels, as well as to conduct independent research projects on specific topics of interest. May include assessing change-over-time, landscape-level impacts of urban developments, severe weather events, and other natural and anthropogenic perturbations affecting the health of forests. Forest damage due to insects, air pollution (primarily ground-level ozone), drought, the 1998 ice storm, and others are investigated. Lab. Special fee. Permission.

NR 783 - Forest Communities of New Hampshire  
Credits: 4.00  
A hands-on field course designed to introduce students to the diverse forest community types of New Hampshire. Topics include 1) field identification of forest types using different classification systems and keys; 2) identification of characteristic plant and animal species; 3) the roles of climate, geology, soils, natural disturbance, forest management, and biotic factors in determining forest community type; 4)
primary and secondary succession, including old-growth. Prereq: one course in ecology or environmental biology or permission. Special fee.

**NR 784 - Sustainable Living - Global Perspectives**
**Credits:** 4.00
The pursuit of sustainable solutions to living in our contemporary world is a global endeavor. In this course, the concept of living sustainably is explored from a broad international perspective. Global scale issues impacting sustainable resource use are considered, including population growth, economic globalization and development, social equity, and cultural values. We will expand our awareness of alternatives to those current practices that impede the sustainability of human societies as part of the earth's natural systems. We will also pursue an understanding of the interrelated socio-economic conditions, combined with social and personal ethics and values necessary to move toward a more sustainable future. And each of us will come to value what sustainable living means for our own lives. Prereq: NR 437 or NR 435.

**NR 785 - Systems Thinking for Sustainable Solutions**
**Credits:** 4.00
This course applies systems thinking as a problem-solving approach aimed at exploring possibilities for creating a future based on sustainable relationships between healthy human societies and their natural environments. Types of systems and systems tools are utilized to describe human-environment relationships and to emphasize their resiliency or vulnerability to future unsustainable events and/or practices. We explore how systems may be restructured to create more sustainable outcomes. Pre- or Coreq: NR 437 or NR 435.

**NR 786 - Leadership for Sustainability**
**Credits:** 4.00
In this course we review and evaluate current knowledge and practice regarding the attainment of sustainability in social and environmental relations. We particularly focus on the meaning and qualities of leadership for achieving a sustainable future. Along the way, we also reflect on our own leadership styles and qualities. Topics include the role of leaders and leadership practices in government, business, academia etc; concepts and theories for achieving social change; and case studies exemplifying a range of leaders and approaches toward sustainability. Prereq: NR 437 or NR 435. Writing intensive.

**Co-requisites:**

**NR 787 - Advanced Topics in Sustainable Energy**
**Credits:** 4.00
This course engages students in advanced topics in sustainable energy. Course reviews basic structures of our energy system, energy markets and economics, and the environmental, economic and technological of energy landscape. Focus is on electricity and building use with introductions to the transportation system. Students gain the knowledge to evaluate innovations in technology, policy and financing necessary to implement sustainable energy goals from conservation and efficiency to renewables and energy storage. Special fee.

**Co-requisites:**

**NR 791 - Project in Environmental Science I**
**Credits:** 1.00
First part of a two-course capstone project sequence for Environmental Science majors. Intended for second semester juniors, this course requires selection of a topic area, and initial library and background research, leading to a statement of the problem to be addressed. To be followed by NR 792. Restricted to Environmental Science majors. Cr/F.

**NR 795 - Investigations**
**Credits:** 1.00 to 4.00
Investigations in Natural Resources may include topics in environmental conservation, forestry, soil and watershed management, ecosystems, and wildlife management. Permission required. Special fee on some topics.

**NR 795W - Investigations**
**Credits:** 1.00 to 4.00
Investigations in Natural Resources may include topics in environmental conservation, forestry, soil and watershed management, ecosystems, and wildlife management. Permission required. Writing intensive.

**NR 797 - Special Topics**
**Credits:** 1.00 to 4.00
An experimental course for the purpose of introducing a new course or teaching a special topic for a semester in an area of specialization in natural resources. Permission required. Special fee on some sections.

**NR 799 - Honors Senior Thesis**
**Credits:** 1.00 to 4.00
Honor/thesis students conduct an independent research project, relevant to the student's area of specialization in the major, under the direction of a faculty sponsor. Students submit a research proposal, write a final report, and provide an oral presentation. One or two semester sequence. Restricted to Senior/Natural Resource Majors. Permission required. Writing intensive.
Psychology

PSYC 401 - Introduction to Psychology
Credits: 4.00
Psychology as a behavioral science; its theoretical and applied aspects. Includes research methods, behavioral neuroscience, sensation and perception, cognition, learning, development, personality, psychopathology, and social psychology. To experience actively the nature of psychological research students have an opportunity to participate in a variety of studies as part of a laboratory experience.

PSYC 401H - Honors/Introduction to Psychology
Credits: 4.00
Psychology as a behavioral science; its theoretical and applied aspects. Includes research methods, behavioral neuroscience, sensation and perception, cognition, learning, development, personality, psychopathology, and social psychology. To experience actively the nature of psychological research students have an opportunity to participate in a variety of studies as part of a laboratory experience.

PSYC 402 - Statistics in Psychology
Credits: 4.00
Design, statistical analysis, and decision making in psychological research. Probability, hypothesis-testing, and confidence intervals. Conceptualization, computation, interpretation, and typical applications for exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate regression, one-way analysis of variance, and chi square. Introduction to computer methods of computation. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; SOC 502. Special fee.

PSYC 402H - Honors/Statistics in Psychology
Credits: 4.00
Design, statistical analysis, and decision making in psychological research. Probability, hypothesis-testing, and confidence intervals. Conceptualization, computation, interpretation, and typical applications for exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate regression, one-way analysis of variance, and chi square. Introduction to computer methods of computation. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; SOC 502. Special fee.

PSYC 440A - Honors/Understanding the Human Brain
Credits: 4.00
First, we will examine the evolution of the brains of hominids to understand what are characteristics are uniquely human and what are conserved across species. We then explore selected topics in neuroscience that alter neural functioning, for example, the impact of neuro-prosthetics, cognitive enhancement, racial discrimination. Finally, we will discuss the benefit and limitations of using animal models to understand human neural functioning.

PSYC 502 - Research Methods in Psychology
Credits: 4.00
Research design, including experimental and correlation design; internal versus external validity; measurement; writing a research report; graphic and statistical methods for summarizing data; sampling; and special problems such as experimenter effects, reactivity of measurement, and others. The use of hypothesis testing and data analysis in research. Prereq: PSYC 401 and 402. Special fee. Writing intensive.
PSYC 511 - Sensation and Perception  
credits: 4.00  
the study of how humans (and some other animals) sense and perceive their environment. topics include seeing (vision), hearing (audition), tasting (gustation), smelling (olfaction), feeling (somatosensation), and the variety of state-of-the-art methods used by psychologists to study these senses. illusions and other sensory and perceptual phenomena are treated. Prereq: PSYC 401.

PSYC 512 - Psychology of Primates  
credits: 4.00  
a comparative analysis of primate cognitive, linguistic, and social processes. the origins of human behavior are explored from the perspectives of history, evolution, and contemporary work in neuropsychology, linguistic, sociobiology, and related fields. Prereq: PSYC 401.

PSYC 513 - Cognitive Psychology  
credits: 4.00  
the study of human cognition, its basic concepts, methods, and major findings. human knowledge acquisition and use. Attention, perception, memory, imagery, language, reading, problem solving, and decision making. Prereq: PSYC 401.

PSYC 521 - Behavior Analysis  
credits: 4.00  

PSYC 522 - Behaviorism  
credits: 4.00  
introduction to behaviorism as a philosophy of science. some historical background, but concentration on modern behaviorism as exemplified in the works of B. F. Skinner. No credit for students who have completed PSYC 722. Offered only in Manchester. Prereq: PSYC 401.

PSYC 531 - Psychobiology  
credits: 4.00  
introduces the behavioral neurosciences. surveys research conducted by psychologists to learn about the biological basis of behavior: development, sensation, perception, movement, sleep, feeding, drinking, hormones, reproduction, stress, emotions, emotional disorders, learning, and memory. Prereq: PSYC 401.

PSYC 552 - Social Psychology  
credits: 4.00  
behavior of individuals as affected by other individuals, groups, and society. topics include attitude change and social influence, conformity, social interaction, interpersonal attraction, impression formation, research. Prereq: PSYC 401.

PSYC 553 - Personality  
credits: 4.00  
major theories, methods of assessment, and research. Prereq: PSYC 401.

PSYC 561 - Abnormal Behavior  
credits: 4.00  
causes, diagnosis, and treatment of abnormal behavior. implications of varying theoretical viewpoints. Prereq: PSYC 401.
PSYC 571 - Pioneers of Psychology  
Credits: 4.00  
An introduction to the development and evolution of psychology as an academic discipline and applied science. The lives and works of innovators in psychology are placed in socio-political context.

PSYC 571H - Honors/Pioneers of Psychology  
Credits: 4.00  
An introduction to the development and evolution of psychology as an academic discipline and applied science. The lives and works of innovators in psychology are placed in socio-political context.

PSYC 581 - Child Development  
Credits: 4.00  
The developing child in the context of his/her society. Current problems in, and influences on, development of the child. Personality and cognitive development; exceptional children. Prereq: PSYC 401.

PSYC 582 - Adult Development and Aging  
Credits: 4.00  
A life-span developmental framework for the study of growth, decline, and stability on adult development. Developmental methods in adult development research; biological basis for aging; patterns of change and stability in diverse domains of psychological functioning, e.g., perception, cognition, intellectual performance, and personality organization. Prereq: PSYC 401. (Offered only in Manchester.)

PSYC 591 - Special Topics  
Credits: 4.00  
New or specialized courses are presented under this listing. Staff present material not normally covered in regular course offerings. May repeat but not duplicate content. Prereq: PSYC 401.

PSYC 595 - Applications of Psychology  
Credits: 1.00 to 4.00  
Arranged by the student or offered by psychology faculty for supervised field, academic, or research experience related to psychology. A) Field experience: supervised internship at a business or human services setting, B) Academic experience: specialized classroom experience or supervised teaching assistance, C) Research experience: supervised research experience or laboratory work. Psychology instructors sponsor academic credit for appropriate experience combined with a relevant academic component. Requires a signed learning agreement prior to registration. Prereq: permission. May be taken for 1-4 credits in a semester and repeated to a maximum of 8 credits total. Cr/F.

PSYC 702 - Advanced Statistics and Research Methodology  
Credits: 4.00  
A review of basic statistics from Psychology 402 and 502. Covers partial correlation, factorial ANOVA, and other analyses that include multiple predictor variables. Appropriate for students who plan to apply to research-oriented graduate programs, those who use statistics in honors thesis research, and those who plan to work in areas such as marketing or survey research. Topics covered are appropriate for use in psychology, sociology, education, medicine, and other research areas. Prereq: PSYC 402; 502; or permission. (Not offered every year.) Writing intensive.

PSYC 705 - Tests and Measurement  
Credits: 4.00  
Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; 502; or permission.

PSYC 705H - Honors/Tests and Measurements
Credits: 4.00
Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; 502; or permission.

PSYC 710 - Visual Perception
Credits: 4.00
The study of how humans (and some other animals) see. Topics include color vision, depth perception, form and pattern vision, visual learning and development, eye movements, diseases of the visual system, illusions, and other visual phenomena. Prereq: PSYC 402, 502, 511, or 531; or permission. Special fee. Writing intensive.

PSYC 712 - Psychology of Language
Credits: 4.00
Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; 502; 512; or 513; or permission. Special fee.

PSYC 712W - Psychology of Language
Credits: 4.00
Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; 502; 512; or 513; or permission. Special fee. Writing intensive.

PSYC 713 - Psychology of Consciousness
Credits: 4.00
Explores questions of consciousness What is it? How does it develop? Are infants and animals conscious? Why did consciousness evolve? Includes a review of historical background, including the ideas of Jaynes, Piaget, James, Freud, and others. Contemporary topics may include the role of language and other representational systems, blindsight, subliminal perception, priming and other implicit cognitive phenomena, hypnosis, confabulation and attribution, dreaming, multiple personality and conceptions of self and free will, from simultaneous perspectives of phenomenology, behavior, and neuroscience. Specific topics governed by class interests. Prereq: PSYC 402; 502; 512; or 513; or permission. Writing intensive.

PSYC 716 - Cognitive Neuroscience
Credits: 4.00
Cognitive Neuroscience is a rapidly expanding scientific discipline that probes classical questions of human cognitive psychology via a broad array of cutting-edge methodological approaches, which include but are not limited to brain imaging (e.g., functional MRI and electroencephalography), lesion studies, single-cell recording, and examinations of brain injuries and other neurological disorders. This course will survey the results of these approaches, which have thus far generated fundamental insights about how the brain supports motor control, attention, memory, emotion processing, social cognition, language, executive function and decision making. Prereq: PSYC 402, 502, 513, or 531; or permission. Writing intensive.

PSYC 720 - Animal Cognition
Credits: 4.00
Do animals use language or have a culture? Can birds count? Do animals use tools and understand how they function? How do ants navigate their environment to find food and then return to their nest? How animals perceive, attend to, process, store, and represent information from their environment. Research on animal learning and behavior as a framework for investigating cognitive processes in animal learning. Quantitative versus qualitative nature of differences between people and non-human animals. Multidisciplinary approach including the fields of anthropology, physiology, philosophy and biology. Prereq: PSYC 401; 402; 502; 513 or 521; or permission. Writing intensive.
PSYC 722 - Behaviorism, Culture, and Contemporary Society  
**Credits**: 4.00  
Introduces behaviorism as a philosophy of science. Concentration on modern behaviorism as exemplified in the works of B.F. Skinner. Implications of behaviorism for the development and evolution of cultures. Consideration of societal issues (for example pollution, overpopulation, conflict, drug abuse) from a behavioral framework. Prereq: PSYC 402; 502; 521;/or permission. No credit for students who have completed PSYC 522. Writing intensive.

PSYC 731 - Brain and Behavior  
**Credits**: 4.00  
Neuropsychology, the study of brain/behavior relationships including clinical topics related to the analysis of neurological diseases in humans and more basic experimental topics related to integrative functions of the brain. The main focus is on cerebral cortex and functions related to perception, movement, attention, memory, and language. Prereq: PSYC 402; 502; 531;/or permission. Special fee. Writing intensive.

PSYC 733 - Drugs and Behavior  
**Credits**: 4.00  
Introduces the principles of psychopharmacology and the effects of psychoactive substances on behavior. Focuses on the therapeutic and recreational use of drugs and the mechanisms of drug action, that is how the drugs affect the brain. Neuropsychiatric function and dysfunction are discussed as they relate to the use or abuse of particular drugs. Prereq: PSYC 402; 502; 531;/or permission. Writing intensive.

PSYC 735 - Neurobiology of Mood Disorders  
**Credits**: 4.00  
Neurobiological and neurochemical substrates underlying various psychopathologies, using both animal models and human data. Study of disorders from the field of biological psychiatry including aggression, anxiety, panic disorder, obsessive-compulsive disorder, unipolar depression, bipolar affective disorder, schizophrenia, and post-traumatic stress disorder. The effectiveness of current behavioral and pharmacological therapy. Prereq: PSYC 402; 502; 531; or permission. Writing intensive.

PSYC 736 - Attention Disorders  
**Credits**: 4.00  
Attention encompasses several cognitive functions including, but not limited to, the ability to select relevant from irrelevant stimuli, to maintain goal-directed behavior over time, and to process multiple streams of information at once. This course explores how the normal brain "attends", and the consequences of dysfunction in neurochemical systems hypothesized to mediate these abilities including dementia, attention-deficit hyperactivity disorder (ADHD) and schizophrenia. Prereq: PSYC 402; 502; 531;/or permission. Writing intensive.

PSYC 737 - Behavioral Medicine  
**Credits**: 4.00  
Behavioral, physiological, and neurochemical alterations, associated with health-promoting behaviors (low-fat diet, exercise) as well as health-impairing behaviors (eating disorders, smoking, excessive alcohol consumption). Topics include stress, coping, type-A behavior, hypertension, and the interface of brain, behavior, and immunity (psychoimmunology, cancer, AIDS). Treatment/therapy are discussed from behavioral and pharmacological perspectives. Prereq: PSYC 402; 502; 531;/or permission. Writing intensive.

PSYC 741 - Advanced Topics  
**Credits**: 4.00  
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics under this listing may be used to fulfill a major requirement in
category CI. A) Psychology as a Natural Science, B) Cognition, C) Behavior Analysis, D) Biological/Sensory. Prereq: PSYC 402; 502; plus other prerequisites when offered; or permission.

PSYC 741W - Advanced Topics
Credits: 4.00
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics include: Behavioral Neuroscience. Prereq: PSYC 402; 502; plus other prerequisites when offered; or permission. Writing intensive.

PSYC 755 - Psychology and Law
Credits: 4.00
Applications of psychology to the study of the law, including theories of legal and moral judgment, participants in the legal system (judges, police, victims, witnesses), the trial process, and plea bargaining. Special focus on the death penalty, the insanity plea, and child witnesses. Prereq: PSYC 402; 502; or permission. Writing intensive.

PSYC 756 - Psychology of Crime and Justice
Credits: 4.00
Examines the psychological aspects of crime and justice, including the following origins and causes of crime: developmental, biological, biopsychological, learning, and mental disorder. Focuses on issues related to homicide, profiling, and serial killers. Examines aggression and violence as well as causes and consequences of criminal homicides. Discussion of the future of crime. Prereq: PSYC 402; 502; or permission. Writing intensive.

PSYC 757 - Psychology of Happiness
Credits: 4.00
Overview of empirical research in Positive Psychology. We will discuss factors that may influence happiness and subjective well-being; and effects that well-being may have on other life outcomes such as physical health. Learning involves reading and writing about evidence from research and also experimental exercises (such as doing an act of kindness). Prereq: PSYC 402, 502 or permission. Writing intensive.

PSYC 758 - Health Psychology
Credits: 4.00
Survey of current topics in health psychology, including social stress and the etiology of disease, Type A and other personality factors related to health, modification of risk factors, the practitioner-patient relationship, chronic pain, and the emotional impact of life-threatening illness. Prereq: PSYC 402; 502; or permission. Writing intensive.

PSYC 762 - Counseling
Credits: 4.00
Theories of counseling, ethical considerations, professional and paraprofessional activities in a variety of work settings. Prereq: PSYC 402; 502; 553; or 561; or permission. Writing intensive.

PSYC 763 - Community Psychology
Credits: 4.00
Examines the sub-field of community psychology, which grew out of clinical psychology but is different from it. Theoretical and research perspectives on prevention, diversity, empowerment, resilience, community intervention, and ecological understandings of behavior. Causes of and interventions in social issues such as interpersonal and community violence and homelessness. Prereq: PSYC 401; 402; 502; 552, 553, or 561; or permission. Writing intensive.

PSYC 775 - Madness in America
**Credits:** 4.00
Examines how popular and professional concepts of mental illness are shaped by historical events as well as scientific and medical research. Writings of former psychiatric patients, therapists, researchers, social critics, and historians of psychology and psychiatry. Cultural values, public attitudes, and popular views of mental health and illness as expressed through motion pictures, documentaries, novels, autobiographies, and biographies. The impact of WWI and WWII on how people thought about madness and how it was treated. The 1973 removal of homosexuality from the diagnostic manual of the American Psychological Association; the rise and fall of the lobotomy; feminist criticisms of psychiatry and psychology. Prereq: PSYC 402; 502; 561; or permission. Writing intensive.

**PSYC 780 - Prenatal Development and Infancy**
**Credits:** 4.00
Psychological development of infants from conception through second year of life. Factors and potential influences on reproductive health and prenatal physical and behavioral development. Transition to parenthood, infant temperament and parent-infant relationships. Developmental patterns of specific capabilities. Prereq: PSYC 402; 502; 581 or FS 525; or permission. Writing intensive.

**PSYC 783 - Cognitive Development**
**Credits:** 4.00
Theories of cognitive development. Comparison among major theorists on how knowledge, thought, and development are defined and studied. Current research, including cognitive development; memory; perceptual processes; language. Prereq: PSYC 402; 502; 581; or permission. Writing intensive.

**PSYC 785 - Social Development**
**Credits:** 4.00
Examines development of social interactions. Emphasizes important social relationships for the child (e.g., attachment to parents and friendships with peers). Considers other topics of relevance to social developmentalists, such as temperament, aggression, social cognition, and sex roles. Prereq: PSYC 402; 502; 581; or permission. Writing intensive.

**PSYC 791 - Advanced Topics**
**Credits:** 4.00
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics under this listing may be used to fulfill a major requirement in category CII. A) Psychology as a Social Science, B) Social Psychology, C) Personality, D) Abnormal/Counseling, E) History of Psychology, F) Child Development, G) Adult Development. Prereq: PSYC 402; 502; plus other prerequisites when offered, or permission. Special fee with some topics.

**PSYC 791W - Advanced Topics**
**Credits:** 4.00
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics include: Close Relationships. Prereq: PSYC 402; 502; plus other prerequisites when offered, or permission. Writing intensive.

**PSYC 793 - Internship**
**Credits:** 4.00 to 8.00
Supervised practicum in one of several cooperating New Hampshire mental health/rehabilitation facilities. Coursework knowledge applied to meaningful work and team experience. Commitment includes a negotiated number of weekly work hours and weekly seminars. Supervision by institution personnel and the instructor. A maximum of 4 credits may be applied to the Psychology major. Course applications accepted beginning in March for fall term and October for spring term. Prereq: permission; PSYC major; PSYC 402; 502; 561 Pre- or coreq: PSYC 762.
PSYC 794 - Advanced Internship
Credits: 1.00 to 8.00
Supervised advanced practicum experience in co-operating New Hampshire mental health/rehabilitation facilities. Expands and builds on experiences and skills acquired in PSYC 793. Commitment includes a negotiated number of hours of work per week and participation in weekly seminars. Supervision done by institution personnel and instructor. Prereq: PSYC 793; permission. 1 to 8 credits.

PSYC 795 - Independent Study
Credits: 1.00 to 4.00

PSYC 797 - Senior Honors Tutorial
Credits: 4.00
For senior psychology honors students. Students propose honors theses under the supervision of psychology faculty. Theses proposed and begun in this course are completed in PSYC 799. Prereq: admission to psychology honors program. (Typically offered in fall.)

PSYC 798 - Capstone
Credits:
This is a zero credit course to indicate on the transcript that the capstone requirement is fulfilled. PSYC majors only.

PSYC 799 - Senior Honors Thesis
Credits: 4.00
Under supervision of psychology department faculty members, students complete the honors projects proposed and begun in PSYC 797. The honors project, which should be empirical in nature, culminates in an oral presentation at the end of the semester. Prereq: admission to psychology honors program; PSYC 797. Special fee. (Typically offered in spring.)
# Neuroscience and Behavior

**NSB 400 - Topics Neuroscience & Behavior**  
**Credits:** 1.00  
This seminar type course is designed as an introductory experience for incoming first-year students, although it may be taken by students transferring into the major. Topics covered will include sensory biology, learning and memory, homing and navigation, neuromodulators and stress, reproductive behaviors. The format will rely heavily on discussion, prompted either by assigned readings or presentations by program faculty on their areas of expertise. Credit/fail. 1 cr.

**NSB 500 - Fundamentals of Neuroscience and Behavior I**  
**Credits:** 3.00  
The course will introduce students to the fundamental neural processes underlying behavior. It will begin with a detailed examination of the properties of individual neurons and then move on to demonstrate how neurons can communicate together to produce complex behaviors. Some of the basic concepts that will be covered will include: the molecular basis of electrical and chemical communication, sensory transduction and processing, neuropharmacology, the neural basis of reflexes and simple behavior, development of the nervous system and the influence of external stimuli on neural processing. Prereq: BIOL 411, 412 and CHEM 403, 404.  
**Co-requisites:** NSB 501

**NSB 501 - Fundamentals of Neuroscience and Behavior I Laboratory**  
**Credits:** 2.00  
The course is designed to expose students to some of the classic experiments in cellular and molecular Neurobiology. They will record from sensory and motor neurons, stain and view neurons, carry out simple behavior experiments and record from muscles in freely behaving animals. The laboratory exercises will run parallel with the concepts taught in lecture and complement the lecture material in many ways. Students will conduct actual experiments, analyze the results and write lab reports as well. Prereq: BIOL 411, 412 and CHEM 403, 404. Special fee.  
**Co-requisites:** NSB 500

**NSB 502 - Fundamentals of Neuroscience and Behavior II/Systems Neuroscience**  
**Credits:** 3.00  
This course is an introduction to the questions addressed by scientists who aim to understand the biological basis of behavior and cognition. This semester we will review the major organization of the central nervous system and how these systems interact with each other to produce behavior and cognition. Major topics will include: the development and emergence of behavior; movement; the neural basis of cognition, and language, thought, affect and learning. Prereq: BIOL 411, 412 CHEM 403, 404, NSB 500/501.  
**Co-requisites:** NSB 503

**NSB 503 - Fundamentals of Neuroscience and Behavior II Laboratory**  
**Credits:** 2.00  
This laboratory class with compliment the material being taught in NSB 502. The laboratory will focus on behavioral and cognitive neuroscience experiments. Students will learn about neuroanatomy and neuroscience research methods, including experimental design, data collection, statistical analysis, data interpretation, and manuscript preparation through conducting actual experiments. Students will write research reports describing their experiments and will receive some basic computer programming and research ethics training. Prereq: NSB 500, NSB 501.
Co-requisites: NSB 502

NSB 600 - Field Experience
Credits: 1.00 to 4.00
A supervised experience providing the opportunity to apply academic experience to settings associated with future professional employment or graduate opportunities. Must be approved by supervising faculty. 1-4 credits for a maximum of 8 credits. Cr/F.

NSB 705 - Molecular and Cellular Neurobiology
Credits: 4.00
The overarching goal of this course is to examine the molecular and cellular mechanisms underlying neuronal function. This course builds on fundamental knowledge in neuroscience. Students will be exposed to primary literature regarding how different model organisms have been used to understand neurons. Prereq: BIOL 411/412. CHEM 403/404. NSB 500/502.

NSB 727 - Animal Communication
Credits: 4.00
This course examines the principles underlying how animals communicate with each other and why they communicate the way they do by using perspectives drawn from a broad range of disciplines including physics, chemistry, ecology, psychology, economics, and behavioral ecology. Students will explore the primary literature, and work in teams to conduct independent research. The course is intended for advanced undergraduate or graduate students interested in neuroscience and behavior, evolution, wildlife and conservation biology, or zoology. Prereq: BIOL 412.

NSB 795 - Special Investigations
Credits: 1.00 to 4.00
Independent research with any member of the NSB faculty in various areas including, but not limited to, neuroscience, neuroendocrinology, animal behavior. Prereq: Permission of faculty concerned. Credits 1-4. May be repeated for up to 8 credits. 795W is writing intensive.

NSB 795W - Special Investigations
Credits: 1.00 to 4.00
Independent research with any member of the NSB faculty in various areas including but not limited to neuroscience, neuroendocrinology, animal behavior. Prereq: Permission of faculty concerned. Writing intensive.

NSB 798 - Capstone
Credits: 0.00
This is a 0 credit course to indicate on the transcript that capstone requirement is fulfilled. Permission required

NSB 799 - NSB Senior Thesis
Credits: 2.00 to 4.00
Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to students entering their senior year. Prereq: permission. A two-semester sequence 2-4 credits each semester, 8 credits maximum. IA (continuous grading) given first semester.

NSB 799H - Honors Senior Thesis
Credits: 2.00 to 4.00
Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to student entering their senior year or under
exceptional circumstances their junior year. Required for students working toward University Honors or Honors-in-Major. Prereq: permission. A two-semester sequence 2-4 credits each semester, 8 credits maximum. IA (continuous grading) given first semester. Writing intensive.
Nursing

NURS 400 - Nursing Continuing Enrollment
Credits: 0.00
RN-BS students are required to maintain continuous enrollment each semester of the academic year until their degree is formally awarded by registering for course credit at the University of New Hampshire Durham or Manchester or registering for NURS 400, Continuing Enrollment. Students registering to NURS 400 will pay a continuing enrollment fee. No credit. Special fee. Nursing majors only.

Credits: 4.00
Examines the process of human birth focusing on the emergent technologies of human genetics, assisted fertility technologies, prenatal diagnosis and treatment, as well as the appropriate and inappropriate use of technology through the labor, delivery, and post-partum experience. The social, cultural, political, and historical context for the development and application of these technologies is explored.

NURS 500 - Introduction to Professional Nursing
Credits: 2.00
The course provides an overview of professional nursing with a focus on reflective thinking. A synthesis of current and projected trends in nursing practice and education, with an introduction to topics on ethical, social, and legislative issues, are explored. This course is divided into five modules: nursing as a career, nursing as a profession, nursing as art and science, nursing as communication, and nursing and relationship-centered care. Prereq: BMS 507-508; majors only. Pre- or Coreq: BMS 501. Special fee.
Co-requisites: NURS 504

NURS 504 - Disease and Drugs I
Credits: 4.00
The two semester course advances knowledge of human physiology and the pathophysiological variations in selected global disease states in adults and children. Students explore how the human body uses its adaptive powers to maintain a steady state and how alterations affect normal processes. Pharmacological agents used on these alterations are examined. Prereq: BMS 507-508; majors only. Pre- or Coreq: BMS 501.
Co-requisites: NURS 500

NURS 505 - Diseases and Drugs II
Credits: 4.00
The two semester course advances knowledge of human physiology and the pathopsychological variations in selected global disease states in adults and children. Students explore how the human body uses its adaptive powers to maintain a steady state and how alterations affect normal processes. Pharmacological agents used on these alterations are examined. Prereq: NURS 500; majors only.
Co-requisites: NURS 506, NURS 601

NURS 506 - Human Development, Interaction and Learning Across the Lifespan
Credits: 4.00
The course emphasizes human development, interaction and learning across the lifespan as essential to safe, effective relationship-centered care. An exploration of selected theoretical perspectives on human development, education and learning and group development prepares students to engage in professional practice. Prereq: NURS 500; or by permission.
Co-requisites: NURS 505, NURS 601
NURS 516 - Health Assessment and Nursing Fundamentals  
Credits: 4.00  
Focuses on the acquisition of psychomotor and assessment skills required for the delivery of safe nursing care. Students begin by learning clinical skills in the simulation setting and then using those skills with supervision in the clinical setting. An additional focus of this course is understanding fundamental nursing concepts as they pertain to providing safe, effective care. Prereq: majors only.  
Co-requisites: NURS 516C

NURS 516C - Health Assessment and Nursing Fundamentals Clinical  
Credits: 2.00  
This clinical course is designed to provide experiences to apply the knowledge to the skills required to perform a systematic examination of a healthy adult, to perform basic psychomotor skills and to record findings appropriately. Students implement the nursing process by obtaining health histories, performing physical and psychosocial assessments, establishing a database, and formulating initial nursing plans. Students become familiar with the nursing simulation lab. Prereq: majors only. Special fee.  
Co-requisites: NURS 516

NURS 517C - Clinical Integration  
Credits: 2.00  
This course focuses on continued development of nursing skills necessary for promoting health in adults. Clinical practicum focuses on restorative care by providing supervised professional nursing practice for development of multidimensional assessment skills, decision-making processes, and evidence-based strategies and interventions for patients transitioning across the health care continuum. Application of evidence-based practice may include rehabilitative, end of life and palliative care. Prereq: majors only. Special fee.

NURS 535 - Death and Dying  
Credits: 4.00  
Encompasses peoples' responses to death throughout the lifecycle. Theories of death, dying, and grieving discussed. Students explore cultural influences, legal, and ethical dilemmas; the biopsychosocial needs of people facing life-threatening situations; resources for care of the dying; death rituals; and surviving a major loss. Writing intensive.

NURS 595 - Women's Health  
Credits: 4.00  
Examines women's health and women's health care from historical, political, and social perspectives. Discussion of societal and health-care constraints that hinder women from achieving their full health potential. Also presents information on women's health care practices, including the concept of self-care, and relates this to development of educated consumerism in the health-care system. Writing intensive.

NURS 601 - Function and Wellbeing of Older Adults  
Credits: 2.00  
This course focuses on developing knowledge necessary for promoting healthy aging and wellness across the lifespan. Multidimensional assessment skills are utilized to develop appropriate evidence-based interventions to assist individuals and families to maintain wellness and promote healthy lifestyles, and enhance the quality of life for older adults with acute and chronic conditions. Students will explore nursing issues and principles of promoting wellness across the health care continuum including end of life and palliative care. Prereq: majors only.  
Co-requisites:  

NURS 611 - Care of the Adult with Acute Illness I
Credits: 4.00
The first of two courses focused on adult health nursing of clients with commonly occurring disease states in the acute care setting. Course builds on previously learned knowledge of physical assessment and technical skills to focus on key components of acute care nursing. Special emphasis placed on the etiology, clinical evaluation and use of evidence-based nursing interventions to manage specific health problems related to cardiovascular, hematologic, pulmonary, endocrine and renal systems. The advanced skills and techniques required to care for clients with commonly occurring disease states is included. Prereq: majors only. Special fee.
Co-requisites: NURS 611C

NURS 611C - Care of the Adult with Acute Illness I Clinical
Credits: 2.00
Designed to provide the student with opportunities to apply the nursing process and clinical judgment within an acute care setting to clients with commonly occurring disease states. The experience focuses on the application of knowledge and skills, evidence-based practice, clinical judgment and relationship-centered care. Prereq: NURS 505; majors only. Special fee.
Co-requisites: NURS 611, NURS 641

NURS 612 - Care of the Adult with Acute Illness II
Credits: 4.00
This is the second of two courses focused on adult health nursing of clients with commonly occurring disease states in acute care nursing. The course builds on previously learned knowledge of physical assessment and technical skills to focus on key components of acute care nursing. Special emphasis is placed on the etiology, clinical evaluation and use of evidence-based nursing interventions to manage specific health problems related to gastrointestinal, neurological, musculoskeletal systems and clients undergoing surgery. Complex client issues related to oncologic, immunologic and shock states are introduced. The advanced skills and interventions required to care for clients with commonly occurring disease states and those undergoing surgery are included. Prereq: NURS 611; majors only.
Co-requisites: NURS 612C, NURS 627

NURS 612C - Care of the Adult with Acute Illness II Clinical
Credits: 2.00
Course is designed to provide the student with opportunities to apply the nursing process and clinical judgment within an acute care setting to clients with commonly occurring disease states and those undergoing surgery. The experience focuses on the application of knowledge and skills, evidence-based practice, clinical judgment and relationship-centered care. Prereq: NURS 611; majors only. Special fee.
Co-requisites: NURS 612, NURS 627

NURS 616 - Living with Mental Illness
Credits: 2.00
This course is designed to provide an understanding of the concepts of mental health and major factors affecting human behavior and interaction. Specific theoretical concepts guiding nurse-client interactions are utilized as a vehicle for supporting the person's and family's optimum state of well-being. Prereq: majors only.
Co-requisites: NURS 616C

NURS 616C - Living with Mental Illness Clinical
Credits: 2.00
In this psychiatric nursing clinical course the nursing process and a situation-based interpretive approach serve as framework for professional nursing action. A special focus is placed on the integration of personal knowledge, therapeutic use of self and communication skills inherent in nurse-client relationships. Through a variety of clinical experiences, the student applies mental health concepts and principles of therapeutic
communication in caring for people and families with alterations in mental health. Prereq: majors only.

**Co-requisites:** NURS 616

**NURS 621 - Maternal and Newborn Nursing**  
**Credits:** 2.00  
The course allows students an opportunity to develop necessary knowledge, attitudes and skills required for the provision of safe care to child bearing women and their families. Childbirth is viewed as part of the life cycle with emphasis on women and family-centered care, normal physiological childbirth, client advocacy and the provision of therapeutic nursing practice. Prereq: majors only.

**Co-requisites:** NURS 621

**NURS 621C - Maternal Newborn Nurs Clin**  
**Credits:** 2.00  
This clinical component of NURS 621, a course that has family as the focus for nursing practice, introducing the student to the care of young families throughout pregnancy, birth, and child-rearing periods. The health needs of the young family are discussed in terms of major morbidity/mortality and contemporary issues. This clinical course offers students experiences in various clinical settings in order to provide opportunities for the development of professional practice roles in maternal health. Prereq: majors only. Special fee.

**Co-requisites:** NURS 621

**NURS 627 - Clinical Judgment in Nursing**  
**Credits:** 4.00  
This course is designed to apply and analyze clinical reasoning and judgement in a variety of situations, focusing on the ability to prioritize and individualize evidence-based nursing interventions. Prereq: majors only. Writing intensive.

**Co-requisites:** NURS 612, NURS 612C

**NURS 641 - Translating Research for Practice**  
**Credits:** 4.00  
The course focuses on the translation of current evidence into nursing practice through the identification of practice issues, appraisal and application of evidence, and the evaluation of outcomes. Development of evidence is examined using the research process. Concepts explored include research ethics and legal precepts, clinical judgment in knowledge development and application, and the integration of client values and preferences. Students learn to use reliable evidence to inform practice and make clinical judgments to promote nursing best practice. Prereq: majors only.

**Co-requisites:** NURS 611, NURS 611C

**NURS 694 - Special Topics**  
**Credits:** 1.00 to 4.00  
Specialized courses covering information not normally presented in regular course offerings. Description of topics will vary. May be repeated but not duplicate areas of content. Prereq: permission. (Not offered every year.)

**NURS 695 - Independent Study**  
**Credits:** 2.00 to 4.00  
In-depth study with faculty supervision. Prereq: junior standing and approval of adviser and faculty of the area concerned. May be repeated for different topics.

**NURS 696 - Health Policy and Finance**  
**Credits:** 3.00  
This course provides knowledge and understanding needed to participate in health policy development,
analysis and implementation. The impact of policies on the delivery of health care and nursing services will be explored. The relationship of health policies to the financing of health care will be presented. Students will be introduced to health economics with a focus on the elements of financial management including the language and basic concepts of cost, the budgeting process and systems of reimbursement. Global, national, state, and local systems of financing health care will be compared. Prereq: majors only.

**NURS 702 - Child Health Nursing**  
**Credits:** 2.00  
The course considers the child in the context of family as the focus for nursing practice, introducing the student to the care of children using a developmental approach. Commonly occurring health transitions and alterations occurring from infancy through adolescence are examined. A survey of child health explores both professional practice roles of the pediatric nurse in health promotion and illness as well as acute and chronic conditions that impact children at various stages of development. Prereq: majors only.

**Co-requisites:**

**NURS 702C - Child Health in the Community Clinical**  
**Credits:** 2.00  
Semester long clinical course focused on the practice of pediatric nursing in the community. Prereq: majors only.

**Co-requisites:** NURS 702

**NURS 704 - Public Health Nursing**  
**Credits:** 4.00  
This course prepares the student for population-focused practice. Emphasis is placed on the synthesis of concepts, theories, knowledge and practice from nursing and public health sciences. Students explore the concepts of: community as client, community assessment, health promotion, health protection, illness prevention and vulnerability from a public health nursing perspective. Prereq: majors only.

**Co-requisites:**

**NURS 704P - Public Health Nursing Project**  
**Credits:** 2.00  
Semester long experience working in teams with a community organization to address a current public health issue. Learning focuses on working in teams to develop a strategic understanding of the identified public health issue and to design, implement, and evaluate a targeted intervention project. Prereq: majors only.

**Co-requisites:**

**NURS 705 - Contemporary Leadership within Health Care Systems**  
**Credits:** 4.00  
The course explores the dynamic nature of the healthcare system and practice environments that impact nursing. Emphasis is placed on relationship of ethics, power, change, conflict, communication and politics in health care systems. Focus is placed on the use of models of leadership and management to effectively negotiate change, provide safe quality care, and promote professional practice in the delivery of relationship-centered care. Prereq: majors only.

**Co-requisites:** NURS 721

**NURS 711 - Clinical Judgment in Complex Illness**  
**Credits:** 2.00  
this course further develops and refines critical thinking skills by student participation in clinical senarios and de-briefings. Students prepare for the care of patients with complex illness and engage in health assessment, psychomotor skills, and implementing the nursing process to develop a plan of care. May be waived with special circumstances. Prereq: majors only. Special fee.
NURS 721 - Integrating Professional Nursing Practice
Credits: 2.00
Weekly seminar provides an opportunity for the analysis, synthesis, refinement and integration of nursing knowledge. Standardized testing provides timely feedback to facilitate transition to professional practice. Prereq: majors only.
Co-requisites: NURS 721C

NURS 721C - Integrating Professional Nursing Practice Clinical
Credits: 6.00
Clinical synthesis experience to refine and integrate previously learned knowledge and skills into professional practice through a cooperatively designed learning experience. Students plan, deliver and manage care under the supervision of a licensed preceptor. Prereq: majors only
Co-requisites: NURS 721

NURS 794 - Special Topics
Credits: 1.00 to 4.00
Specialized courses covering information not normally presented in regular course offerings. Description of topics varies. May be repeated but not in duplicate areas of content. Prereq: permission. Special fee on some sections

NURS 794T - Special Topics/Study Away
Credits: 1.00 to 4.00
Study Away course. Special fees. Permission required. Co-requisites: INCO 589

NURS 794W - Special Topics
Credits: 1.00 to 4.00
Specialized courses covering information not normally presented in regular course offerings. Description of topics varies. May be repeated but not in duplicate areas of content. Prereq: permission. Special fee on some sections. Writing intensive.

NURS 797 - Honors Thesis
Credits: 1.00 to 4.00
Honors seminar designed to expand the knowledge and skills presented in previous honors in major courses. Focuses on a project relevant to the discipline of nursing under the direction of a faculty adviser. Open to honors-in-major and senior nursing majors. Students must complete two semesters of work 1cr. in fall, and 4cr. in spring.

NURS 797W - Honors Thesis
Credits: 1.00 to 4.00
Honors seminar designed to expand the knowledge and skills presented in previous honors in major courses. Focuses on a project relevant to the discipline of nursing under the direction of a faculty adviser. Open to honors-in-major and senior nursing majors. Students must complete two semesters of work 1cr. in fall, and 4cr. in spring. Writing intensive.
**Nutrition**

**NUTR 400 - Nutrition in Health and Well Being**  
**Credits:** 4.00  
This lecture laboratory introductory course is designed to teach the scientific principles of human nutrition to promote personal health and well-being. The course provides an overview of the biological significance of food and nutrition. Specific nutrient functions are discussed, as well as how the supply and demand of food impacts our physical health and well-being. The course fosters scientific literacy and an appreciation of the ways in which we gain scientific knowledge and understanding. Special fee. Lab.  
**Co-requisites:**

**NUTR 400H - Honors/Nutrition in Health and Well Being**  
**Credits:** 4.00  
This course is designed to teach the scientific principles of human biology using nutritional concepts to promote personal health and well being. Special fee. Students cannot earn credit for this course if they have taken ANSC 400 or NUTR 475.

**NUTR 401 - Professional Perspectives on Nutrition**  
**Credits:** 1.00  
This survey course examines the many opportunities for dietitians and nutrition science professionals, from farm to fork, to health and nutrition outcomes. Students have the opportunity to meet and interact with department and university faculty. They explore the many career paths and nutrition strategies used by those in the food and nutrition science fields. Legal and ethical considerations for these professionals are discussed. Content areas for specialization in nutrition sciences, dietetics, nutrition and wellness are reviewed as well as those topics explored via the Ecogastronomy dual major. Cr/F.

**NUTR 405 - Food and Society**  
**Credits:** 4.00  
Consideration of the cultural significance of food, emphasizing historical, psychological, social, political, and economic aspects. (Spring semester only.)

**NUTR 405W - Food and Society**  
**Credits:** 4.00  
Consideration of the cultural significance of food, emphasizing historical, psychological, social, political, and economic aspects. (Spring semester only.) Writing intensive.

**NUTR 476 - Nutritional Assessment**  
**Credits:** 4.00  
Designed for the student who plans to enter the health care profession. Introduces the concepts of nutritional assessment and the practical application of these concepts in the nutritional care of clients in clinical, community, and research settings. Prereq: NUTR 400. Special fee.

**NUTR 504 - Managerial Skills in Dietetics**  
**Credits:** 4.00  
Emphasizes the basic principles of managing clinical, community, and food service operations, including personnel management, in-service and on-the-job training, policies and procedures development, and financial management. (Spring semester only.) Only open to Nutrition, Nutr: Dietetics, and Nutr: Nutritional Sciences majors.
NUTR 505 - ServSafe  
Credits: 1.00  
Topical area include: risk management, equipment selection, negotiation skills, and purchasing. Special fee.

NUTR 506 - Nutrition and Wellness  
Credits: 4.00  
This course assists students in making informed decisions affecting personal and societal wellness. It emphasizes the dimensions of wellness, including the impact of psychological, emotional and physical health, as well as environmental influences that affect behavior. (Spring semester only.)

NUTR 546 - Nutrition in Exercise and Sports  
Credits: 4.00  
Advanced nutritional strategies to optimize health, fitness, and athletic performance. Emphasis is on nutrition before, during, and after exercise for fitness, training, and competitions. Topics include optimal amounts of timing of dietary carbohydrates and proteins around the training period. Vitamins, minerals, and other dietary supplements are discussed. So are healthy strategies for building muscle and losing body fat. Prereq: NUTR 400.

NUTR 550 - Food Science: Principle and Practice  
Credits: 4.00  
Principles of food composition structure and properties and the chemical changes foods undergo in preparation and processing. Study of the laws and regulations that are applied to marketing food systems; principle and practice in food preservation. Application of scientific principles and interpretations of laboratory findings. Prereq: HMGT 403, NUTR 400, CHEM 411, or CHEM 403-404. Special fee. Lab.

NUTR 560 - Introduction to Research in Nutrition  
Credits: 2.00  
This course introduces students to research methods in nutritional assessment. Students gain both conceptual knowledge and hands-on experience in a collaborative setting while working with the College Health and Nutrition Assessment Project. Special fee.

NUTR 595 - Mediterranean Diet and Culture  
Credits: 4.00  
Is there a diet that allows one to eat, drink, and still be healthy? While Americans struggle with rising rates of obesity and related health conditions, inhabitants of the Mediterranean region enjoy relatively low rates of heart disease, cancer, and obesity. Offers a unique on-site experience in Ascoli Piceno, Italy to investigate the cultural and scientific importance of the Mediterranean Diet. Students review basic nutrition concepts as well as the history and evolution of the Mediterranean diet. Combining lecture, discussion, and experiential activities, NUTR 595 is offered through the UNH Italy Study Abroad Program during the summer session.  
Co-requisites: INCO 589

NUTR 600 - Field Experience in Nutrition  
Credits: 1.00 to 4.00  
Supervised field experience in public and private agencies with planned learning objectives related to the areas of clinical and community nutrition and food service management. Students are responsible for their own transportation; faculty member coordinates arrangements with fieldwork sites. Prereq: NUTR majors and minors only; permission; NUTR 400. May be repeated for a maximum of 6 credits. Cr/F.

NUTR 600W - Field Experience in Nutrition  
Credits: 1.00 to 4.00
Supervised field experience in public and private agencies with planned learning objectives related to the areas of clinical and community nutrition and food service management. Students are responsible for their own transportation; faculty member coordinates arrangements with fieldwork sites. Prereq: NUTR majors and minors only; permission; NUTR 400. May be repeated for a maximum of 6 credits. Cr/F. Writing intensive.

**NUTR 610 - Nutrition Education and Counseling**  
**Credits:** 4.00  
This course focuses on the principles, methods and materials needed to apply nutrition education and counseling processes. Emphasis is placed on behavior change and developing the skills needed to be an effective nutrition educator and counselor. Prereq: NUTR 400 and NUTR 476. Section 1 is restricted to Nutrition majors in Dietetics option, section 2 is restricted to Nutrition majors in Nutrition and Wellness option, or by permission. (Fall semester only.)

**NUTR 650 - Life Cycle Nutrition**  
**Credits:** 4.00  
Comprehensive review of the nutritional issues related to the life cycle. The nutrient requirements of each stage of the life cycle are analyzed in the context of their metabolic functions. The course also involves the practical application of theory at each stage of the life cycle through projects and discussion. Prereq: NUTR 400. Nutrition majors only or by permission.

**NUTR 699 - Independent Study**  
**Credits:** 1.00 to 4.00  
Scholarly research project in an area of the nutritional sciences under the guidance of a faculty adviser. May be repeated. Prereq: permission. Cr/F.

**NUTR 699W - Independent Study**  
**Credits:** 1.00 to 4.00  
Scholarly research project in an area of the nutritional sciences under the guidance of a faculty adviser. May be repeated. Prereq: permission. Cr/F. Writing intensive.

**NUTR 700 - Career Development in Dietetics**  
**Credits:** 1.00  
This course prepares the student for a dietetic internship through investigation of supervised practice concentrations that meet their career goals. Course also emphasizes resume writing, interviewing, and professional skills.

**NUTR 720 - Community Nutrition**  
**Credits:** 4.00  
Solutions to the complex public health nutrition problems require cost-effective, community-based interventions that identify and address their multiple causes. From food insecurity to the challenges of escalating obesity rates, the community nutritionist is a key player in designing prevention, intervention and health promotion programs and policies. Provides the skills and tools needed to assess, implement, and evaluate community nutrition interventions. Prereq: NUTR 400. Nutrition majors only, or by permission. Writing intensive.

**NUTR 730 - From Seed to Sea: Examining Sustainable Food Systems**  
**Credits:** 4.00  
Food system structure and function from a coupled human and natural systems perspective. Topics include: an exploration of using natural resources to meet growing population demands; conflicting views on meeting food and nutrition requirements; impacts of increased stress on natural resources; inequities and discrimination in the food system; impact of dietary guidelines on the environment. Study of diverse
human and natural system interactions are integrated to understand issues in food system sustainability.

**NUTR 733 - Inv Diet Supplements & Herbs**  
**Credits:** 4.00  
Investigations into the potential benefits to human health of medicinal herbs and other dietary supplements. Students critically evaluate the potential effectiveness of dietary supplements by relying on peer-reviewed nutrition and medical journals. Safety, efficacy, and legality of dietary supplements are critically evaluated, as well as governmental regulations and industry marketing approaches. Several exemplary dietary supplements are examined in detail. Recommended for students in the health sciences (nutrition, nursing, biomedical sciences). Students are expected to attend live sessions of this synchronous online course at the regularly scheduled class times, and all exams will take place in a UNH classroom at the regularly-scheduled class times on the dates indicated in the syllabus. Prereq: NUTR 400. Attributes: Online with some campus visits, EUNH.

**NUTR 740 - Nutrition for Children with Special Needs**  
**Credits:** 4.00  
Nutritional assessment and care of children with special needs resulting in feeding difficulties requiring medical nutrition therapy. Prereq: NUTR 400.

**NUTR 750 - Nutritional Biochemistry**  
**Credits:** 4.00  
Detailed analysis of the digestion, absorption, transport, and intermediary metabolism of nutrients. Nutrient requirements are evaluated in the context of their physiological and biochemical functions. Prereq: ANSC 511-512; BMCB 658; or equivalents. Writing intensive.

**NUTR 751 - Nutritional Biochemistry of Micronutrients**  
**Credits:** 4.00  
Investigation of the nutritional and biochemical aspects of micronutrient metabolism. All of the essential vitamins and minerals are explored in depth, and some phytonutrients and quasi-nutrients are also explored. These nutrients are examined for their molecular, cellular, and metabolic and biomedical functions, as well as the biochemical and clinical consequences of their deficiency or excess. Prereq: NUTR 750 or equivalent.

**NUTR 755 - Treatment of Adult Obesity**  
**Credits:** 3.00  
Overview of the risk factors associated with obesity; evidence-based recommendations for assessment and treatment of obesity. Counseling skills important to successful weight management and non-diet approaches are also explored. Open to Junior and Senior Nutrition majors, or by permission. Prereq: NUTR 400, 476, and 610.  
**Co-requisites:** NUTR 758

**NUTR 758 - Practicum in Weight Management**  
**Credits:** 2.00  
Students in NUTR 758 assist clients in making lifestyle and dietary changes over a 10-week period and develop skills in marketing, advertising, counseling, and oral communication related to weight management. Prereq: NUTR 400, 476, and 610. Special fee.  
**Co-requisites:** NUTR 755

**NUTR 760 - Research Experience Nutrition I**  
**Credits:** 2.00  
In NUTR 760 and NUTR 761 students review scientific literature, formulate research questions, and test hypotheses, analyze and interpret research data, and formally present findings. Students gain conceptual...
knowledge and hands-on experience while working with established research projects. NUTR 760 focuses on the development and testing of a research question. Offered during the Fall term by permission only. Prereq: NUTR 560. Special fee.

**NUTR 761 - Research Experience Nutrition II**  
**Credits:** 2.00  
In NUTR 760 and 761 students review scientific literature, formulate research questions, create and test hypotheses, analyze and interpret research data, and formally present findings. Students gain conceptual knowledge and hands-on experience while working with established research projects. NUTR 761 focuses on understanding and communicating research findings in a collaborative setting. Offered during the spring term by permission only. Prereq: NUTR 760. Special fee.

**NUTR 765 - Geriatric Nutrition**  
**Credits:** 4.00  
An overview of the physiological changes associated with aging and their impact on preparing, consuming, digesting, absorbing, and metabolizing food will be the primary emphasis. This course also explores the role of routine nutritional assessment in the promotion of health to prevent and manage chronic disease, with a social focus on the influence of polypharmacy on nutritional status. Prereq: NUTR 400 or equivalent.

**NUTR 773 - Clinical Nutrition**  
**Credits:** 4.00  
Application of principles of normal nutrition and physiology to clinical problems; altered nutrient requirements in human disease. Prereq: basic nutrition, anatomy and physiology, and biochemistry. Nutrition majors only or by permission. (Fall semester only.)

**Co-requisites:**

**NUTR 775 - Practical Applications in Medical Nutrition Therapy**  
**Credits:** 4.00  
Supervised practical experience in therapeutic dietetic in one of several cooperating New Hampshire hospitals. Emphasizes nutritional counseling, assessment, and instruction of patients with nutrition-related disorders. Prereq: basic nutrition, anatomy and physiology, and biochemistry. (Fall semester only.)

**Co-requisites:** NUTR 773

**NUTR 780 - Critical Issues in Nutrition**  
**Credits:** 4.00  
Critical review and analysis of controversial topics in nutrition; emphasis on developing oral and written communication skills and analytical reasoning skills. Prereq: permission. (Spring semester only.) Writing intensive.

**NUTR 790 - Undergraduate Teaching Experience**  
**Credits:** 1.00 to 2.00  
Students assist graduate teaching assistants or faculty in preparing, presenting, and executing NUTR courses/laboratories. May be repeated up to a maximum of 4 credits.

**NUTR 795 - Investigations**  
**Credits:** 1.00 to 4.00  
Prereq: permission.

**NUTR 795W - Investigations**  
**Credits:** 1.00 to 4.00  
Prereq: permission. Writing intensive.
NUTR 799 - Senior Thesis
Credits: 1.00 to 4.00
A special project conducted under faculty supervision and resulting in a written honors thesis. Students must initiate discussion of the project with an appropriate faculty member. Offered both semesters. Prereq: Junior or Senior major with cum. GPA of 3.20; permission. Writing intensive.

NUTR 799H - Honors Senior Thesis
Credits: 1.00 to 4.00
A special project conducted under faculty supervision and resulting in a written honors thesis. Students must initiate discussion of the project with an appropriate faculty member. Offered both semesters. Prereq: Junior or Senior major with cum. GPA of 3.20; permission. Writing intensive.
**Occupational Therapy**

**OT 444 - Living and Doing with Technology**  
**Credits:** 4.00  
This course draws upon the knowledge from emerging product design concepts and principals and advocates for inclusiveness of all consumers regardless of their age, abilities, disabilities, and personal affinities. Students will apply critical thinking and hands-on learning to evaluate day-to-day technologies by use of various design criteria, identify usability problems, and design technology solutions. Course work will include readings, interactive activities, discussions, quizzes, and group projects.

**OT 500 - Behavior and Development of Children**  
**Credits:** 4.00  
Introduces the biological, psychosocial, and cultural aspects of human development from birth through adolescence. Emphasizes theories that help explain human behavior; discusses implications of developmental research.

**OT 501 - Developmental Tasks of Adulthood**  
**Credits:** 4.00  
Includes the biological and psychosocial context of development for adults. Developmental tasks relate to the accomplishment of prior tasks, physiological change, socioeconomic status, and psychosocial development. Prereq: child development course or permission.

**OT 510 - Exploring Occupational Therapy and Occupation**  
**Credits:** 4.00  
Occupational therapy is introduced as a human service profession through experiential and academic activities, which illustrate the personal and professional skills required to practice in a variety of settings and roles. Basic concepts of human occupation and the therapeutic use of occupation are explored. Comparisons are made to related human service careers. Students are encouraged to do a personal assessment of their interest and potential for further study of occupational therapy.

**OT 513 - Stressed Out: The Science and Nature of Human Stress**  
**Credits:** 4.00  
The human stress response system, research investigating the sequelae of stress on health, protective strategies for stress, managing personal stress effectively, and strategizing stress modulation as an intervention technique. Course format includes two hours of weekly lecture/discussion followed by one hour of experiential laboratory in which students research and/or apply new information. Special fee.

**OT 595 - Special Topics**  
**Credits:** 4.00  
Explores areas related to occupational therapy theory, practice, and/or research. Special fee on topic: College as Transition.

**OT 598 - Happy and Healthy at Work/Promoting Wellness, Diversity and Inclusion**  
**Credits:** 4.00  
Offers an improved understanding and ability to effectively manage a diverse and healthy workplace. Addresses key diversity, inclusion and wellness issues in the workplace of a general, technical and social nature with an emphasis on disability and health promotion. (Also listed as HMGIT 598.) Special fee.

**OT 610 - Occupation, Identity, Disability**
Credits: 4.00
Students develop skills and knowledge for analyzing daily existence, patterns of activity and the occupational choices pursued by humans. Students explore how the self-identity of individuals with and without disability is influenced by participation in everyday activities, and contextual factors: Through reading, reflective writing and collecting personal narratives of individuals with disability, students examine the relations among engagement in daily occupations and the orchestration of routines and social participation with self identity and well-being. Majors only. Writing intensive.

OT 685 - Psychosocial Disorders and Everyday Life
Credits: 4.00
The study of abnormal behavior in the context of its effect on everyday function. Provides background information on adult psychosocial disorders commonly seen by service providers in the mental health system. Students learn to observe and describe behavior in terms of functional impairment, diagnostic criteria, and causative factors. General psychosocial and biological treatments are studied. This course or its equivalent is a prerequisite for entry to the professional masters degree program in occupational therapy. Students are expected to bring to this course a basic knowledge of psychosocial aspects of human development. Prereq: PSYC 401. Majors only.

OT 695 - Independent Study
Credits: 2.00 to 4.00
In-depth study with faculty supervision. Prereq: junior standing in OT major; approval of major adviser and faculty of area concerned. May be repeated for a maximum of 8 credits.

OT 710 - OT Practice and Professional Roles
Credits: 4.00
Students are introduced to foundation knowledge, values and philosophy of occupational therapy practice. Students learn skills to apply professional behaviors and skills required to be ethical practitioners. They learn about various practice settings and systems within which occupational therapists practice to prepare them to begin to make decisions regarding their fieldwork site selections. They are introduced to models of OT practice. Only open to OT majors. Special fee.

OT 722 - Introduction to Assistive Technology
Credits: 4.00
Hands on course provides participants with an overview of the application of assistive technology in all life settings for individuals affected by physical, sensory, or cognitive limitations. Methods, materials, and resources for obtaining and providing assistive technology services will also be discussed. Special fee.

OT 724 - Assistive Technology and Physical Disabilities
Credits: 4.00
An advanced course that focuses on the specialized assistive technology needs of persons with physical impairments. Topics include seating and positioning needs, prosthetic devices, manual powered mobility devices, ergonomics and computer access. Special fee.

OT 726 - Assistive Technology and Sensory, Communicative, and Cognitive Disabilities
Credits: 4.00
Explores the application of various technologies for individuals with visual, auditory, cognitive and communication impairments. Included are: blind and low vision aides, assistive listening devices, alternative and augmentative communication devices, memory aides, and prompting aides. Special fee.

OT 730 - Assistive Technology for Enhancing Occupational Performance
Credits: 3.00
This course provides instruction on how occupational therapy practitioners use and apply assistive
technology in the context of client evaluation and intervention, to improve quality of life and functional capacities. Students learn and apply clinical reasoning skills related to the selection, procurement, modification and training in the use of assistive technology solutions. OT majors only.

**Co-requisites:** OT 730L

**OT 730L - Assistive Technology for Enhancing Occupational Performance Lab**

**Credits:** 2.00

Co-Proprietary Laboratory for OT 730/830 Assistive Technology for Enhancing Occupational Performance. Students are provided hands-on learning experiences regarding the fabrication, identification, adaptation and training in the use of assistive technology for individuals with functional problems associated with disability or impairment. OT evaluation and interventions related to the application of assistive technology are addressed. OT majors only.

**Co-requisites:** OT 730

**OT 741 - Human Occupation**

**Credits:** 4.00

This course introduces students to the broad concept of occupation by exploring ways people acquire skills for occupational performance. Students develop an understanding of the relations between health and occupation, disability and occupation, and explore how humans find meaning in their lives through occupational engagement. Writing intensive.

**OT 745 - Administration and Management for Occupational Therapy Practice**

**Credits:** 4.00

This course aims to increase the student's understanding of systems of practice, and to business fundamentals associated with occupational therapy service delivery. Specific topics covered include and analysis of practice settings, reimbursement, supervision of professional and non-professional staff, program evaluation methods, ethics, OT management practices, marketing, health policy including medicare, Human Rights and Education Legislation, and the impact of policy decisions for the delivery of OT services. OT majors only.

**OT 751 - Mind Body Systems/Neurologically Based Function and Dysfunction**

**Credits:** 4.00

Students study most significant occupational-related disorders commonly seen by occupational therapists. A self-directed method is used to examine the perceptual, cognitive, biopsychosocial basis of these disorders. A basic overview of human body-mind systems is provided with an emphasis on pathology, the recognition of symptoms, their causes and the occupational implications of the disorders. The course is a prerequisite for courses in specific occupational therapy assessment and intervention. OT majors only.

**OT 752 - Human Movement and Environmental Effects on Everyday Occupations**

**Credits:** 4.00

Integrates the student's prerequisite knowledge of occupation. Develops skills required for interpretation of biomechanical analysis for creating successful occupational performance for individuals with varied musculoskeletal, cardiac and respiratory dysfunction. Integration of the occupational therapy clinical reasoning process and the use of occupations as a therapeutic mechanism for change are emphasized. The analysis of environment as it relates to human movement and participation in desired occupations is explored. Special fee.

**Co-requisites:** OT 752L

**OT 752L - Human Movement Lab**

**Credits:** 1.00

OT majors only. Cr/F.

**Co-requisites:** OT 752
OT 760 - Psychosocial Evaluation and Intervention  
**Credits:** 4.00  
Examines the evaluation of psychosocial and psycho-emotional areas of occupational performance and the planning and implementation of occupation-based interventions across domains of practice and client populations. Course addresses developing a client's occupational profile, narrative reasoning and therapeutic use of self, behavioral change, illness representation, and adjustment to chronic disorders. A specific focus of the course is evaluation of and intervention for clients’ presenting with mental health disorders. Open to OT majors only.  
**Co-requisites:** OT 760L

OT 760L - Psychosocial Evaluation and Intervention Lab  
**Credits:** 1.00  
This is the co-requisite lab for OT 760. Lab provides hands-on experiences regarding the evaluation and intervention of psychological and psycho-emotional areas of occupational performance. Course focuses on the evaluation and intervention for clients presenting with mental health disorders and also addresses narrative reasoning, therapeutic use of self, behavioral change, illness representation and adjustment to chronic disorders. Special fee. OT majors only. Cr/F.  
**Co-requisites:** OT 760

OT 766 - AMPS Training  
**Credits:** 4.00  
The Assessment of Motor and Process Skills (AMPS) provides a client-centered, occupation-based assessment of a person's ADL ability. The course supports occupation-based intervention. Students learn to reliably administer the AMPS and use it in the context of occupational therapy practice. Cr/F.

OT 771 - Enabling Participation in Community Groups  
**Credits:** 2.00 or 3.00  
Students will work in an organization, learn about the people served by this organization, and conduct therapeutic groups within the organization. Emphasis of content includes group process, clinical documentation, intervention planning and OT services with adults with cognitive impairments.  
**Co-requisites:**

OT 771L - Enabling Participation in Community Groups Lab  
**Credits:** 2.00  
Students will work in an organization, learn about the people served by this organization and conduct therapeutic groups. This lab serves as a Level I Fieldwork placement. OT majors only. Special fee.  
**Co-requisites:**

OT 785 - Research Methods and Application to Practice  
**Credits:** 4.00  
Qualitative, quantitative, and mixed methods types of research are introduced and applied to relevant occupational therapy questions. Students acquire the fundamental skills of conducting research such as formulating research questions and identifying appropriate research designs and/or methods. Students also develop the ability to critically analyze research studies and apply the outcomes to evidence-based practice in occupational therapy. OT majors only.

OT 789 - Using iPads to Support Children with Disabilities  
**Credits:** 3.00  
The iPad is changing the way we teach and learn. This technology embraces Universal design principles (UDL) and enables children with significant disabilities to learn in ways never thought possible five years ago. It is a tool for delivering multimedia content and embraces the use of Multi modal learning. This technology finally levels the playing field to support all students including students with disabilities.
OT 791 - Senior Honors Thesis  
**Credits:** 4.00  
Completion of a research proposal based on a topic of relevance to the occupational therapy profession. Development of knowledge and skills in receiving and critiquing research and professional literature; research design and methodology; and the development of a research proposal. Required for graduation with honors in the major. Prereq: Completion of OT 741. Open to OT majors only.

OT 792 - Level I Fieldwork  
**Credits:** 1.00  
Provides occupational therapy students an opportunity to experience occupational therapy in a clinical setting. Students attend a seminar prior to beginning their placement. The Level I placement is scheduled between the fall and spring semesters of the senior year. During fieldwork, students observe an occupational therapist as well as participate in the planning and implementing of the occupational therapy assessment or intervention process for a client. OT majors only. Cr/F.

OT 795 - Special Topics  
**Credits:** 2.00 to 4.00  
Explores areas related to occupational therapy theory, practice, and/or research. May repeat to 12 credits but not in duplicate subject areas. Prereq: permission. Special fee on some sections. Cr/F.
**Ocean Engineering**

**OE 400 - Ocean Engineering Seminar**  
**Credits:** 1.00  
A seminar based course considering contemporary topics involved in ocean exploration. Faculty and guest speakers will describe thematic ocean engineering subareas through weekly presentations. The presentations will provide examples of engineering applications and ocean exploration. Class participation credit can be earned through oral discussions, presentation of contemporary OE topics, or hands on projects.

**OE 401 - Ocean Engineering Seminar**  
**Credits:** 1.00  
A seminar based course considering contemporary topics involved in ocean exploration. Faculty and guest speakers will describe thematic ocean engineering subareas through weekly presentations. The presentations will provide examples of engineering applications and ocean exploration. Class participation credit can be earned through oral discussions, presentation of contemporary OE topics, or hands on projects.

**OE 521 - Power of the Sea: Scientific Discovery in the Ocean**  
**Credits:** 4.00  
This course considers the struggle to understand the physics of the sea to help predict when the sea will unleash its fury. The scientific discovery of ocean engineering topics such as tides, waves, and tsunamis are introduced through their human historical introduction. The historical significance and preliminary resolution of each physical mechanism provide context for the fundamental formulations and contemporary predictive models. The course also considers the role of ocean disasters and geopolitical conflict in motivating scientific exploration of the oceans.

**OE 610 - Ocean Instrumentation Lab**  
**Credits:** 4.00  
An investigation of the discrete and integrated electronics typically used in the design and implementation of ocean instruments. Topics include both passive and active analog electronic elements typically used for signal conditioning of common oceanographic sensors (e.g., thermistors, pressure sensors, acoustic transducers); A/D and D/A conversion, sensor sampling criteria and rules, with examples from contemporary ocean instruments; embedded micro-controller/microcomputer modules for autonomous or remote sensing in ocean environments; inter-instrument communications methods typically used in ocean instruments (e.g., serial and network communications). Laboratory time will be used to develop practical experience in specification, design, development and testing of various ocean instrument components based on the material presented. Prereq: MATH 527; MATH 528; ECE 537; IAM 550.

**OE 677 - Seamanship and Marine Weather for Ocean Engineers and Scientists**  
**Credits:** 2.00  
A survey of basic principles of seamanship and marine weather intended for ocean engineers and ocean scientists. Reviews ship and vessel nomenclature, shipboard safety, techniques for equipment handling and instrument deployment, common shipboard evolutions associated with scientific cruises, navigation principles, and marine weather phenomena and products. Includes field trips and practical applications.

**OE 690 - Introduction to Ocean Engineering**  
**Credits:** 4.00  
Survey of engineering applications in the ocean environment. Topics vary and include hydrodynamics,
waves, tides, underwater sound, instrumentation, marine geomechanics, and naval architecture. Includes guest lectures by faculty members from the Engineering departments. Prereq" PHYS 408 Pre- or Coreq: MATH 527.

OE 710 - Ocean Measurements Lab
Credits: 4.00
Measurements of fundamental ocean processes and parameters. Emphasizes understanding typical offshore measurements, their applications, and the use of acquired data, in terms of the effects on structures and processes in the ocean.

OE 744 - Corrosion
Credits: 4.00
Three-part course. First part reviews and develops basic concepts of electrochemistry, kinetics, and measurement methods. Second part covers details of specific corrosion mechanisms and phenomena including passivity, galvanic corrosion, concentration cell corrosion, pitting and crevice corrosion, and environmentally induced cracking. Third part focuses on the effects of metallurgical structure on corrosion, corrosion in selected environments, corrosion prevention methods, and materials selection and design. Prereq: CHEM 404 or 405; ME 561 or permission. Special fee. Lab. (Also listed as CHE 744 and ME 744.)

OE 753 - Ocean Hydrodynamics
Credits: 3.00
Fundamental concepts of fluid mechanics as applied to the ocean, continuity, Euler and Navier-Stokes equations, Bernoulli equation, stream function, potential function, moment theorem, turbulence and boundary layers are developed with ocean applications. Prereq:MATH 527; CIE 642 or ME 608.

OE 754 - Ocean Waves and Tides
Credits: 4.00
Introduces waves: small amplitude, linear wave theory, standing and propagating waves, transformation in shallow water, energy and forces on structures, generation by wind and specification of a random sea, long waves with rotation, and internal waves. Introduces tides: description of tides in ocean tidal generation forces, equilibrium tide, and tidal analysis. Lab/project: field and lab measurements with computer analysis. Prereq: PHYS 407-408; MATH 527;/or permission. Lab.

OE 756 - Principles of Naval Architecture and Model Testing
Credits: 4.00
Fundamentals of naval architecture presented, including hydrostatics, basics of resistance and propulsion, sea keeping and scaling. Concepts applied in experiments utilizing the tow/wave tank and associated instrumentation. Prereq: ME 608 or equivalent; ME 627 or equivalent.

OE 757 - Coastal Engineering and Processes
Credits: 3.00
Introduces small amplitude and finite amplitude wave theories. Wave forecasting by significant wave method and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave structure interaction. Introduction to mathematical and physical modeling. (Also offered as CIE 757; ME 757.) Prereq: fluid dynamics or permission.

OE 758 - Design of Ocean Structures
Credits: 3.00
The foundational information necessary for the design of ocean structures. Topics include analysis and design of floating body, fixed body and moored line hydrostatics; wave forces on small and large bodies; dynamic response of floating bodies; and pile and gravity foundation geotechnics. Prereq: ME 526 or CIE 526; ME 608 or CIE 642; ME 627, MATH 527.
OE 759 - Estuarine and Coastal Modeling
Credits: 4.00
Thoery and application of coastal and estuarine numerical models for hydrodynamics and transport/fate of natural and pollutant sustances. The course will be organized around the development/addition to a numerical model applied to the Great Bay Estuarine System. Theory and course organization will be covered in the lecture component. The full set of steps required to apply, test, use and document a numerical model will be completed in the laboratory component. Prereq: MATH 527; MATH 528, OE 754 or permission.

OE 765 - Underwater Acoustics
Credits: 3.00
An introduction to acoustics in the ocean. Fundamental acoustic concepts including the simple harmonic oscillator, waves on strings, and the acoustic wave equation; the sonar equation; sound generation and reception by underwater acoustic transducers and arrays; basics of sound propagation; reflection and scattering from ocean boundaries. Spring semesterl offered every year; satisfies core course requirement in Ocean Engineering. Prereq: PHYS 407/408, MATH 527 or equivalent.

OE 771 - Geodesy and Positioning for Ocean Mapping
Credits: 4.00
The science and technology of acquiring, managing, and displaying geographically-referenced information; the size and shape of the earth, datums and projections; determination of precise positioning of points on the earth and the sea, including classical terrestrial-based methods and satellite-based methods; shoreline mapping, nautical charting and electronic charts. Prereq: MATH 426, PHYS 408. (Also listed as ESCI 771.)

OE 795 - Special Topics
Credits: 2.00 to 4.00
New or specialized courses and/or independent study. May be repeated for credit.

OE 797 - Honors Seminar
Credits: 1.00
Course enrichment and/or additional independent study in subject matter pertaining to 600- or 700-level OE courses.
**Philosophy**

**PHIL 401 - Introduction to Philosophy**  
**Credits:** 4.00  
This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind.

**PHIL 401H - Honors/Introduction to Philosophy**  
**Credits:** 4.00  
This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind.

**PHIL 401W - Introduction to Philosophy**  
**Credits:** 4.00  
This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind. Writing intensive.

**PHIL 410 - Happiness, Well-Being, and a Good Life**  
**Credits:** 4.00  
A sustained exploration of happiness, well-being, and a good life. Are they the same? If not, do any include the others, and can they conflict? What sorts of things might contribute to or detract from happiness, well-being, and having a good life? Comparing work on these topics in philosophy and psychology will be a key theme in the course.

**PHIL 412 - Beginning Logic**  
**Credits:** 4.00  
Principles of reasoning and development of symbolic techniques for evaluating arguments.

**PHIL 412H - Honors/Beginning Logic**  
**Credits:** 4.00  
Principles of reasoning and development of symbolic techniques for evaluating arguments.

**PHIL 417 - God, Religion, and the Meaning of Life**  
**Credits:** 4.00  
An introductory philosophical exploration of the relationship between reason and religious experience, particularly as this relationship has developed in and in response to, the great world religions.

**PHIL 421 - Philosophy and the Arts**  
**Credits:** 4.00  
Contemporary philosophic concerns and perspectives as reflected in one or more of the arts (literature, theatre, film, music, plastic art). Writing intensive.

**PHIL 421H - Honors/Philosophy and the Arts**  
**Credits:** 4.00  
Contemporary philosophic concerns and perspectives as reflected in one or more of the arts (literature, theatre, film, music, plastic art). Writing intensive.
PHIL 424 - Science, Technology, and Society  
Credits: 4.00  
Consideration of the scientific endeavor and its social import from a philosophical perspective.

PHIL 424H - Honors/Science, Technology and Society  
Credits: 4.00  
Consideration of the scientific endeavor and its social import from a philosophical perspective.

PHIL 430 - Ethics and Society  
Credits: 4.00  
Critical study of principles and arguments advanced in discussion of current moral and social issues.  
Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion.

PHIL 430H - Honors/Ethics and Society  
Credits: 4.00  
Critical study of principles and arguments advanced in discussion of current moral and social issues.  
Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion. Writing intensive.

PHIL 430W - Ethics and Society  
Credits: 4.00  
Critical study of principles and arguments advanced in discussion of current moral and social issues.  
Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion. Writing intensive.

PHIL 435 - Human Nature and Evolution  
Credits: 4.00  
Philosophy of biology and the evolutionary process. Readings of scientists and philosophers' commentary on scientists. Examination of the differences between scientific debate and philosophic debate.  
Philosophical study of scientific theory stressing humans' place in the natural world and the ethical implication of humans as natural beings in the evolutionary process.

PHIL 435H - Honors/Human Nature and Evolution  
Credits: 4.00  
Philosophy of biology and the evolutionary process. Readings of scientists and philosophers' commentary on scientists. Examination of the differences between scientific debate and philosophic debate.  
Philosophical study of scientific theory stressing humans' place in the natural world and the ethical implication of humans as natural beings in the evolutionary process.

PHIL 436 - Social and Political Philosophy  
Credits: 4.00  
Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable?

PHIL 436H - Honors/Social and Political Philosophy  
Credits: 4.00  
Examines social and political thought that may include texts from ancient through contemporary times,
addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable? Writing intensive.

**PHIL 436W - Social and Political Philosophy**
**Credits: 4.00**
Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable? Writing intensive.

**PHIL #437 - Social and Political Philosophy**
**Credits: 4.00**
This course is the same as PHIL 436 Social and Political Philosophy but without the Inquiry designation. Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable?

**PHIL 440 - Just Business: The Ethics of Markets and Money**
**Credits: 4.00**
Critical study of business ethics and scandals. Questions may include: Is ethics irrelevant in the cutthroat world of money making? How can one be a good person - for example honest, loyal, and caring - while attempting to maximize profits? Must employers treat workers with dignity? Does anything have more value than money? Is money closer to the "root of all evil" or the "root of all good"? Should everything be for sale? To what extent are unregulated markets fair? How should we punish corporate wrongdoers?

**PHIL 440A - Honors/Who Are You? Personal Identity and Humanity**
**Credits: 4.00**
What makes you you? Are you the same person over time? What does it mean to be a person? How is being a person related to being a human being? This course is part of an Honors Symposium on the nature of personhood and humanity. We will explore a number of philosophical questions related to personal identity over time, the social construction of the self, and the relationship between being a member of homo sapiens and being a person.

**PHIL 440B - Honors/Humanism and Dehumanization**
**Credits: 4.00**
When we call someone human or a person, what do we mean, and what are we trying to do? How has the concept of personhood expanded or contracted to include more or fewer beings and why? Are fetuses persons? Are corporations persons? Are chimps persons? Who counts as a person now, and who will count as a person in the future? How and why are human persons subject to dehumanization? Readings and texts will draw from historical sources and contemporary philosophy. No credit if credit earned for PHIL 780.
PHIL 444 - Remaking Nature/The Ethics and Politics of Genetic Engineering  
**Credits:** 4.00  
Examines the biological, ethical, social, and political issues raised by genetic engineering and by human enhancement techniques. Issues may include: cloning humans, selection of embryos on the basis of lack of genetic defects, genetic modification of plants and animals for food, gene therapy on humans, cognitive and athletic enhancement. Depending on instructor other topics may include human modification of the environment and engineering responses to global warming. Writing intensive.

PHIL 444A - Who Am I? Concepts of Self  
**Credits:** 4.00  
An inquiry into the nature of the self and into the conditions under which it may best flourish. Is the self fundamentally biological, spiritual, or social?. Draws on a variety of perspectives in an attempt to answer these questions, including East Asian as well as Western philosophical ideas, feminist theory, Existentialism, and others. Writing intensive.

PHIL 447 - Artificial Intelligence, Robots, and People  
**Credits:** 4.00  
The historical origins of the science of computation. The implications of the nature of information-processing for understanding the mind-body relation. Examines the possible social, economic, and educational consequences of the computer revolution.

PHIL 447H - Honors/Artificial Intelligence, Robots, and People  
**Credits:** 4.00  
The historical origins of the science of computation. The implications of the nature of information-processing for understanding the mind-body relation. Examines the possible social, economic, and educational consequences of the computer revolution.

PHIL 450 - Environmental Ethics  
**Credits:** 4.00  
Thoughtful people cannot help escape considering hard questions about our relationship to the natural world and what it means for the future of life on earth. In this course we think philosophically about these crucial concerns. We try to answer questions about our responsibilities to the environment and to future generations.

PHIL 450H - Honors/Environmental Ethics  
**Credits:** 4.00  
Thoughtful people cannot help escape considering hard questions about our relationship to the natural world and what it means for the future of life on earth. In this course we think philosophically about these crucial concerns. We try to answer questions about our responsibilities to the environment and to future generations.

PHIL 495 - Tutorial Reading  
**Credits:** 1.00 to 4.00  
Basic introductory reading under faculty direction on topics of philosophical importance. Books offered for tutorial reading may be in any area the instructor chooses or on independent study basis. May be repeated, but total credits of repetition cannot exceed 8 credits. Prereq: permission.

PHIL 496 - Topics  
**Credits:** 4.00  
Introductory-level seminar in specific topics or problems considered from a philosophic point of view.
PHIL 500 - Workshop  
**Credits:** 4.00  
Introduces methods of studying philosophical texts. Emphasizes reading philosophical texts and arguments for comprehension, and on writing philosophically with accuracy and clarity. Open to PHIL majors (PHIL minors may enroll if they receive permission). Writing intensive.

PHIL 510 - Philosophy and Feminism  
**Credits:** 4.00  
Focuses on philosophical issues in feminism primarily through the work of historical and contemporary philosophers. Topics include the question of the nature of women, feminism as an ethical and political theory, feminism as an exploration and transformation of the self, feminism as a philosophical methodology, and the institutions of marriage and motherhood. Writing intensive.

PHIL 520 - Introduction to Eastern Philosophy  
**Credits:** 4.00  
Major Eastern traditions of philosophy. Concentration on Indian, Chinese, and Japanese systems may vary from semester to semester.

PHIL 525 - Existentialism  
**Credits:** 4.00  
Readings from existential philosophy and literature. Selections may be drawn from the works of Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, de Beauvoir, Buber, Bultman, Merleau-Ponty, Tillich, Kafka, and others.

PHIL 525H - Honors/Existentialism  
**Credits:** 4.00  
Readings from existential philosophy and literature. Selections may be drawn from the works of Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, de Beauvoir, Buber, Bultman, Merleau-Ponty, Tillich, Kafka, and others.

PHIL 530 - Ethics  
**Credits:** 4.00  
Critical examination of the development of philosophical thinking regarding human values, rights, and duties.

PHIL 560 - Philosophy Through Fiction  
**Credits:** 4.00  
Philosophical implications of representative literary works, read in tandem with philosophical literature. The content will vary. The literary works explored may be drawn from ancient times through modern times. For examples, the classic Greek tragedy "Antigone" might be explored for its implications regarding moral, political, and feminist philosophy, or the philosophical implications of an anti-utopian contemporary work like "Brave New World" might be explored, or short stories drawn from science fiction and other speculative fiction might be used to explore the possibility of time travel or of machines with mental lives. Writing intensive.

PHIL 565 - Philosophy Through Film  
**Credits:** 4.00  
Philosophical exploration of film as a medium for developing philosophical ideas and for stimulating philosophical thinking about various issues reflected in film, from traditional philosophical issues to the pressing social and cultural issues of our time. The content will vary. Philosophical texts are read in tandem with screenings of a range of movies from Hollywood blockbusters and art house films to films made for TV. Philosophical issues such as the nature of consciousness, appearance and reality, God and evil, the
good life, and time and memory might be explored. Film might also be used to examine representations of race and gender or violence in society; and the power of movies to influence society might be explored through documentaries and propaganda films. Required evening film screenings in addition to regular class meetings. Writing intensive.

**PHIL 570 - Classical Philosophy**  
**Credits:** 4.00  
Development of Western philosophy from its beginnings in Greece to the Roman period, with particular emphasis on the thought of Plato and Aristotle.

**PHIL 570H - Honors/Ancient Philosophy**  
**Credits:** 4.00  
Development of Western philosophy from its beginnings in Greece to the Roman period, with particular emphasis on the thought of Plato and Aristotle.

**PHIL 580 - Modern Philosophy from Descartes to Kant**  
**Credits:** 4.00  
The birth and development of distinctively modern philosophy in the thought of such creative minds as Galileo, Descartes, Hobbes, Leibniz, Spinoza, Locke, Berkeley, Hume, Rousseau, Reid, Kant, and others. Prereq: PHIL 570 or permission.

**PHIL 610 - Topics in History of Philosophy**  
**Credits:** 4.00  
In-depth examination of a major figure or philosophical movement in the history of philosophy. Content will vary. Consult the Time and Room Schedule for topics. Prereq: one course in history of philosophy or permission. Writing intensive.

**PHIL #620 - 20th Century European Philosophy**  
**Credits:** 4.00  
Major figures or philosophical movements such as phenomenology, existentialism, critical social theory, and post-modernism. Content will vary. Consult Time and Room Schedule for topics. Writing intensive.

**PHIL 630 - Neuroscience and Philosophy**  
**Credits:** 4.00  
This course has a double focus. It investigates theories concerning the nature of the mind/brain relation, especially in light of recent work in the neurosciences. It also considers the particular presuppositions of and methodological challenges endemic to the neurosciences, along with the relations neuroscience bears to neighboring disciplines. Prereq: Sophomore standing or better.

**PHIL 631 - Topics in the Philosophy of Science**  
**Credits:** 4.00  
Philosophical problems raised by the physical, biological, and social sciences. Content will vary. Topics may include the nature of scientific explanation, the role of mathematics in science, the relations of science to common sense, the relation of theory to observation, the nature of historical changes in scientific world view, claim to objectivity in the natural and social sciences, the role of values in scientific research, the relation of the logic of science to the philosophy and history of science. Prereq: Sophomore standing or better or permission. Writing intensive.

**PHIL 635 - Philosophy of Law**  
**Credits:** 4.00  
Systematic study of salient features of legal systems. Possible topics: nature of law; concept of legal validity; law and morality; individual liberty and the law; legal punishment; legal responsibility and related...
concepts (for example, legal cause, harm, mens rea, negligence, strict liability, legal insanity). Writing intensive.

**PHIL 660 - Law, Medicine, and Ethics**  
**Credits:** 4.00  
Critical examination of the diverse legal and moral issues facing the profession of health care. Variable topics may include: duty to provide care; nature of informed consent to treatment; problems of allocating limited health-care resources (e.g., withdrawal of life-support systems, quality-of-life decisions, etc.); patient's right to confidentiality. Problems relating to involuntary preventive care (e.g., involuntary sterilization, psycho-surgery, etc.). Writing intensive.

**PHIL 701 - Topics in Value Theory**  
**Credits:** 4.00  
Philosophical inquiry into the nature of value. Topics may include the grounds of right and wrong, various conceptions of morality, the nature of good and evil, theories about the meaning of life, the nature of the beautiful. Content will vary. Consult the Time and Room Schedule for topics. Course may be taken twice for credit (a third time with permission of the chair of the department) so long as the topic is different. May not be repeated to improve grade without approval from the department chair. Prereq: PHIL 500 one course in history of philosophy, or permission. Writing intensive. Repeatable with permission.

**PHIL 702 - Topics in Metaphysics and Epistemology**  
**Credits:** 4.00  
Advanced study in one or more of the following topics: nature of reality, relationship of thought and reality, nature of knowledge and perception, theories of truth. Content will vary. Consult the Time and Room Schedule for topics. Course may be taken twice for credit (a third time with permission of the chair of the department) so long as the topic is different. May not be repeated to improve grade without approval of the chair of the department. Prereq: PHIL 500 and one course in history of philosophy, or permission. Writing intensive. Repeatable with permission.

**PHIL 740 - Advanced Topics in the Philosophy of Law**  
**Credits:** 4.00  
Content variable. In-depth examination of special topics (constitutional law, crime and punishment, international human rights and gender, sexual orientation, race and class in the law) or a major figure in the philosophy of law (Dworkin, Habermas and Rawls). Prereq: PHIL 635 or permission. Writing intensive. Repeatable with permission.

**PHIL 780 - Special Topics**  
**Credits:** 4.00  
Advanced study of special topics: a problem, figure, or movement in the history of philosophy, or selected issues, thinkers, or developments in contemporary philosophy. Prereq: PHIL 500 and one course in the history of philosophy, or permission. Writing intensive. Repeatable with permission.

**PHIL 795 - Independent Study**  
**Credits:** 1.00 to 8.00  
For students who are adequately prepared to do independent, advanced philosophical work; extensive reading and writing. Before registering, students must formulate a project and secure the consent of a department member who will supervise the work. Conferences and/or written work as required by the supervisor. Prereq: permission. May be repeated to a total of 8 credits. Writing intensive.

**PHIL 798 - Senior Thesis**  
**Credits:** 4.00  
Two-course sequence (798, then 799) open only to senior philosophy majors in the University Honors
Program, the philosophy department honors-in-major program, or by special permission from the department. All senior thesis candidates must have a proposal approved in the spring of their junior year and a thesis adviser assigned by the chair of the department before registering for 798. Students must orally defend their theses before the department. (See department guidelines for further details.) Prereq: PHIL 500. Writing intensive.

**PHIL 799 - Senior Thesis**

**Credits:** 4.00

Two-course sequence (798, then 799) open only to senior philosophy majors in the University Honors Program, the philosophy department honors-in-major program, or by special permission from the department. All senior thesis candidates must have a proposal approved in the spring of their junior year and a thesis adviser assigned by the chair of the department before registering for 799. Students must orally defend their theses before the department. (See department guidelines for further details.) Prereq: B- or above in PHIL 798. Writing intensive
Physics

PHYS 400 - Freshman Seminar
Credits: 1.00
An informal reading and discussion course to introduce students to the general culture of physics, including career possibilities, historical and philosophical aspects of physics, current research at UNH and elsewhere, and physics in the news. Topics vary based on interests of the class. Students in their first year as physics majors (either as freshmen or transfers) are strongly encouraged to take this class. May be repeated once for a total of 2 credits. Cr/F.

PHYS 401 - Introduction to Physics I
Credits: 4.00
Broad survey of classical and modern physics. Designed to enable students to appreciate the role of physics in today's society and technology. Emphasizes the fundamental laws of nature on which all science is based, with some examples of interest to biologists. Knowledge of high school algebra, geometry, and trigonometry essential. Lab.

PHYS 402 - Introduction to Physics II
Credits: 4.00
Broad survey of classical and modern physics. Designed to enable students to appreciate the role of physics in today's society and technology. Emphasizes the fundamental laws of nature on which all science is based, with some examples of interest to biologists. Knowledge of high school algebra, geometry, and trigonometry essential. Prereq: PHYS 401 or the equivalent. Special fee. Lab.

PHYS 405 - Intro to Modern Astronomy
Credits: 4.00
Starting with a survey of the night sky and the daily motions of the stars and planets, this course surveys our current understanding of the Universe. It traces the development of the tools of the modern astronomer and how those tools have led to out theories of the solar system, the life cycle of stars, the formation of elements, the formation of galaxies and the evolution of the universe. Students explore in depth an astronomical topic of their choice through a term paper. The course includes direct experience with astronomical techniques and concepts through the use of the UNH Observatory and Small Radio Telescope, and a visit to a planetarium. Recommended for liberal arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 406, except for the substitution of a term paper instead of a lab. Cannot be taken for credit if credit received for PHYS 406. Special fee.

PHYS 406 - Introduction to Modern Astronomy
Credits: 4.00
Descriptive coverage of contemporary astronomical and astrophysical techniques with a review of current knowledge and theories concerning the solar system, galaxies, and the universe. Recommended for liberal arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 405, except for the substitution of a lab instead of a term paper. Cannot be taken for credit if credit received for PHYS 405. Lab.

PHYS 406H - Introduction to Modern Astronomy/Honors
Credits: 4.00
Descriptive coverage of contemporary astronomical and astrophysical techniques with a review of current knowledge and theories concerning the solar system, galaxies, and the universe. Recommended for liberal
arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 405, except for the substitution of a lab instead of a term paper. Cannot be taken for credit if credit received for PHYS 405. Special fee. Lab. Permission required.

**PHYS 407 - General Physics I**
**Credits:** 4.00
Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. This version is the traditional format with three lectures, one recitation (problem solving section), and one lab each week. Students in this version must also register for a particular recitation and lab. Prereq: thorough knowledge of algebra, geometry, and trigonometry; May not receive credit for both PHYS 401 and 407. Pre- or Coreq: MATH 425. Special fee. Lab.

**PHYS 407H - Honors/General Physics I**
**Credits:** 4.00
Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. The honors version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in the Honors section must be co-enrolled in MATH 425H so that strong connections can be made between math and physics. 407H students work in groups in every class meeting. Students in this version do not register for a recitation or lab, since these activities are integrated into the regular class meetings. Prereq: thorough knowledge of algebra, geometry, and trigonometry; May not receive credit for both PHYS 401 and 407. Pre- or Coreq: MATH 425. Special fee. Lab.

**Co-requisites:** MATH 425H

**PHYS 407S - General Physics I Studio**
**Credits:** 4.00
Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. The Studio version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in this version do not register for a recitation or lab since these activities are integrated into the regular class meetings. Prereq: thorough knowledge of algebra, geometry, and trigonometry. May not receive credit for both PHYS 401 and PHYS 407. Pre- or coreq: MATH 425. Special fee. Lab.

**PHYS 408 - General Physics II**
**Credits:** 4.00
Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. This version is the traditional format with three lectures, one recitation (problem solving section), and one lab each week. Students in this version must also register for a particular recitation and lab. Prereq: PHYS 407. May not receive credit for both PHYS 402 and 408. Pre- or Coreq: MATH 426. Special fee. Lab.

**PHYS 408H - Honors/General Physics II**
**Credits:** 4.00
Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. The honors version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in the Honors section must be co-enrolled in MATH 426H so that strong connections can be made between math and physics. 408H students work in groups in every class meeting. Students in this version do not register for a recitation or lab, since these activities are
integrated into the regular class meetings. Prereq: PHYS 407H, MATH 425H. May not receive credit for both PHYS 402 and 408. Special fee. Lab.

**Co-requisites:** MATH 426H

**PHYS 408S - General Physics II Studio**

**Credits:** 4.00

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. The Studio version covers the same materials as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in this version do not register for a recitation or lab since these activities are integrated into the regular class meetings. Prereq: PHYS 407. May not receive credit for both PHYS 402 and 408. Pre- or coreq: MATH 426. Special fee. Lab.

**PHYS 409 - Investigating Physics**

**Credits:** 4.00

Elementary physics course where students develop a conceptual understanding of topics such as the solar system, phases of the moon, seasons, electrical circuits, electromagnets, light and color, sound and simple machines. The course is based on hands-on-activities, small groups, and discussions. This course is intended for students with little or no previous experience in physics who do not intend to take any other physics course. Cannot be taken for credit if credit received for PHYS 401, 402, 407 or 408. Not open to Physics majors.

**Co-requisites:**

**PHYS 444 - Myths and Misconceptions about Nuclear Science**

**Credits:** 4.00

The discoveries of nuclear physics have spawned the nuclear power plant and bomb, but also many far reaching, though less recognized applications of nuclear science in medicine, research, and our everyday lives. This course examines the underlying physics of nuclear science, the resulting technological applications and dangers, and some of the implications for public policy. In the process, we dispel many of the popular myths and misconceptions that surround nuclear science and radiation in the public's mind and the media. You may be surprised! Topics are wide ranging and inherently interdisciplinary. They include nuclear stability and radioactivity, natural sources of radioactivity, the effects of radiation on living things, particularly people, nuclear medicine, nuclear science in fields such as biology, archeology, geology and engineering, nuclear chain reactions, nuclear reactors and energy, nuclear accidents, radioactive waste, nuclear weapons and proliferation, nuclear energy in stars, and the origin of the elements. Be prepared to actively participate.

**PHYS 501 - Peer-Led Team Learning in Physics**

**Credits:** 2.00

This course provides students with their initial experience as a peer instruction leader. In this course peer leaders will deepen their knowledge of introductory physics, be introduced to pedagogical theories, and meet weekly with students in introductory physics to facilitate their learning. Pedagogical topics covered include questioning techniques, learning theory, cooperative learning, student epistemologies, and the nature of science. Students in this course are asked to reflect on their work as peer leaders through the lens of the required readings. Prereq: PHYS 401/402 or PHYS 407/408. Permission required. Cr/F.

**PHYS 502 - Advanced Peer-Led Team Leadership in Physics**

**Credits:** 1.00

This course provides students with their second experience as a peer instruction leader. In this course peer leaders read more deeply about issues in teaching and learning science in general, and physics in particular. Topics include naive conceptions in physics, cooperative learning strategies, theories of cognition, and classroom assessment. Prereq: PHYS 501. Permission required. Cr/F.
**PHYS 505 - General Physics III**  
**Credits:** 3.00  
Electromagnetic waves, geometrical and physical optics, relativity, atomic physics, elementary quantum mechanics, molecular physics, and nuclear physics. Prereq: PHYS 408.

**PHYS 506 - General Physics III Laboratory**  
**Credits:** 1.00  
**Co-requisites:** PHYS 505

**PHYS 508 - Thermodynamics and Statistical Mechanics**  
**Credits:** 4.00  
Classical and statistical approach to thermodynamics, kinetic theory. Pre- or Coreq: PHYS 505. MATH 525 or MATH 527.  
**Co-requisites:**

**PHYS 605 - Experimental Physics I**  
**Credits:** 5.00  
Circuit design with passive and active elements including transistors and operational amplifiers; electrical measurements for experimental physics; digital electronics, microprocessors, and interfacing techniques. Prereq: PHYS 408. MATH 525 or 527. Lab. Special fee.

**PHYS 615 - Classical Mechanics and Mathematical Physics I**  
**Credits:** 4.00  
Analytical treatment of classical mechanics covering the dynamics of particles and rigid bodies at an intermediate level. Advanced mathematical analysis (complex numbers, differential equations, Fourier series, multiple integrals) are reviewed or introduced as needed to analyze physical situations. Prereq: PHYS 407. Pre- or Coreq: MATH 527.

**PHYS 616 - Classical Mechanics and Mathematical Physics II**  
**Credits:** 4.00  
Analytical treatment of classical mechanics covering the dynamics of particles and rigid bodies, at an intermediate level. Advanced mathematical analysis (complex numbers, differential equations, Fourier series, multiple integrals) are reviewed or introduced as needed to analyze physical situations. Prereq: PHYS 615.

**PHYS 701 - Quantum Mechanics I**  
**Credits:** 4.00  
Non-relativistic Schroedinger equation, the hydrogen atom, applications to atomic and nuclear structure. Prereq: PHYS 505, 615, 616.

**PHYS 702 - Quantum Mechanics II**  
**Credits:** 4.00  
Non-relativistic Schroedinger equation, the hydrogen atom, applications to atomic and nuclear structure. Prereq: PHYS 505, 615, 616.

**PHYS 703 - Electricity and Magnetism I**  
**Credits:** 4.00  
Foundation of electromagnetic theory; electrostatics, dielectric theory, electromagnetism, magnetic properties of matter, alternating currents, Maxwell's field theory. Prereq: PHYS 408, 615, 616.
PHYS 704 - Electricity and Magnetism II
Credits: 4.00
Foundation of electromagnetic theory; electrostatics, dielectric theory, electromagnetism, magnetic properties of matter, alternating currents, Maxwell's field theory. Prereq: PHYS 408, 615, 616.

PHYS 705 - Experimental Physics II
Credits: 4.00
Modern physics experiments and special project problems assigned to individual students. Prereq: PHYS 605; senior standing in physics. Lab. Writing intensive.

PHYS 708 - Optics
Credits: 4.00

PHYS 710 - Modern Astrophysics
Credits: 4.00
Reviews the sun, stars, Milky Way, external galaxies, and expansion of the universe. Recent discoveries of radio galaxies, quasi-stellar objects, cosmic black-body radiation, x rays, and gamma rays precede a discussion of Newtonian and general relativistic cosmological models, steady-state/big-bang theories, and matter-antimatter models. Prereq: PHYS 505, 615, 616.

PHYS 712 - Space Plasma Physics
Credits: 4.00
Introduces space plasma physics, including solar physics, heliospheric physics, magnetospheric physics, and ionospheric physics. An overview of the basic phenomena and processes (e.g., particle acceleration and transport, shock formation, magnetic structures and reconnection, wave propagation, wave-particle interactions, instabilities), theoretical techniques (e.g., single-particle orbits, kinetic and fluid descriptions), and experimental techniques. (Alternate years only.)

PHYS 718 - Condensed Matter Physics
Credits: 4.00

PHYS 720 - Nuclear Physics
Credits: 4.00
Nuclear phenomenology, reactions, models, radiation, interaction of radiation with matter; accelerators; properties and interactions of elementary particles; symmetries and symmetry breaking; standard model. Prereq: PHYS 702, 704.

PHYS 764 - General Relativity and Cosmology
Credits: 4.00
Review of special relativity, and the motivation for considering gravity in terms of curvature of space time. Introduction to Riemannian geometry, general relativity and Einstein’s equations. Application of general relativity in the study of black holes, gravitational waves, cosmology, as well as recent results on inflation and quantum gravity. (Alternate years only.)

PHYS 791 - Special Topics
Credits: 4.00
Any selected topics not covered sufficiently in a general course may be studied. May be repeated to a maximum of 8 credits.

**PHYS 795 - Independent Study**  
**Credits:** 1.00 to 8.00  
Individual project under direction of a faculty adviser. Prereq: department permission.

**PHYS 799 - Thesis**  
**Credits:** 4.00  
Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Restricted to seniors. Prereq: permission; Physics majors only. May be repeated to 8 credits. Writing intensive.
Plant Biology

PBIO 400 - Plants and Civilization
Credits: 4.00
Global experience of human interactions with plants and ways in which plants have contributed to the development and flourishing of human societies. Includes role of plants in providing sustenance, clothing and shelter, quest for spices and the historical consequences of plant explorations and exploitations, the power to heal or kill, plants in mythology and spiritual endeavors, plants that alter consciousness, plant diseases and human history, plants as energy for society, and the Green Revolution global change and feeding the world in the future. Special fee.

PBIO 412 - Introductory Botany
Credits: 4.00
Plants in their natural environments: their structure, function, growth, reproduction, and evolutionary diversity. Special fee. Lab.

PBIO 421 - Introductory Horticulture
Credits: 4.00
Introduces horticultural practices and principles affecting plant growth and development in garden, landscape, greenhouse, and farm settings. Special fee. Lab.

PBIO 421H - Honors/Introductory Horticulture
Credits: 4.00
Introduces horticultural practices and principles affecting plant growth and development in garden, landscape, greenhouse, and farm settings. Special fee. Lab.

PBIO 503 - Introduction to Marine Biology
Credits: 4.00
Emphasizes the organization of marine biological communities. Various marine environments pelagic, benthic, temperate, tropical and their characteristic communities. Major emphasis on the approaches (e.g., analysis of energy flow and predator-prey interactions) used to analyze marine communities as well as the sampling techniques employed for each approach and the characteristic habitat type. Prereq: BIOL 411-412. Special fee. (Also offered as ZOOL 503.)

PBIO #565 - Turf Management
Credits: 4.00
Adaptation and management of fine turf grasses for recreational, aesthetic, and functional use. Lab. Special fee.

PBIO 566 - Systematic Botany
Credits: 4.00
Scientific basis of plant taxonomy and the identification and classification of major plant families, native trees, shrubs, and wild flowers. Field trips, plant collection. Prereq: BIOL 412 or PBIO 412. Lab. Special fee.

PBIO 600 - Field Experience
Credits: 1.00 to 4.00
A supervised experience providing the opportunity to apply academic experience in setting associated with future professional employment and/or related graduate opportunity to apply academic experience in
settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

**PBIO 600W - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in setting associated with future professional employment and/or related graduate opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F. Writing intensive.

**PBIO 625 - Introduction to Marine Botany**  
**Credits:** 4.00  
Life history, classification, and ecology of micro- and macroscopic marine plants, including phytoplankton, seaweed, and salt marsh plants, and the interactions between humans and marine plant communities. Occasional Saturday morning field trips. Prereq: BIOL 412 or PBIO 412 or permission. Special fee. Lab.

**PBIO 651 - Plant Pathology**  
**Credits:** 4.00  

**PBIO 701 - Plant Physiology**  
**Credits:** 3.00  
Structure-function relationship of plants, internal and external factors regulating plant growth and development, plant hormones, plant metabolism, water relations, and mineral nutrition. Prereq: PBIO 412 or PBIO 421 or BIOL 411-412; CHEM 403-404; PBIO 501 or equivalent.

**PBIO 709 - Plant Stress Physiology**  
**Credits:** 3.00  
Physiological and biochemical mechanisms of plant responses to abiotic stresses, including drought, salt, high and low temperature, visible and ultra-violet radiation, heavy metals, and air pollutants. Current hypotheses, agricultural and ecological implications are discussed. Prereq: plant physiology; biochemistry; or permission. (Offered alternate years.)

**PBIO #713 - Biochemistry of Photosynthesis**  
**Credits:** 4.00  
Physiology and biochemistry of photosynthesis in higher plants and microorganisms: light reactions, electron transport, membrane structure and function, carbon assimilation pathways, energy conservation, and metabolic regulation. Agronomic and ecological aspects of photosynthesis are examined. Prereq: plant physiology or biochemistry (Not offered every year.)

**PBIO 717 - Lake Ecology**  
**Credits:** 4.00  
Introduces the ecology of freshwater systems with emphasis on lakes. Origins of lakes and the effects of watersheds on lake chemistry and nutrient cycling are explored. Other topics include the impact of human disturbances on productivity and aquatic food webs and methods used for the management and restoration of lakes. Comparisons are made of the structure and functions of lake ecosystems found in temperate, tropical and arctic regions. Prereq: general biology. (Also offered as ZOOL 717.)

**PBIO 719 - Field Studies in Lake Ecology**
**Credits:** 4.00
Ecology of lakes and other freshwater habitats examined through field studies. Emphasizes modern methods for studying lakes; analysis and interpretation of data; and writing of scientific papers. Seminars on research papers and student presentations of class studies. Field trips to a variety of lakes, from the coastal plain to White Mountains; investigate problems, such as eutrophication, acidification, biodiversity and biotoxins. Capstone experiences include interaction with state agencies, lake stakeholders and the submission of written manuscripts for publication. Prereq: introductory biology. (Also offered as ZOOL 719.) Special fee. Writing intensive.

**PBIO 722 - Marine Phycology**  
**Credits:** 4.00  
Identification, classification, ecology, and life histories of the major groups of marine algae, particularly the benthonic marine algae of New England. Periodic field trips. Prereq: BIOL 412 or PBIO 412 or 703. Lab. (Offered alternate years.) Special fee.

**PBIO 725 - Marine Ecology**  
**Credits:** 4.00  
Marine environment and its biota, emphasizing intertidal and estuarine habitats. Includes field, laboratory, and independent research project. Prereq: general ecology; permission. Marine invertebrate zoology, oceanography, and statistics are desirable. (Also offered as ZOOL 725.) Special fee. (Offered alternate years.)

**PBIO 727 - Algal Physiology**  
**Credits:** 3.00  
Survey of major topics in the physiology and biochemistry of marine and freshwater algae including: nutrition, metabolic pathways, reproductive physiology, storage and extracellular products, cell inclusions, growth and development. Prereq: plant physiology or introductory biochemistry or permission. (Not offered every year.)

**Co-requisites:**

**PBIO 732 - Lake Management: A Multidisciplinary Approach**  
**Credits:** 4.00  
Lectures and seminars on interpreting lake water quality, developing a natural history inventory for lakes, the process of creating a lake management plan, and resolution of conflicting uses of lakes. Students develop lake management plans in cooperation with governmental agencies and lake associations. Guest speakers from state agencies and non-governmental organizations. Introduces use of GIS (Geographic Information Systems) methods for the analysis of lakes and watersheds. Presents lake management issues from scientific and social science points of view. Open to students from all disciplines. (Also offered as ZOOL 732.) Special fee. Lab.

**PBIO 747 - Aquatic Plants in Restoration, Management and Conservation**  
**Credits:** 4.00  
A field-intensive class focusing upon freshwater and marine vascular plants with an emphasis on species commonly associated with ecological restoration, the identification and conservation of rare species, and the adaptations and management of invasive species of aquatic habitats in New England. Field trips emphasize the flora of various wetland habitats, including open water and vegetated fresh water wetlands, as well as coastal and estuarine habitats. Lectures and readings examine the current trends in research and management focusing upon specific taxa and pertinent facets of their taxonomy, physiology, and natural history. Prereq: PBIO 566 or permission. Special fee.

**PBIO 752 - Mycology**  
**Credits:** 4.00
Classification, identification, culturing, life histories, and ecology of fungi, from slime molds to hallucinogenic mushrooms; the significance of fungi in human history, from their contributions to the art of bread making and alcoholic fermentation to their destructiveness as agents of deadly diseases of plants and animals. Prereq: BIOL 411-412 or PBIO 412 or equivalent. Special fee. Lab.

PBIO 758 - Plant Anatomy
Credits: 5.00
Anatomy of vascular plants, emphasizing structure and development of basic cell and tissue types, and of the major plant organs. Prereq: BIOL 412 or PBIO 412. Lab. (Not offered every year.)

PBIO 760 - Insect Pest Management
Credits: 4.00
Students learn the principles of integrated pest management, as they apply to insects (and some other anthropods). Additionally, they learn to recognize the major orders of insects, and some insect families that are important as natural enemies of pests. Course incorporates a significant amount of writing, plus learning to search the scientific literature. Prereq: BIOL 411 and BIOL 412 or equivalent. Writing intensive.

PBIO 795 - Investigations
Credits: 1.00 to 6.00
Topics may include systematic botany, plant physiology, plant pathology, plant anatomy, plant ecology, mycology, cell biology, phycology, botanical teaching, morphology, cell physiology, scientific writing, micro-technique, cell and tissue culture, history of botany, genetics, plant utilization, or teaching experience. Individual projects under faculty guidance. Prereq: permission. (4 credit maximum per semester for any single section.) May be repeated.

PBIO 795W - Investigations
Credits: 1.00 to 6.00
Topics may include systematic botany, plant physiology, plant pathology, plant anatomy, plant ecology, mycology, cell biology, phycology, botanical teaching, morphology, cell physiology, scientific writing, micro-technique, cell and tissue culture, history of botany, genetics, plant utilization, or teaching experience. Individual projects under faculty guidance. Prereq: permission. (4 credit maximum per semester for any single section.) May be repeated. Writing intensive.

PBIO 796 - Special Topics
Credits: 1.00 to 4.00

PBIO 796W - Special Topics
Credits: 1.00 to 4.00
**PBIO 797 - Senior Seminar**  
**Credits:** 1.00  
Professionalism course for plant biology and environmental horticulture majors. Topics focus on the importance of written and oral communications. Projects include resume preparation, oral presentations, and writing activities. Discussion of current topics in horticulture/plant sciences and job search basics. Attendance at selected seminars in related subject areas. Required of all senior majors in environmental horticulture. (Fall semesters only.) Cr/F.

**PBIO 799 - Honors Senior Thesis**  
**Credits:** 2.00 to 4.00  
Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Two-semester sequence; IA grade (continuous course) given at end of first semester. May be repeated to a total of 6 credits. Writing intensive.
Politics and Society

PS 407 - Politics, Law and Contemporary Society
Credits: 4.00
This course examines the foundation and structure of the American legal system and the complex relationship between law, politics, and contemporary social structures, including the philosophical and historical origins of law and the concept of sovereignty. Using case studies and United States Supreme Court decisions, the course considers the philosophical, historical, economic, environmental, and sociological underpinnings of contemporary legal and politics issues.

PS 501 - Social and Political-Economic Theory
Credits: 4.00
Classics of sociological and political economic theory, as well as contemporary thinking in conservative, classical liberal, modern liberal, and radical political economy. Emphasis on the historical context in which these ideas emerge, and the links among them. Readings and discussions include such thinkers as Comte, Spencer, Weber, Durkheim, Locke, Marx, Smith, Riccardo, J.S. Mill, Shumpeter, Keynes, Hayek.

PS 502 - Political Psychology
Credits: 4.00
Political opinion, identity, and belief-formation and reinforcement. The roles of cognition and emotion in how political identities, opinions and beliefs form, change and resist change. The implications of idea-framing in the acceptance and rejection of political concepts and ideologies. The role of social contexts and the media in creating conceptual boundaries in contemporary politics. Writing intensive.

PS 503 - Political Theory and Historical and Social Context
Credits: 4.00
Course analyzes and evaluates the roles of political philosophy and historical circumstances in politics through the readings of selected works by political philosophers and political leaders whose writings combine political philosophy with historical analysis. Special attention given to the nature of argument, choice, and leadership in political behavior. Authors studied include Machiavelli, Madison, Marx, and Lincoln. Writing intensive.

PS #504 - Empire, Democracy and War
Credits: 4.00
The United States, the worlds oldest and most prominent constitutional democracy, is frequently characterized as an American empire, and empire maintained not only by its political ideals and its economic strength, but also by war. Through the reading of selected ancient and modern works by major political philosophers, historians, and political leaders, this course examines empire, democracy, and war as recurrent political concerns and as the actual experience of different regimes throughout history, including the United States. Works by, among others, Aristotle, Thucydides, Machiavelli, Hobbes, Kant, Clausewitz, and Lincoln are supplemented by selected historical studies and by analyses of American policy since World War II.

PS 505 - Political Violence and Terrorism
Credits: 4.00
This course provides an interdisciplinary approach to the study of political violence and terrorism. It covers the psychosocial and sociological roots of terrorism, the organizational patterns of cells, groups and networks, and the role of ideology and identity in shaping goals, targets, and tactics. No credit for students who have previously taken PS 651 Special Topics: Political Violence and Terrorism.
PS 506 - Civil Society and Public Policy  
**Credits:** 4.00  
Explores how grassroots advocacy organizations and social movements mobilize human and material resources in order to shape public policy and what tactics and organizational and communication strategies lead to success. Provides students with hand-on learning through service learning project at a local organization. Policy areas may include immigration, environmental conservation, women’s issues and more. Instructor permission required.

PS 507 - Justice Law and Politics  
**Credits:** 4.00  
This course examines the relationships among law, politics, and social structures and how much relationships shape our conceptions of justice. We explore philosophical and historical origins of US law and such concepts as due process and sovereignty. We examine the foundations and economic, environmental, and sociological underpinnings of contemporary legal and political issues.

PS 508 - Supreme Court in US Society  
**Credits:** 4.00  
This course examines Supreme Court legal holdings from the creation of the American Republic to the present, with attention to the social and historical contexts in which holdings have been made. We examine Constitutional issues, the process by which the Court examines such issues, the ways in which political and social context has framed and influenced Court decisions, as well as how the Court has influenced politics and the broader society.

PS 509 - Political and Social Change in Developing Countries  
**Credits:** 4.00  
Overview of the pressing social, political, and economic issues in the developing world. Analysis includes: political development, including different forms of authoritarianism and democracy; international political economy and models of macro-economic development; international and national aid programs aimed at reducing poverty. Case studies include China, India, Iraq and more.

PS 510 - Politics of Food  
**Credits:** 4.00  
This course examines the politics of how food is produced, marketed and distributed in the United States, with attention to how the American food system has changed since World War II. The ethics and nutritional and public health implications of current agricultural policies and practices are looked at carefully, as are the environmental impacts of current practices. The impact on international food prices and markets and world hunger are also examined.

PS 511 - Women and War  
**Credits:** 4.00  
Explores impact of war on women as both victims (i.e. refugees, rape victims) and participants (i.e. warriors). Covers issues such as women in combat as soldiers and terrorists, women’s rights, sexual violence and rape during warfare, women’s roles during peace-building etc. Case studies include Bosnia, Liberia, Afghanistan, USA, Colombia, and more.

PS 512 - People on the Move: Immigration and Refugee Policy in Global Perspective  
**Credits:** 4.00  
Migration affects nearly every country in the world. It is an important dimension of globalization and compels us to reflect on notions of state sovereignty, nationhood, citizenship, human rights, tolerance and international relations. This course offers a multi-disciplinary, comparative overview of current issues in the field of international migration, including refugee policy. It aims to help students develop the knowledge and
analytical tools to participate in today's often contentious debates about people on the move.

**PS 514 - Model United Nations**
**Credits:** 4.00
The highlight of this experiential learning course is a trip to participate in a Model United Nations conference. Students will develop solutions to contemporary global problems (including human rights, terrorism, climate change, etc.), and will learn the art of debate and compromise. The class will serve as a particular country's delegation during a simulation of the United Nations, where it will promote the UN, the issues before the UN, and the assigned country's role in global affairs. Open to students of all majors. Instructor permission required. Contact Prof. Negron-Gonzales, melinda.negron@unh.edu. Special fee.

**PS 515 - New Hampshire Politics in Action**
**Credits:** 4.00
A hands-on course on New Hampshire politics and policymaking, in which students will identify a Bill currently active in the NH General Court and develop and execute a step-by-step plan for helping get it enacted or defeated. Periodic travel to the State Capitol in Concord will be required.

**PS 651 - Selected Topics Politics and Society**
**Credits:** 4.00
Interdisciplinary treatment of selected topics in politics and society. Topics may include democracy, empire and war, gender roles in electoral process, the sociology and psychology of terrorism, the political economy of hunger and poverty, the social origins of dictatorship and democracy, and others. May repeated for a maximum of 8 credits. Topic: Empire, Democracy, and War is Writing intensive.

**PS 651W - Selected Topics Politics and Society**
**Credits:** 4.00
Interdisciplinary treatment of selected topics in politics and society. Topics may include democracy, empire and war, gender roles in electoral process, the sociology and psychology of terrorism, the political economy of hunger and poverty, the social origins of dictatorship and democracy, and others. May repeated for a maximum of 8 credits. Topic: Empire, Democracy, and War is Writing intensive. Writing intensive.

**PS 695 - Politics and Society Independent Study**
**Credits:** 1.00 to 4.00
Independent study on specific topics in Politics ans Society. Project must be approved by the project supervisor Politics and Society Program.

**PS 701 - Senior Project and Interdisciplinary Seminar in Politics and Society**
**Credits:** 4.00
Students undertake internships or other approved field projects with organizations such as political campaigns, media organizations, government offices, business or community groups. The seminar component enables students to share and analyze these experiences, employing readings, discussions, collective behavior games, and speakers. Permission required. Writing intensive.

**PS 702 - International Relations: Interdisciplinary Approach**
**Credits:** 4.00
This course explores International Relations Theory as developed by political scientists, subjected to critical insights from other disciplines, including psychology, anthropology, political economy and history. Course first surveys the historical development of International Relations Theory, beginning with Thucydides and Macchiavelli, and proceeding through 20th and 21st century realist, liberal, Marxist and constructivist theories. Theses theories are then examined critically in the light of insights from psychology, anthropology and political economy. Pre or Coreq: PS 501 or PS 401 or permission of instructor. Special fee.
PS 703 - Dictatorship and Democracy  
Credits: 4.00  
This course examines the theoretical debates in comparative politics and political sociology regarding the social and economic bases of dictatorship and democracy, as well as the transition from authoritarianism to democracy. The course considers different conceptualizations of democracy, as well as competing theoretical arguments regarding the causes of democractization. Readings draw on case studies from different regions, including Europe, Latin America, Africa, and Asia.
PORT 401 - Elementary Portuguese I  
**Credits:** 4.00  
Conducted in Portuguese. For students without previous knowledge of Portuguese. Aural-oral practice; fundamental speech patterns; reading and writing to achieve a firm basis for an active command of the language. Labs. No credit toward a major. (No credit for students who have had two or more years of Portuguese in secondary school; however, any such students whose studies of Portuguese have been interrupted for a significant period of time should consult the chairperson about possibly receiving credit.) Special fee.

PORT 402 - Elementary Portuguese II  
**Credits:** 4.00  
Conducted in Portuguese. Aural-oral practice; fundamental speech patterns; reading and writing to achieve a firm basis for an active command of the language. Labs. No credit toward a major. (No credit for students who have had two or more years of Portuguese in secondary school; however, any such students whose studies of Portuguese have been interrupted for a significant period of time should consult the chairperson about possibly receiving credit.) Special fee. Prereq: PORT 401. (PORT 401 and 402 together satisfies the foreign language requirement.)

PORT 500 - Selected Topics in World Literature  
**Credits:** 4.00  
Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, RUSS 500, SPAN 500.) May be repeated for credit. Cr/F. Writing intensive.

PORT 503 - Intermediate Portuguese I  
**Credits:** 4.00  
Conducted in Portuguese. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Portuguese on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

PORT 504 - Intermediate Portuguese  
**Credits:** 4.00  
Conducted in Portuguese. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Portuguese on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

PORT 526 - Luso-Brazilian Culture and Civilization  
**Credits:** 4.00  
This course provides a general overview of Brazil's culture and history from the arrival of the first Europeans, through its independence and consolidation as a nation-state in nineteenth-century, up to its present. Students will learn about the development of Brazilian cultural and intellectual life through literature, cinema, music, painting, architecture, and photography. No prior knowledge of the Portuguese language is required. The course will be taught in English. Special fee.

PORT 595 - Portuguese Practicum  
**Credits:** 2.00  
Practical use of Portuguese language or cultural skills outside the classroom through special projects. Prereq: PORT 401-402 and permission. May be repeated up to 4 credits.
Politics and Society

PS 407 - Politics, Law and Contemporary Society
Credits: 4.00
This course examines the foundation and structure of the American legal system and the complex relationship between law, politics, and contemporary social structures, including the philosophical and historical origins of law and the concept of sovereignty. Using case studies and United States Supreme Court decisions, the course considers the philosophical, historical, economic, environmental, and sociological underpinnings of contemporary legal and politics issues.

PS 501 - Social and Political-Economic Theory
Credits: 4.00
Classics of sociological and political economic theory, as well as contemporary thinking in conservative, classical liberal, modern liberal, and radical political economy. Emphasis on the historical context in which these ideas emerge, and the links among them. Readings and discussions include such thinkers as Comte, Spencer, Weber, Durkheim, Locke, Marx, Smith, Riccardo, J.S. Mill, Shumpeter, Keynes, Hayek.

PS 502 - Political Psychology
Credits: 4.00
Political opinion, identity, and belief-formation and reinforcement. The roles of cognition and emotion in how political identities, opinions and beliefs form, change and resist change. The implications of idea-framing in the acceptance and rejection of political concepts and ideologies. The role of social contexts and the media in creating conceptual boundaries in contemporary politics. Writing intensive.

PS 503 - Political Theory and Historical and Social Context
Credits: 4.00
Course analyzes and evaluates the roles of political philosophy and historical circumstances in politics through the readings of selected works by political philosophers and political leaders whose writings combine political philosophy with historical analysis. Special attention given to the nature of argument, choice, and leadership in political behavior. Authors studied include Machiavelli, Madison, Marx, and Lincoln. Writing intensive.

PS #504 - Empire, Democracy and War
Credits: 4.00
The United States, the worlds oldest and most prominent constitutional democracy, is frequently characterized as an American empire, and empire maintained not only by its political ideals and its economic strength, but also by war. Through the reading of selected ancient and modern works by major political philosophers, historians, and political leaders, this course examines empire, democracy, and war as recurrent political concerns and as the actual experience of different regimes throughout history, including the United States. Works by, among others, Aristotle, Thucydides, Machiavelli, Hobbes, Kant, Clausewitz, and Lincoln are supplemented by selected historical studies and by analyses of American policy since World War II.

PS 505 - Political Violence and Terrorism
Credits: 4.00
This course provides an interdisciplinary approach to the study of political violence and terrorism. It covers the pyschological and sociological roots of terrorism, the organizational patterns of cells, groups and networks, and the role of ideology and identity in shaping goals, targets, and tatics. No credit for students who have previously taken PS 651 Special Topics: Political Violence and Terrorism.
PS 506 - Civil Society and Public Policy  
Credits: 4.00  
Explores how grassroots advocacy organizations and social movements mobilize human and material resources in order to shape public policy and what tactics and organizational and communication strategies lead to success. Provides students with hand-on learning through service learning project at a local organization. Policy areas may include immigration, environmental conservation, women's issues and more. Instructor permission required.

PS 507 - Justice Law and Politics  
Credits: 4.00  
This course examines the relationships among law, politics, and social structures and how much relationships shape our conceptions of justice. We explore philosophical and historical origins of US law and such concepts as due process and sovereignty. We examine the foundations and economic, environmental, and sociological underpinnings of contemporary legal and political issues.

PS 508 - Supreme Court in US Society  
Credits: 4.00  
This course examines Supreme Court legal holdings from the creation of the American Republic to the present, with attention to the social and historical contexts in which holdings have been made. We examine Constitutional issues, the process by which the Court examines such issues, the ways in which political and social context has framed and influenced Court decisions, as well as how the Court has influenced politics and the broader society.

PS 509 - Political and Social Change in Developing Countries  
Credits: 4.00  
Overview of the pressing social, political, and economic issues in the developing world. Analysis includes: political development, including different forms of authoritarianism and democracy; international political economy and models of macro-economic development; international and national aid programs aimed at reducing poverty. Case studies include China, India, Iraq and more.

PS 510 - Politics of Food  
Credits: 4.00  
This course examines the politics of how food is produced, marketed and distributed in the United States, with attention to how the American food system has changed since World War II. The ethics and nutritional and public health implications of current agricultural policies and practices are looked at carefully, as are the environmental impacts of current practices. The impact on international food prices and markets and world hunger are also examined.

PS 511 - Women and War  
Credits: 4.00  
Explores impact of war on women as both victims (i.e. refugees, rape victims) and participants (i.e. warriors). Covers issues such as women in combat as soldiers and terrorists, women's rights, sexual violence and rape during warfare, women's roles during peace-building etc. Case studies include Bosnia, Liberia, Afghanistan, USA, Colombia, and more.

PS 512 - People on the Move: Immigration and Refugee Policy in Global Perspective  
Credits: 4.00  
Migration affects nearly every country in the world. It is an important dimension of globalization and compels us to reflect on notions of state sovereignty, nationhood, citizenship, human rights, tolerance and international relations. This course offers a multi-disciplinary, comparative overview of current issues in the field of international migration, including refugee policy. It aims to help students develop the knowledge and
analytical tools to participate in today's often contentious debates about people on the move.

**PS 514 - Model United Nations**  
**Credits:** 4.00  
The highlight of this experiential learning course is a trip to participate in a Model United Nations conference. Students will develop solutions to contemporary global problems (including human rights, terrorism, climate change, etc.), and will learn the art of debate and compromise. The class will serve as a particular country’s delegation during a simulation of the United Nations, where it will promote the UN, the issues before the UN, and the assigned country’s role in global affairs. Open to students of all majors. Instructor permission required. Contact Prof. Negron-Gonzales, melinda.negron@unh.edu. Special fee.

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Interdisciplinary treatment of selected topics in politics and society. Topics may include democracy, empire and war, gender roles in electoral process, the sociology and psychology of terrorism, the political economy of hunger and poverty, the social origins of dictatorship and democracy, and others. May repeated for a maximum of 8 credits. Topic: Empire, Democracy, and War is Writing intensive. Writing intensive.

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# Political Science

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POLT 407 - Law and Society
Credits: 4.00
Introduces the ways in which law operates in modern society: its forms, functions, underlying values, and the consequences of its application in particular regimes. Topics include the psychological bases for legal obligation, the evolution of particular legal doctrines, the philosophical underpinnings of legal responsibility, the relationship of law to social structures, the relationship of law to morality, the nature of legal reasoning, and critiques of law.

POLT 407H - Honors/Law and Society
Credits: 4.00
Introduces the ways in which law operates in modern society: its forms, functions, underlying values, and the consequences of its application in particular regimes. Topics include the psychological bases for legal obligation, the evolution of particular legal doctrines, the philosophical underpinnings of legal responsibility, the relationship of law to social structures, the relationship of law to morality, the nature of legal reasoning, and critiques of law.

POLT 440A - Honors/Global Justice
Credits: 4.00
The course exposes students to different understandings of global justice and the institutions and approaches used to address genocide and mass human suffering. Students explore several modern conflicts and different cultural understandings of these conflicts and views on justice. The class also examines the political dynamics of international and domestic institutions, power politics, and international activism. Students also examine the globalization of accountability and post-conflict transitions from violence to peace.
Co-requisites:

POLT 444 - Politics and Policy in a Warming World
Credits: 4.00
Uses the issue of climate change to explore the relationships between scientific and technical research and debate, policymaking at the international and domestic (U.S.) levels, and public understanding and interpretation of complex technical issues. The course is interdisciplinary. Writing intensive.

POLT 444A - Democracy: Its Character and Its Characters
Credits: 4.00
An examination of the spirit of a modern democracy and its influence on the thoughts and actions of those who live within it. Includes selections from Tocqueville's Democracy in America and an examination of characters in the works of major and contemporary authors. Writing intensive.

POLT 444B - Cruel and Unusual in a Federal System
Credits: 4.00
This course is an exploration of the US/state constitutional language of 'cruel and unusual' as an important limitation on governmental power. Students study its historical origins, interpretations, and applications across time periods and types of regimes. Particular attention will be paid to its association with the death penalty in the contemporary United States. Writing intensive

POLT 500 - American Public Policy
Credits: 4.00
Foundational public policy course examining policy choices and conflicts, how policy decisions are made, how policies are assessed, the development of potential policy solutions, and the politics of policy making. Students engage in a task force project that simulates public policy processes and culminates in a policy recommendation at the end of the semester. Writing intensive.

**POLT 502 - State and Local Government**  
**Credits:** 4.00  
Examines power, policies, political culture, and constitutional settings of state and local governments in the United States. Students study how state legislatures, governors, courts, political parties, and interest groups interact to shape political outcomes at the state and local levels.

**POLT 504 - American Presidency**  
**Credits:** 4.00  
The President as administrator, policy maker, and political leader. The relationship between the President and the public, the media, and other governmental institutions. Historical and constitutional background of the Presidency, role, and powers of the President in domestic and foreign affairs.

**POLT 505 - American Congress**  
**Credits:** 4.00  
Role and powers of Congress as national lawmaker and check on the executive branch: committee structure, concepts of representation, legislative oversight and party cleavage, federal budget control, and foreign policy involvement.

**POLT 506 - Parties, Interest Groups, and Voters**  
**Credits:** 4.00  
Role of political parties as organizers and managers of social conflict. Role of voters in controlling parties and government. Influence of interest groups in the electoral process and in governmental decision making.

**POLT 507 - Politics of Crime and Justice**  
**Credits:** 4.00  
Criminal justice in theory and practice; contemporary role of police, prosecutors, judges, juries, counsel, and interest groups in the administration of criminal justice. Writing intensive.

**POLT 508 - Supreme Court and the Constitution**  
**Credits:** 4.00  
Supreme Court treated as a political institution whose historic mission is to decide all controversies arising under the Constitution between the nation and the states, the President and Congress; the role of the judiciary in defining its own powers, rights, and duties. Writing intensive.

**POLT 509 - Managing Bureaucracy in America**  
**Credits:** 4.00  
Growth and development of the bureaucratic state. Roles and powers of administrative officials, decision making in bureaucratic settings, citizen participation, and the influence of interest groups on bureaucratic policymaking.

**POLT 510 - Media and Politics**  
**Credits:** 4.00  
Contemporary review of media in politics; major roles of media today in providing news, setting public agenda, influencing public opinion; government regulations vs. media responsibility; future developments and consequences for American democracy.
POLT 512 - Public Opinion in American Politics  
**Credits:** 4.00  
Relationship of mass and elite opinion within the context of American political culture. Impact of public opinion on American governmental policies, especially with respect to major issues facing the President and Congress. Appraisal of responsiveness to influence and responsibility to lead.

POLT 513 - Civil Rights and Liberties  
**Credits:** 4.00  
Analysis of four major areas of constitutional rights and liberties, political freedom, equal protection of the laws, and due process with particular attention to their impact on such problems as political protest, discrimination, school segregation, students' rights and the relationship between government and religion.

POLT 520 - Politics, Justice, and Morality  
**Credits:** 4.00  
Origin of the idea of justice; relationship between politics, justice, and morality; selections from Plato, Aristotle, Roman, Islamic, and Christian political philosophers.

POLT 521 - Rights and the Political Community  
**Credits:** 4.00  
Human rights and the quality of communities as expressed in Hobbes, Locke, Mandeville, Rousseau, and others.

POLT 522 - Dissent and the Political Community  
**Credits:** 4.00  
Current political ideologies and controversies in America and abroad; liberal democracy and its critics since the 19th century.

POLT 523 - American Political Thought  
**Credits:** 4.00  
Introduces the student to the key questions about politics and government asked and answered by American thinkers and actors, as well as the ways in which those "answers" have shaped our institutions and political processes. Emphasizes the idea of property. Writing intensive.

POLT 524 - Politics and Literature  
**Credits:** 4.00  
This course examines classical and contemporary works of literature to explore perennial issues in the study of politics, such as: exceptionalism, individualism, justice, and equality.

POLT 524W - Politics and Literature  
**Credits:** 4.00  
This course examines classical and contemporary works of literature to explore perennial issues in the study of politics, such as: exceptionalism, individualism, justice, and equality. Writing intensive.

POLT 525 - Multicultural Theory  
**Credits:** 4.00  
Issues of concern generated from an attention to and appreciation of our diverse cultural identities. As a theory course in political framework, we approach multiculturalism as a new attempt to respond to the challenges that difference poses in democratic theory.

POLT #543 - The Politics of Costa Rica  
**Credits:** 4.00  
While the rest of the Central American region has struggled to overcome authoritarian legacies, Costa Rica
has been a trailblazer on the path to democracy. The successful establishment of democratic political institutions and political culture have been coupled with other innovations including the abolition of the military, investments in human capital, and eco-friendly economic development. This course is designed to explore the many facets of Costa Rican exceptionalism onsite in Costa Rica during the J term. Special fee.

POL'T 544 - Of Dictators and Democrats
Credits: 4.00
Why are some countries democratic, while others are ruled by dictators? This course answers this question by examining leading theories of democratization, then testing these theories empirically through case studies of ancient Greece, the United States, Germany, Chile, and South Africa. The course concludes with an overview of contemporary political change in the Middle East, and the potential for popular protest to culminate into democratic practices. Writing intensive.

POL'T 545 - People and Politics in Asia
Credits: 4.00
This course is an introduction to Northeast Asia, with special emphasis on the politics of the region’s major actors. Will China be the next global hegemon? Is Japan moribund? Is Taiwan an independent country? Is Hong Kong a democratic bastion? Why does Kim Jong-un keep threatening to attack the United States? It's a mid-level, writing intensive course that will prepare students for more advanced courses on the nations and issues of the Asia-Pacific rim. Writing intensive.

POL'T 546 - Wealth and Politics in Asia
Credits: 4.00
Different paths to modernization, industrialization, and development in nations of the Asia-Pacific Rim. In-depth examinations of the challenges faced by Japan, China, Hong Kong/Macao, Taiwan, and the Koreas in their search for the correct path to economic growth and prosperity, with special emphasis on each nation’s distinct society and history. Companion course to POL'T 545, but either may be taken separately. Writing intensive.

POL'T 547 - Race and Justice in the Americas: Insights from Film, Literature, and Politics
Credits: 4.00
Throughout the Americas many democracies have been built on foundations of racial and ethnic inequality, yet have managed to transcend these imperfect foundations. To understand how democracy has thrived despite the challenges of racial and ethnic inequality, this course examines how the justice system has addressed inequality in select cases throughout the Americas. Through comparative analysis of film, literature, and politics, students improve their knowledge and understanding of other cultures while exploring the evolution of similar issues in the United States.

POL'T 548 - Drug Wars
Credits: 4.00
The Americas have hosted several wars against drugs, but these militarized campaigns have not curtailed the global consumption of opiates, cocaine, and cannabis. Perhaps even more sobering, the drug wars have coincided with spiraling rates of violent crime. Given this track record, policymakers have begun to reevaluate drug policies in the US and abroad. This course evaluates these contemporary changes, particularly in light of the successes and failures of past drug control policies.

POL'T 550 - Comparative Government and Society
Credits: 4.00
Introduces students to key concepts and themes in comparative politics through the study of revolutions, ideologies, institutions, and/or social movements. This course compares interactions between citizens and their governments in various types of democracies as well as authoritarian regimes, and spans industrialized and developing countries.
POLT 552 - Contemporary European Politics  
**Credits:** 4.00  
Analyzes politics, governments, and societies in contemporary Europe; focuses on basic characteristics of political life in different countries as well as pressing economic, political, and social issues. Writing intensive.

POLT 554 - Revolution and Protest in Latin America  
**Credits:** 4.00  
Throughout Latin American history, economic and political models have been heavily contested. Advocates of state intervention in the economy have clashed with free market forces, and these clashes have often spilled into the political arena where they have been further complicated by divisions between dictators and democrats. This course examines these twin processes in Latin American politics, tracing economic and political development from the time of independence to the present. Writing intensive.

POLT 555W - Politics in Russia  
**Credits:** 4.00  
Russia provides an ideal case study for learning comparative political concepts - a developed state that continues to undergo a political and economic revolution, if not yet a social revolution. Additionally, it remains a major force in international relations. Beginning with a survey of its history and geography, the course provides a basis for understanding the behavior of the Russian Federation domestically and in international affairs. Writing intensive.

POLT 556 - Politics in China  
**Credits:** 4.00  
Dynamics of China’s domestic political and economic policy processes - from massive starvation of the Great Leap Forward and the ideological upheavals of the Great Proletarian Cultural Revolution to the "Opening of China to the Outside World." Writing intensive.

POLT 558 - Government and Politics of Canada  
**Credits:** 4.00  
This course examines the political culture, partisan dynamics, political institutions and processes of modern Canada. Selected policy issues as well as U.S. - Canadian relations are also discussed. Writing intensive.

POLT 559 - Comparative Politics of the Middle East  
**Credits:** 4.00  
Examines the dynamics of political and economic change in states and societies of the Middle East. Covers state formation, nationalism and colonialism, authoritarianism and opposition movements, and the origins of the Israeli-Palestinian conflict.

POLT 560 - World Politics  
**Credits:** 4.00  
The course explores the primary issues of world politics with a focus on conflict, cooperation and development. Students are introduced to the principal theories and concepts in the analysis of world politics and encouraged to apply these theories and concepts to contemporary global issues. Writing intensive.

POLT 561 - Introduction to International Political Economy  
**Credits:** 4.00  
Designed for students with little or no knowledge of economics; the course develops the relationships between political and economic policy and behavior in international affairs. A major focus is on the conflict between the primary values of the international economic system (efficiency and growth) and other societal considerations.
and political values. Among the topics are: international trade and finance, economic and non-economic globalization, growth and human development, illicit trade, and economic governance.

POLT 562 - Strategy and National Security Policy
Credits: 4.00
This course develops an understanding of: 1) strategy and its relationship to national security policy and 2) American national security issues and the process of creating and implementing American national security policies. A primary theoretical and practical consideration is the relationship between the use of force and diplomacy. Among the specific issues are: the nuclear world, the U.S. defense posture, military interventions, and the broadening definition of security.

POLT 563 - The Global Information Grid's Disruptive Impact on Government, Politics, and Society
Credits: 4.00
Disruptive networking technologies, collectively called the Global Information Grid or GIG, are facilitating revolutionary changes in government, politics, and society. The course is designed to provide students with a framework for understanding and addressing issues that spring from the application of technology.

POLT 565 - United States Policy in Latin America
Credits: 4.00
Frequently U.S. policymakers portray the United States as a benevolent neighbor, seeking to help the countries in their "backyard". Many Latin Americans disagree with this view, and think more critically about the motivations and legacies of U.S. intervention in the Western Hemisphere. To understand these disagreements, this course applies theories of international relations to analyze pivotal events in the history of U.S. - Latin American relations from the time of independence to the present, including Spanish-American War, creation of Panama Canal, Cuban Missile Crisis, Iran Contra Affair, War Against Drugs, Washington Consensus.

POLT 566 - Asian Challenge to Global Order
Credits: 4.00
Asian international relations continue to challenge global power structures. As the world's most vital region, Asia is characterized by explosive economic growth, diverse political systems, modernizing militaries, and advanced technologies. This course explores the regional political and economic dilemmas, starting with the breakdown of the old imperialist order, Japan's expansion, the Asian Cold War, Korean and Chinese unification, China's post-1978 emergence, North Korea nuclear weapons, and the growing conflict over the Pacific Ocean's marginal seas. Writing intensive.

POLT 567 - Politics of Global Resources
Credits: 4.00
International politics from the perspective of the exhaustibility of global resources and the expansion of global demand. Concentrates on issues including population, food, energy, the environment, security, and human rights. Global interdependence and the appearance of new institutional frameworks of global public policymaking. Writing intensive.

POLT 568 - Introduction to Intelligence
Credits: 4.00
The purpose and practice of intelligence in the national security process. Concentration on the role of intelligence in the United States involving the C.I.A., military intelligence agencies, and the practice of intelligence in other countries.

POLT 568W - Introduction to Intelligence
Credits: 4.00
The purpose and practice of intelligence in the national security process. Concentration on the role of
intelligence in the United States involving the C.I.A., military intelligence agencies, and the practice of intelligence in other countries. Writing intensive.

POLT 569 - The Rise of China
Credits: 4.00
Analysis of China's struggle for political and economic power in Asia and the world. Examines the legacy of China's historical encounters with the outside world, interactions with the international system since 1949, domestic determinants of foreign political and economic policies, and theories of decision making. Writing intensive

POLT 570 - Counterterrorism: Nation states' responses to terrorist activity
Credits: 4.00
This course explores nation states' responses to terrorism or "counterterrorism." Students learn to define terrorism and use models to understand responses. Case studies are used to highlight the challenges and successes resulting from different response strategies. Students analyze questions facing government counterterrorism decision makers. For example, what is the risk of a terrorist organization acquiring and detonating a nuclear weapon and what response could governments deliver following such an event?

POLT 580 - Selected Topics Am Politics
Credits: 4.00
Special topics such as politics and public affairs in New Hampshire, women in politics, and civil liberties. Not offered every semester. See departmental listings for semester offerings. Writing intensive. 4 cr.

POLT 584 - Selected Topics in Political Thought
Credits: 4.00
Special issues in political theory, such as liberalism and conservatism, radical political thought, the American character, and others. Not offered every semester. See departmental listings for semester offerings. Writing intensive. 4 cr.

POLT 588 - Selected Topics in Comparative Politics
Credits: 4.00

POLT 592 - Selected Topics in International Politics
Credits: 4.00
Examines specialized issues in international politics. Topics may include ethnic conflict, non-proliferations and global security, economic and political globalization, etc. Not offered every semester. See departmental listings for semester offerings. Writing Intensive. 4 crs.

POLT 595 - Smart Politics
Credits: 4.00
An introduction to empirical research methods in political science, both qualitative and quantitative. Students study all aspects of the research process, including hypothesis-building, concepts and variables, measurement, research design, sampling, and empirical observations. Special attention paid to the use of statistical software. Writing intensive.

POLT 602A - Internship
Credits: 4.00
Field experience in a governmental or nongovernmental organization at the local, state, national, or international level. Arrangements must be made through the political science department. Open to juniors and seniors with at least a 3.2 GPA. Permission of the undergraduate curriculum committee of the department is required prior to the internship.
POLT 602B - Washington Center Internship
Credits: 4.00
A four-credit independent study designed to work in conjunction with the University's Washington Center Internship program. Requirements: major in political science. Junior or senior research component to be discussed with faculty sponsor. For details on the Washington Center Internship, please contact Paula DiNardo, Coordinator National Student Exchange and Washington Center Internships, 114 Hood House, 603-862-3485 (V/TTY 862-2607), email: paula.dinardo@unh.edu. Prereq: POLT 402.

POLT 602C - Concord Internship Program
Credits: 12.00
Provides students with field experience in state government in Concord (State Senate, House of Representatives, Office of the Governor, etc.). Students will spend three days weekly in Concord and attend a weekly practicum in Durham. Open to juniors and seniors with a 3.2 or better GPA. Applications accepted in the fall semester and can be found on department's website. Permission required. Students may sign up any four (4) credit course along with 602C for a total of 16 credits. Cr/F.

POLT 602D - Internship
Credits: 2.00 to 12.00
Field experience in governmental or nongovernmental organization at the local, state, national, or international level. Arrangements must be made through the political science department. Open to juniors and seniors with at least 3.2 GPA. Permission from the undergraduate curriculum committee of the department is required. From 2 to 12 credits maybe taken. Cr/F.

POLT 695 - Independent Study
Credits: 2.00 to 4.00
Designed to meet special interests of students and instructors in exploring issues in political science. Upon satisfying eligibility requirements set forth by departmental guidelines (in departmental office and online), students must have the approval of a faculty sponsor. Students submit the form and all supporting evidence by mid-semester prior to the planned semester of independent study for departmental approval. Does not meet the major's four field-course requirement; maximum of eight (8) credits can be counted toward the non-field major requirements. Prereq: at least one upper-level course in field of independent study. Majors only.

POLT 696 - Independent Study
Credits: 2.00 to 4.00
Designed to meet special interests of students and instructors in exploring issues in political science. Upon satisfying eligibility requirements set forth by departmental guidelines (in departmental office and online), students must have the approval of a faculty sponsor. Students submit the form and all supporting evidence by mid-semester prior to the planned semester of independent study for departmental approval. Does not meet the major's four field-course requirement; maximum of eight (8) credits can be counted toward the non-field major requirements. Prereq: at least one upper-level course in field of independent study. Only open to Political Science majors.

POLT 701 - Courts and Public Policy
Credits: 4.00
Impact of judicial decisions on public policy and influences on judicial decision making at the federal, state, and local levels. Writing intensive.

POLT #706 - State and Local Government
Credits: 4.00
Advanced study of powers, politics, political cultures, and constitutional settings of American state and local
POLT 711 - Public Opinion and Survey Research  
**Credits:** 4.00  
Examines the role of public opinion in democracy. Research, design, implementation, and analysis of a public opinion survey.

POLT 721 - Feminist Political Theory  
**Credits:** 4.00  
Explores various strands of feminist political theory; taking a specifically political view of the challenges of feminist activism and philosophy. Addresses issues of the public space, power, social transformation, and democracy. Writing intensive.

POLT 725 - Politics and Literature  
**Credits:** 4.00  
Seminar: Advanced work in exploring classical and contemporary works of literature to illustrate perennial issues in political philosophy. Writing intensive.

POLT 740 - States and Societies in the Middle East  
**Credits:** 4.00  
Exploration of changing relationships between states and societies in the Middle East and North Africa from WWI to the present. Analyzes the creation of states and markets, the origins of authoritarian and democratic rule, the politics of environment and development, and the evolution of Islamist movements. Country and case studies vary. Previous coursework in comparative politics (POLT 540-559) or history strongly recommended. Writing intensive.

POLT 750 - Politics of Poverty  
**Credits:** 4.00  
Why are some countries rich while others are so poor? This course answers this question by examining several theories of economic development: political culture, modernization, dependency, regime types, urban bias, rent-seeking institutions, and international aid. The immediate goal of this course is for students to understand the causes of international inequality in the distribution of wealth. Students also improve their ability to evaluate theoretical arguments and empirical evidence critically, and develop reading and writing skills. Writing intensive.

POLT 751 - Comparative Environmental Politics and Policy  
**Credits:** 4.00  
Environmental politics and policy across national boundaries and at different levels of governance. Comparison of the U.S. and European Union environmental policies to build a foundation for comparisons across national boundaries and sub-national authorities. Students improve their understanding of how and why comparative methods are used to gain insight into politics and policymaking. Central concepts and debates addressed include the roles of expertise, sustainability, precautionary principle, the use of market mechanisms in policy, environmental justice, policy devolution and flexibility, environmental performance assessment, NGO roles, activism, and social movements. Using a range of theoretical approaches and historical and contemporary events and case studies, evaluating the claims and explanatory power of various concepts and theories. Includes ethical issues emerging from the theory and practice of environmental politics. Writing intensive.

POLT 760 - Theories of International Relations  
**Credits:** 4.00  
Theoretical approaches of international politics, international organization, and international political economy with particular emphasis on systems theories, domestic determinants of foreign policy and
theories of decision making. Writing intensive.

**POLT 762 - International Political Economy**
**Credits:** 4.00
This course has been designed to introduce advanced undergraduates and graduate students to the current theoretical discussions in international political economy. The course analyzes the development of current international economic regimes, as well as looks at systemic theories (interdependence, hegemonic stability), domestic determinants (bureaucratic, interest group), and decision-making theories (rational choice). By monitoring current economic and political news, students are challenged to apply these ideas to explain the current problems in political economy. Writing intensive.

**POLT 765 - Security Intelligence Study**
**Credits:** 4.00
The goal of the Security Intelligence Study course is to provide an opportunity for students to apply research and analysis models used by intelligence professionals to a real world problem. Using unclassified public sources, students research and present an analytical product to help limit risk for a government decision maker. Participants learn about and use publicly available data and intelligence analysis models. Writing intensive.

**POLT 778 - International Organization**
**Credits:** 4.00
This course is about cooperation at the international level. With a focus on international organizations, we examine what roles international institutions (both IGOS and NGOS) play in global governance and their effects in various issue areas. We examine their historical origins, functions, and the international and domestic political forces that impact their effectiveness. The course also considers the role of international organizations on world order including conflict resolution, peacekeeping, development, and human rights. Writing intensive.

**POLT 780 - International Environmental Politics, Policy, and Law**
**Credits:** 4.00
Explores international/global environmental politics and policymaking, multilateral negotiations, the role of science and technology in policymaking, state capacity, the making of international law, implementation, and compliance. Other issues include climate change, marine pollution, long-range air pollution, United States leadership in the global political arena, North-South divisions in global politics, environmental justice, sustainable development, and the role of the United Nations and other international organizations. Writing intensive.

**POLT 795 - Advanced Study**
**Credits:** 4.00
Senior POLT majors, with a cumulative average of 3.20 or greater, may undertake advanced study (political science), in an area of their choice, in consultation with member(s) of the faculty. Normally, the result of the project is a significant written product of a quality comparable to that done at the 700 course level. Student must initiate the project discussion and obtain approval of the undergraduate curriculum committee of the department before undertaking the project. Writing intensive.

**POLT 796 - Advanced Study**
**Credits:** 4.00
Senior POLT majors, with a cumulative average of 3.20 or greater, may undertake advanced study (political science), in an area of their choice, in consultation with member(s) of the faculty. Normally, the result of the project is a significant written product of a quality comparable to that done at the 700 course level. Student must initiate the project discussion and obtain approval of the undergraduate curriculum committee of the department before undertaking the project. Writing intensive.
POLT 797B - Seminar in American Politics  
Credits: 4.00  
Advanced analysis and individual research. Prereq: senior standing. Writing intensive.

POLT 797C - Seminar in Comparative Politics  
Credits: 4.00  
Advanced analysis focusing on government and politics in foreign nations or regions. Areas of interest may include: constitutional structures, political parties and interest groups, legislatures, bureaucracy, and public policy. Topics address such concerns as religion and politics, patterns of economic development, ethnic strife, and political leadership. Prereq: senior standing. Writing intensive.

POLT 797E - Seminar in International Politics  
Credits: 4.00  
Advanced analysis focusing on problems of theory and contemporary issues in international politics. Areas of interest may include: democratic norms in international relations, NATO expansion and European security, the peace process in the Middle East, etc. See department listings for semester offerings. Prereq: senior standing. Writing intensive.

POLT 797F - Seminar in Public Administration  
Credits: 4.00  
Advanced analysis and individual research, including opportunities for direct observation of governmental administration. Prereq: senior standing. Writing intensive.

POLT 797I - Seminar in Political Thought  
Credits: 4.00  
Advanced treatment and individual research. Prereq: senior or graduate standing. Writing intensive.

POLT 798B - Seminar in American Politics  
Credits: 4.00  
Advanced analysis and individual research. Prereq: senior standing. Writing intensive.

POLT 798C - Seminar in Comparative Politics  
Credits: 4.00  
Advanced analysis focusing on government and politics in foreign nations or regions. Areas of interest may include constitutional structures, political parties and interest groups, legislatures, bureaucracy, and public policy. Topics address such concerns as religion and politics, patterns of economic development, ethnic strife, and political leadership. Prereq: senior standing. Writing intensive.

POLT 798E - Seminar in International Politics  
Credits: 4.00  
Advanced analysis focusing on problems of theory and contemporary issues in international politics. Areas of interest may include democratic norms in international relations, NATO and European security, the peace process in the Middle East, etc. See department listings for semester offerings. Prereq: senior standing. Writing intensive.

POLT 798F - Seminar in Public Administration  
Credits: 4.00  
Advanced analysis and individual research, including opportunities for direct observation of governmental administration. Prereq: senior standing. Writing intensive.

POLT 798I - Seminar in Political Thought  
Credits: 4.00
Advanced treatment and individual research. Prereq: senior or graduate standing. Writing intensive.

POLT 799 - Honors Thesis

Credits: 4.00

Senior POLT honors-in-major students (see department for honors-in-major requirements), with a cumulative average of 3.20 or greater, may undertake a special honors project in an area of their choice. The result of this special project is a significant written product constituting an honors thesis, under the supervision of a faculty sponsor. Students must initiate the project discussion and obtain approval of the undergraduate curriculum committee before undertaking the project. The honors thesis constitutes the tenth course in the major. Writing intensive.
PORTUGUESE

PORT 401 - Elementary Portuguese I
Credits: 4.00
Conducted in Portuguese. For students without previous knowledge of Portuguese. Aural-oral practice; fundamental speech patterns; reading and writing to achieve a firm basis for an active command of the language. Labs. No credit toward a major. (No credit for students who have had two or more years of Portuguese in secondary school; however, any such students whose studies of Portuguese have been interrupted for a significant period of time should consult the chairperson about possibly receiving credit.) Special fee.

PORT 402 - Elementary Portuguese II
Credits: 4.00
Conducted in Portuguese. Aural-oral practice; fundamental speech patterns; reading and writing to achieve a firm basis for an active command of the language. Labs. No credit toward a major. (No credit for students who have had two or more years of Portuguese in secondary school; however, any such students whose studies of Portuguese have been interrupted for a significant period of time should consult the chairperson about possibly receiving credit.) Special fee. Prereq: PORT 401. (PORT 401 and 402 together satisfies the foreign language requirement.)

PORT 500 - Selected Topics in World Literature
Credits: 4.00
Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, RUSS 500, SPAN 500.) May be repeated for credit. Cr/F. Writing intensive.

PORT 503 - Intermediate Portuguese I
Credits: 4.00
Conducted in Portuguese. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Portuguese on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

PORT 504 - Intermediate Portuguese
Credits: 4.00
Conducted in Portuguese. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Portuguese on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

PORT 526 - Luso-Brazilian Culture and Civilization
Credits: 4.00
This course provides a general overview of Brazil's culture and history from the arrival of the first Europeans, through its independence and consolidation as a nation-state in nineteenth-century, up to its present. Students will learn about the development of Brazilian cultural and intellectual life through literature, cinema, music, painting, architecture, and photography. No prior knowledge of the Portuguese language is required. The course will be taught in English. Special fee.

PORT 595 - Portuguese Practicum
Credits: 2.00
Practical use of Portuguese language or cultural skills outside the classroom through special projects. Prereq: PORT 401-402 and permission. May be repeated up to 4 credits.
Psychology

PSYC 401 - Introduction to Psychology
Credits: 4.00
Psychology as a behavioral science; its theoretical and applied aspects. Includes research methods, behavioral neuroscience, sensation and perception, cognition, learning, development, personality, psychopathology, and social psychology. To experience actively the nature of psychological research students have an opportunity to participate in a variety of studies as part of a laboratory experience.

PSYC 401H - Honors/Introduction to Psychology
Credits: 4.00
Psychology as a behavioral science; its theoretical and applied aspects. Includes research methods, behavioral neuroscience, sensation and perception, cognition, learning, development, personality, psychopathology, and social psychology. To experience actively the nature of psychological research students have an opportunity to participate in a variety of studies as part of a laboratory experience.

PSYC 402 - Statistics in Psychology
Credits: 4.00
Design, statistical analysis, and decision making in psychological research. Probability, hypothesis-testing, and confidence intervals. Conceptualization, computation, interpretation, and typical applications for exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate regression, one-way analysis of variance, and chi square. Introduction to computer methods of computation. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; SOC 502. Special fee.

PSYC 402H - Honors/Statistics in Psychology
Credits: 4.00
Design, statistical analysis, and decision making in psychological research. Probability, hypothesis-testing, and confidence intervals. Conceptualization, computation, interpretation, and typical applications for exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate regression, one-way analysis of variance, and chi square. Introduction to computer methods of computation. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; HHS 540; MATH 439; MATH 539; MATH 644; SOC 502. Special fee.

PSYC 440A - Honors/Understanding the Human Brain
Credits: 4.00
First, we will examine the evolution of the brains of hominids to understand what are characteristics are uniquely human and what are conserved across species. We then explore selected topics in neuroscience that alter neural functioning, for example, the impact of neuro-prosthetics, cognitive enhancement, racial discrimination. Finally, we will discuss the benefit and limitations of using animal models to understand human neural functioning.

PSYC 502 - Research Methods in Psychology
Credits: 4.00
Research design, including experimental and correlation design; internal versus external validity; measurement; writing a research report; graphic and statistical methods for summarizing data; sampling; and special problems such as experimenter effects, reactivity of measurement, and others. The use of hypothesis testing and data analysis in research. Prereq: PSYC 401 and 402. Special fee. Writing intensive.
PSYC 511 - Sensation and Perception
Credits: 4.00
The study of how humans (and some other animals) sense and perceive their environment. Topics include seeing (vision), hearing (audition), tasting (gustation), smelling (olfaction), feeling (somatosensation), and the variety of state-of-the-art methods used by psychologists to study these senses. Illusions and other sensory and perceptual phenomena are treated. Prereq: PSYC 401.

PSYC 512 - Psychology of Primates
Credits: 4.00
A comparative analysis of primate cognitive, linguistic, and social processes. The origins of human behavior are explored from the perspectives of history, evolution, and contemporary work in neuropsychology, linguistic, sociobiology, and related fields. Prereq: PSYC 401.

PSYC 513 - Cognitive Psychology
Credits: 4.00
The study of human cognition, its basic concepts, methods, and major findings. Human knowledge acquisition and use. Attention, perception, memory, imagery, language, reading, problem solving, and decision making. Prereq: PSYC 401.

PSYC 521 - Behavior Analysis
Credits: 4.00

PSYC 522 - Behaviorism
Credits: 4.00
Introduction to behaviorism as a philosophy of science. Some historical background, but concentration on modern behaviorism as exemplified in the works of B. F. Skinner. No credit for students who have completed PSYC 722. Offered only in Manchester. Prereq: PSYC 401.

PSYC 531 - Psychobiology
Credits: 4.00
Introduces the behavioral neurosciences. Surveys research conducted by psychologists to learn about the biological basis of behavior: development, sensation, perception, movement, sleep, feeding, drinking, hormones, reproduction, stress, emotions, emotional disorders, learning, and memory. Prereq: PSYC 401.

PSYC 552 - Social Psychology
Credits: 4.00
Behavior of individuals as affected by other individuals, groups, and society. Topics include attitude change and social influence, conformity, social interaction, interpersonal attraction, impression formation, research. Prereq: PSYC 401.

PSYC 553 - Personality
Credits: 4.00

PSYC 561 - Abnormal Behavior
Credits: 4.00
Causes, diagnosis, and treatment of abnormal behavior. Implications of varying theoretical viewpoints. Prereq: PSYC 401.
PSYC 571 - Pioneers of Psychology
Credits: 4.00
An introduction to the development and evolution of psychology as an academic discipline and applied science. The lives and works of innovators in psychology are placed in socio-political context.

PSYC 571H - Honors/Pioneers of Psychology
Credits: 4.00
An introduction to the development and evolution of psychology as an academic discipline and applied science. The lives and works of innovators in psychology are placed in socio-political context.

PSYC 581 - Child Development
Credits: 4.00
The developing child in the context of his/her society. Current problems in, and influences on, development of the child. Personality and cognitive development; exceptional children. Prereq: PSYC 401.

PSYC 582 - Adult Development and Aging
Credits: 4.00
A life-span developmental framework for the study of growth, decline, and stability on adult development. Developmental methods in adult development research; biological basis for aging; patterns of change and stability in diverse domains of psychological functioning, e.g., perception, cognition, intellectual performance, and personality organization. Prereq: PSYC 401. (Offered only in Manchester.)

PSYC 591 - Special Topics
Credits: 4.00
New or specialized courses are presented under this listing. Staff present material not normally covered in regular course offerings. May repeat but not duplicate content. Prereq: PSYC 401.

PSYC 595 - Applications of Psychology
Credits: 1.00 to 4.00
Arranged by the student or offered by psychology faculty for supervised field, academic, or research experience related to psychology. A) Field experience: supervised internship at a business or human services setting, B) Academic experience: specialized classroom experience or supervised teaching assistance, C) Research experience: supervised research experience or laboratory work. Psychology instructors sponsor academic credit for appropriate experience combined with a relevant academic component. Requires a signed learning agreement prior to registration. Prereq: permission. May be taken for 1-4 credits in a semester and repeated to a maximum of 8 credits total. Cr/F.

PSYC 702 - Advanced Statistics and Research Methodology
Credits: 4.00
A review of basic statistics from Psychology 402 and 502. Covers partial correlation, factorial ANOVA, and other analyses that include multiple predictor variables. Appropriate for students who plan to apply to research-oriented graduate programs, those who use statistics in honors thesis research, and those who plan to work in areas such as marketing or survey research. Topics covered are appropriate for use in psychology, sociology, education, medicine, and other research areas. Prereq: PSYC 402; 502; or permission. (Not offered every year.) Writing intensive.

PSYC 705 - Tests and Measurement
Credits: 4.00
Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; 502; or permission.

PSYC 705H - Honors/Tests and Measurements
Credits: 4.00
Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; 502; or permission.

PSYC 710 - Visual Perception
Credits: 4.00
The study of how humans (and some other animals) see. Topics include color vision, depth perception, form and pattern vision, visual learning and development, eye movements, diseases of the visual system, illusions, and other visual phenomena. Prereq: PSYC 402, 502, 511, or 531; or permission. Special fee. Writing intensive.

PSYC 712 - Psychology of Language
Credits: 4.00
Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; 502; 512; or 513; or permission. Special fee.

Writing intensive.

PSYC 712W - Psychology of Language
Credits: 4.00
Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; 502; 512; or 513; or permission. Special fee. Writing intensive.

PSYC 713 - Psychology of Consciousness
Credits: 4.00
Explores questions of consciousness What is it? How does it develop? Are infants and animals conscious? Why did consciousness evolve? Includes a review of historical background, including the ideas of Jaynes, Piaget, James, Freud, and others. Contemporary topics may include the role of language and other representational systems, blindsight, subliminal perception, priming and other implicit cognitive phenomena, hypnosis, confabulation and attribution, dreaming, multiple personality and conceptions of self and free will, from simultaneous perspectives of phenomenology, behavior, and neuroscience. Specific topics governed by class interests. Prereq: PSYC 402; 502; 512; or 513; or permission. Writing intensive.

PSYC 716 - Cognitive Neuroscience
Credits: 4.00
Cognitive Neuroscience is a rapidly expanding scientific discipline that probes classical questions of human cognitive psychology via a broad array of cutting-edge methodological approaches, which include but are not limited to brain imaging (e.g., functional MRI and electroencephalography), lesion studies, single-cell recording, and examinations of brain injuries and other neurological disorders. This course will survey the results of these approaches, which have thus far generated fundamental insights about how the brain supports motor control, attention, memory, emotion processing, social cognition, language, executive function and decision making. Prereq: PSYC 402, 502, 513, or 531; or permission. Writing intensive.

PSYC 720 - Animal Cognition
Credits: 4.00
Do animals use language or have a culture? Can birds count? Do animals use tools and understand how they function? How do ants navigate their environment to find food and then return to their nest? How animals perceive, attend to, process, store, and represent information from their environment. Research on animal learning and behavior as a framework for investigating cognitive processes in animal learning. Quantitative versus qualitative nature of differences between people and non-human animals. Multidisciplinary approach including the fields of anthropology, physiology, philosophy, and biology. Prereq: PSYC 401; 402; 502; 513 or 521; or permission. Writing intensive.
PSYC 722 - Behaviorism, Culture, and Contemporary Society  
Credits: 4.00  
Introduces behaviorism as a philosophy of science. Concentration on modern behaviorism as exemplified in the works of B.F. Skinner. Implications of behaviorism for the development and evolution of cultures. Consideration of societal issues (for example pollution, overpopulation, conflict, drug abuse) from a behavioral framework. Prereq: PSYC 402; 502; 521;/or permission. No credit for students who have completed PSYC 522. Writing intensive.

PSYC 731 - Brain and Behavior  
Credits: 4.00  
Neuropsychology, the study of brain/behavior relationships including clinical topics related to the analysis of neurological diseases in humans and more basic experimental topics related to integrative functions of the brain. The main focus is on cerebral cortex and functions related to perception, movement, attention, memory, and language. Prereq: PSYC 402; 502; 531;/or permission. Special fee. Writing intensive.

PSYC 733 - Drugs and Behavior  
Credits: 4.00  
Introduces the principles of psychopharmacology and the effects of psychoactive substances on behavior. Focuses on the therapeutic and recreational use of drugs and the mechanisms of drug action, that is how the drugs affect the brain. Neuropsychiatric function and dysfunction are discussed as they relate to the use or abuse of particular drugs. Prereq: PSYC 402; 502; 531;/or permission. Writing intensive.

PSYC 735 - Neurobiology of Mood Disorders  
Credits: 4.00  
Neurobiological and neurochemical substrates underlying various psychopathologies, using both animal models and human data. Study of disorders from the field of biological psychiatry including aggression, anxiety, panic disorder, obsessive-compulsive disorder, unipolar depression, bipolar affective disorder, schizophrenia, and post-traumatic stress disorder. The effectiveness of current behavioral and pharmacological therapy. Prereq: PSYC 402; 502; 531; or permission. Writing intensive.

PSYC 736 - Attention Disorders  
Credits: 4.00  
Attention encompasses several cognitive functions including, but not limited to, the ability to select relevant from irrelevant stimuli, to maintain goal-directed behavior over time, and to process multiple streams of information at once. This course explores how the normal brain "attends", and the consequences of dysfunction in neurochemical systems hypothesized to mediate these abilities including dementia, attention-deficit hyperactivity disorder (ADHD) and schizophrenia. Prereq: PSYC 402; 502; 531;/or permission. Writing intensive.

PSYC 737 - Behavioral Medicine  
Credits: 4.00  
Behavioral, physiological, and neurochemical alterations, associated with health-promoting behaviors (low-fat diet, exercise) as well as health-imparing behaviors (eating disorders, smoking, excessive alcohol consumption). Topics include stress, coping, type-A behavior, hypertension, and the interface of brain, behavior, and immunity (psychoimmunology, cancer, AIDS). Treatment/therapy are discussed from behavioral and pharmacological perspectives. Prereq: PSYC 402; 502; 531;/or permission. Writing intensive.

PSYC 741 - Advanced Topics  
Credits: 4.00  
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics under this listing may be used to fulfill a major requirement in
category Cl. A) Psychology as a Natural Science, B) Cognition, C) Behavior Analysis, D) Biological/Sensory. Prereq: PSYC 402; 502; plus other prerequisites when offered; or permission.

PSYC 741W - Advanced Topics
Credits: 4.00
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics include: Behavioral Neuroscience. Prereq: PSYC 402; 502; plus other prerequisites when offered; or permission. Writing intensive.

PSYC 755 - Psychology and Law
Credits: 4.00
Applications of psychology to the study of the law, including theories of legal and moral judgment, participants in the legal system (judges, police, victims, witnesses), the trial process, and plea bargaining. Special focus on the death penalty, the insanity plea, and child witnesses. Prereq: PSYC 402; 502; or permission. Writing intensive.

PSYC 756 - Psychology of Crime and Justice
Credits: 4.00
Examines the psychological aspects of crime and justice, including the following origins and causes of crime: developmental, biological, biopsychological, learning, and mental disorder. Focuses on issues related to homicide, profiling, and serial killers. Examines aggression and violence as well as causes and consequences of criminal homicides. Discussion of the future of crime. Prereq: PSYC 402; 502; or permission. Writing intensive.

PSYC 757 - Psychology of Happiness
Credits: 4.00
Overview of empirical research in Positive Psychology. We will discuss factors that may influence happiness and subjective well-being; and effects that well-being may have on other life outcomes such as physical health. Learning involves reading and writing about evidence from research and also experimental exercises (such as doing an act of kindness). Prereq: PSYC 402, 502 or permission. Writing intensive.

PSYC 758 - Health Psychology
Credits: 4.00
Survey of current topics in health psychology, including social stress and the etiology of disease, Type A and other personality factors related to health, modification of risk factors, the practitioner-patient relationship, chronic pain, and the emotional impact of life-threatening illness. Prereq: PSYC 402; 502; or permission. Writing intensive.

PSYC 762 - Counseling
Credits: 4.00
Theories of counseling, ethical considerations, professional and paraprofessional activities in a variety of work settings. Prereq: PSYC 402; 502; 553; or 561; or permission. Writing intensive.

PSYC 763 - Community Psychology
Credits: 4.00
Examines the sub-field of community psychology, which grew out of clinical psychology but is different from it. Theoretical and research perspectives on prevention, diversity, empowerment, resilience, community intervention, and ecological understandings of behavior. Causes of and interventions in social issues such as interpersonal and community violence and homelessness. Prereq: PSYC 401; 402; 502; 552, 553, or 561; or permission. Writing intensive.

PSYC 775 - Madness in America
Credits: 4.00
Examines how popular and professional concepts of mental illness are shaped by historical events as well as scientific and medical research. Writings of former psychiatric patients, therapists, researchers, social critics, and historians of psychology and psychiatry. Cultural values, public attitudes, and popular views of mental health and illness as expressed through motion pictures, documentaries, novels, autobiographies, and biographies. The impact of WWI and WWII on how people thought about madness and how it was treated. The 1973 removal of homosexuality from the diagnostic manual of the American Psychological Association; the rise and fall of the lobotomy; feminist criticisms of psychiatry and psychology. Prereq: PSYC 402; 502; 561; or permission. Writing intensive.

PSYC 780 - Prenatal Development and Infancy
Credits: 4.00
Psychological development of infants from conception through second year of life. Factors and potential influences on reproductive health and prenatal physical and behavioral development. Transition to parenthood, infant temperament and parent-infant relationships. Developmental patterns of specific capabilities. Prereq: PSYC 402; 502; 581 or FS 525; or permission. Writing intensive.

PSYC 783 - Cognitive Development
Credits: 4.00
Theories of cognitive development. Comparison among major theorists on how knowledge, thought, and development are defined and studied. Current research, including cognitive development; memory; perceptual processes; language. Prereq: PSYC 402; 502; 581; or permission. Writing intensive.

PSYC 785 - Social Development
Credits: 4.00
Examines development of social interactions. Emphasizes important social relationships for the child (e.g., attachment to parents and friendships with peers). Considers other topics of relevance to social developmentalists, such as temperament, aggression, social cognition, and sex roles. Prereq: PSYC 402; 502; 581; or permission. Writing intensive.

PSYC 791 - Advanced Topics
Credits: 4.00
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics under this listing may be used to fulfill a major requirement in category CII. A) Psychology as a Social Science, B) Social Psychology, C) Personality, D) Abnormal/Counseling, E) History of Psychology, F) Child Development, G) Adult Development. Prereq: PSYC 402; 502; plus other prerequisites when offered, or permission. Special fee with some topics.

PSYC 791W - Advanced Topics
Credits: 4.00
Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics include: Close Relationships. Prereq: PSYC 402; 502; plus other prerequisites when offered, or permission. Writing intensive.

PSYC 793 - Internship
Credits: 4.00 to 8.00
Supervised practicum in one of several cooperating New Hampshire mental health/rehabilitation facilities. Coursework knowledge applied to meaningful work and team experience. Commitment includes a negotiated number of weekly work hours and weekly seminars. Supervision by institution personnel and the instructor. A maximum of 4 credits may be applied to the Psychology major. Course applications accepted beginning in March for fall term and October for spring term. Prereq: permission; PSYC major; PSYC 402; 502; 561 Pre- or coreq: PSYC 762.
PSYC 794 - Advanced Internship  
**Credits:** 1.00 to 8.00  
Supervised advanced practicum experience in co-operating New Hampshire mental health/rehabilitation facilities. Expands and builds on experiences and skills acquired in PSYC 793. Commitment includes a negotiated number of hours of work per week and participation in weekly seminars. Supervision done by institution personnel and instructor. Prereq: PSYC 793; permission. 1 to 8 credits.

PSYC 795 - Independent Study  
**Credits:** 1.00 to 4.00  

PSYC 797 - Senior Honors Tutorial  
**Credits:** 4.00  
For senior psychology honors students. Students propose honors theses under the supervision of psychology faculty. Theses proposed and begun in this course are completed in PSYC 799. Prereq: admission to psychology honors program. (Typically offered in fall.)

PSYC 798 - Capstone  
**Credits:**  
This is a zero credit course to indicate on the transcript that the capstone requirement is fulfilled. PSYC majors only.

PSYC 799 - Senior Honors Thesis  
**Credits:** 4.00  
Under supervision of psychology department faculty members, students complete the honors projects proposed and begun in PSYC 797. The honors project, which should be empirical in nature, culminates in an oral presentation at the end of the semester. Prereq: admission to psychology honors program; PSYC 797. Special fee. (Typically offered in spring.)
Race, Culture, & Power

RCP 000 - Special Message Placeholder
Credits:

RCP 795 - Independent Study in Race, Culture and Power
Credits: 1.00 to 8.00
Open to qualified sophomores, juniors, and seniors. May include research project or fieldwork. To be elected only with permission of the coordinator and with qualified supervision.

RCP OOO - RCP Placeholder
Credits:
O

RCP XXX - Special message place holder
Credits:
O
Recreation Management & Policy

RMP 400 - Recreation Management and Policy Continuing Enrollment
Credits:
This course enables BS students to maintain continuous enrollment in RMP as part of their matriculation plan until after their degree is formally awarded. Students registering for RMP 400 will pay a continuous enrollment fee. No credit. Special fee. RMP majors only.

RMP 444 - Building a Culture of Peace
Credits: 4.00
Peace is more than just the absence of war. A culture of peace incorporates respect and dignity for all persons, stewardship of natural resources, a striving toward justice and equality, the non-violent resolution of conflicts, non-hierarchical decision-making and participatory community life. Students in this course explore the origins and concepts of peace culture. Students experience the elements of a culture of peace as they are empowered to create a peace culture within the classroom and as they share peace culture with a broader community through service learning projects.

RMP 444A - Taking the "Dis" out of Disability
Credits: 4.00
In contrast to the traditional view of disability as a defect, students learn how disability provides a unique vantage point on our world and can be perceived as an ordinary part of the twists and turns of life. Examines the history of social responses to disability, with an emphasis on the present day concepts of inclusion and self-determination. Students explore expressions of the disability experience through print and visual media. Writing intensive.

RMP 490 - Recreation and Leisure in Society
Credits: 4.00
Examines the historical and philosophical foundation of recreation and leisure. Emphasizes concepts, theories, and the interrelationships between factors (social, economic, political, and environmental), which influence people's leisure attitudes and behavior. Explores implications of leisure for holistic and balanced living. Classes not allowed in section: Senior.

RMP 500 - Therapeutic Recreation Methods in Physical Rehabilitation Settings
Credits: 1.00
This course introduces students to a variety of assistive techniques, devices and equipment used in Therapeutic Recreation settings that allow individuals with illnesses and disabilities achieve maximum independence and functional capacity to maintain optimal health and leisure functioning. Students learn and apply skills in anatomical orientation and positioning, universal precautions, assistive technology and adapted equipment for recreation including manual, power, sports, and all-terrain wheelchairs, wheelchair mobility skills, proper body mechanics, transfer and lifting techniques, ambulation assists, and sighted guide techniques. Prereq: RMP 490, 501, 502, permission.
Co-requisites: RMP 503

RMP 501 - Recreation Services for Individuals with Disabilities
Credits: 4.00
Presents and discusses issues that concern the delivery of quality leisure services to individuals with disabilities in community settings. Classroom activities provide opportunities for practical experience.

RMP 502 - Foundations of Therapeutic Recreation
Credits: 4.00
History and professional concepts of therapeutic recreation and the roles and functions of the therapeutic recreation specialist.

**RMP 503 - Therapeutic Recreation Rehabilitation Principles & Interventions**
Credits: 4.00
Introduces the rehabilitation principles and recreational therapy interventions used by therapeutic recreation specialists to improve functioning for people with physical and cognitive impairments. Students learn and apply fundamental processes of clinical reasoning and treatment program planning to improve quality of life. A lab provides students with the opportunity to use a variety of assistive techniques, adaptive devices, and equipment to support individuals and achieve maximum independence and promote a healthy leisure lifestyle. Special fee. Prereq: RMP 490, 501, 502.
Co-requisites: RMP 500

**RMP 504 - Therapeutic Recreation Mental Health Principles and Interventions**
Credits: 4.00
Introduces mental health principles and recreational therapy interventions to improve functioning for people with emotional, social, and behavioral impairments. Students will learn and apply fundamental processes of clinical reasoning and treatment program planning to improve quality of life for persons with emotional, social, and behavioral impairments. Restricted to RMP majors.

**RMP 511 - Issues of Wilderness and Nature in American Society**
Credits: 4.00
Provides students with an overview of the evolving relationship between wilderness/nature and American society. Examines the philosophy, ethics, and societal values in American society and its relationship to our natural wilderness. Recent issues are used as case studies in order for students to articulate, defend, and critique the ethical issues presented. Students are responsible for understanding and applying philosophical approaches developed by philosophers, writers, and activists associated with the wilderness, sustainability, biodiversity, hunting, suburban sprawl, environmental activism, endangered species, organic foods, and genetic engineering.

**RMP 515 - History of Outdoor Pursuits in North America**
Credits: 4.00
Voluntary pursuits in the outdoors have defined American culture since the early 17th century. Over the past 400 years, activities in outdoor recreation and education have reflected Americans' spiritual aspirations, imperial ambitions, social concerns, and demographic changes. This course will give students the opportunity to learn how Americans' experiences in the outdoors have influenced and been influenced by major historical developments of the 17th, 18th, 19th and 20th, and early 21st centuries. This course is cross-listed with KIN 515.

**RMP 557 - Program and Event Design**
Credits: 4.00
This course introduces students to a range of approaches to recreation program and event design, and focuses on providing leisure experiences for all populations. Course topics include foundations of programming, program theories, needs assessment techniques, vision, mission, goals, and objectives, processes of group planning, public relations, program promotion, and program evaluation. Students will design and deliver a recreation program using a team approach. Prereq: RMP 490. Permission required.

**RMP 559 - Program and Event Marketing**
Credits: 4.00
This course prepares students to apply marketing principles and strategies to recreation programs and events, including procedures for developing marketing plans for recreation and event organizations.
Course content includes planning the marketing mix, with a focus on the recreation or event product, price, place, and promotion. The course covers the application of marketing and communication strategies delivered through social and audio-visual media. The culminating project consists of a marketing and communication plan for a recreation/leisure service agency. Prereq: RMP 490. Permission required. RMP Majors Only.

**RMP 560 - Recreational Sport Management**  
**Credits:** 4.00  
Explores and examines the theoretical foundations and basic skill methods, and techniques necessary for the effective and efficient delivery of recreational sport programs within a variety of collegiate, public, quasi-public, and private settings, agencies and/or organizations.

**RMP 563 - Recreation Management and Policy Practicum**  
**Credits:** 2.00  
Designed to provide first and second year RMP majors the opportunity to observe and practice leadership skills in clinical and community-based settings. Students complete a 40-45 hour practicum at an approved site. Successful completion of a practicum is prerequisite to the professional internship, RMP 664. Students are responsible for transportation and housing. Prereq: RMP 490. Permission required. May be repeated for a total of 4 credits. Cr/F.

**RMP 565 - Introduction to Child Life**  
**Credits:** 4.00  
When facing acute, chronic or life-threatening illness and traumatic injuries, children and families have unique needs within the medical system. The purpose of this course is to provide an introduction to the theory and practice of the child life profession and family centered care. Topics include children's emotional reactions to hospitalization, use of play, preparation, and family support, designing healing environments, and specializations within the field. Permission required. (Also listed as HDFS 565).

**RMP 593 - Special Topics**  
**Credits:** 2.00 to 4.00  

**RMP 593W - Special Topics**  
**Credits:** 2.00 to 4.00  

**RMP 612 - Therapeutic Communication and Facilitation Techniques in Therapeutic Recreation**  
**Credits:** 4.00  
Addresses specific clinical knowledge and skills essential to therapeutic recreation service delivery including clinical interviewing, group process, leisure education, treatment approaches, and intervention techniques. Prereq: RMP 490. Permission required.

**Co-requisites:**
RMP 613 - Interventions and Documentation in Therapeutic Recreation  
Credits: 3.00  
This course emphasizes theory and concepts in clinical intervention within therapeutic recreation settings. Students learn to identify and select appropriate facilitation techniques for a variety of client needs. Students also learn to write and interpret practice-based documentation. Students are afforded the opportunity to practice and apply concepts learned. Prereq: RMP 490. Permission required. Only open to RMP: Therapeutic Recreation majors.

Co-requisites:

RMP 614 - Assessment and Treatment Planning in Therapeutic Recreation  
Credits: 4.00  
Addresses the principles of activity analysis, client assessment, documentation, individualized program planning, selection of interventions, and collaboration with a treatment team. Prereq: RMP 612/613. Permission required.

Co-requisites:

RMP 615 - Clinical Lab in Therapeutic Recreation  
Credits: 2.00  
A clinical lab that provides students with the opportunity to apply principles central to the effective delivery of therapeutic recreation individualized treatment planning, client assessment, documentation, and activity analysis with members of one of two community sites located in the Seacoast region. Students are required to participate in weekly sessions (five to six hours per week) for a total of 15 weeks. Prereq: RMP 612/613. Permission required. Cr/F.

Co-requisites:

RMP 654 - Professional Development and Ethics  
Credits: 2.00  
Focuses on preparing students for the internship experience through the identification of career goals and the selection of an approved internship site. A portfolio emphasizing process skills in resume construction, interviewing techniques, establishing internship goals and objectives, and self-assessment is developed. Majors only. Prereq: permission. Letter Grade/IA (continuous grading).

RMP 661 - Recreation and Event Leadership  
Credits: 4.00  
This course is designed to expose students to fundamental principles of leadership, communication, group facilitation, motivation, employee management, conflict resolution, and development of professional ethics. Students will develop techniques for the exercise of leadership in group and organizational settings associated with recreational programs and events. Students are expected to apply the leadership principles, theories, and techniques to small group exercises and activity leadership requirements. Prereq: RMP 490, RMP Majors only; permission required.

RMP 663 - Recreation and Event Management  
Credits: 4.00  
This course introduces students to various management processes. These processes include fiscal and budget development and management; policy development and implementation; recreational facility design, operation, and functions. Students gain insight into key areas of management through visitation to recreation and event venues and facilities. RMP Majors Only. Prereq: RMP 490 permission required. Special fee.

RMP 664 - Internship  
Credits: 14.00 to 16.00
A full-time 14-16 week internship in Therapeutic Recreation or Program Administration. Supervised work experience in an approved profession-related agency. An IA (continuous grading) grade (yearlong course) may be assigned at the end of the semester or summer session. Prereq: majors only; permission. Cr/F.

**RMP 668 - Youth Culture and Programs**  
**Credits:** 4.00  
Emphasizes the identification of community and personal issues youth face in growing up as well as institutional and programmatic support available to assist youth. The course also examines the leadership, administrative, financial, and marketing tools necessary to develop successful youth programs and services. Service learning fieldwork and the completion of a background check are required. Prereq: RMP, RMP:PA or RMP:TR Majors Only or by permission of the instructor. Writing intensive.

**RMP 680 - Festival and Event Planning**  
**Credits:** 4.00  
Introduces the planning, marketing, management, and evaluation of festivals and special events. Explores the theories and practices relevant to successful event planning for host community residents and visitors. Prereq: RMP 557 (majors); or by instructor permission (non-majors). Sophomores, Juniors, and Seniors only.

**RMP 700H - Senior Honors Project**  
**Credits:** 4.00 to 6.00  
Under the direction of an RMP faculty member, students complete either a supervised research or applied field study project that builds on their honors coursework. Students submit a written proposal for approval and present the results at the completion of their project. Applied studies address a specific need or problem of a local agency or organization. Prereq: permission required.

**RMP 705 - Management and Policy in Therapeutic Recreation**  
**Credits:** 4.00  
Addresses National Council for Therapeutic Recreation Certification knowledge areas concerning management competency. Students acquire knowledge of current principles and procedures for assuming an administrative role in the therapeutic recreation profession. Issues and practices related to budgeting, reimbursement, quality improvement programs, and comprehensive program planning. Prereq: RMP 612 613.RMP:TR majors only.

**RMP 711 - Recreation Resource Management**  
**Credits:** 4.00  
Examines the supply and demand of natural resources for outdoor recreation uses, with emphasis on relationships between public and private roles and responsibilities. Social, environmental, and economic impacts of outdoor recreation use are discussed. Current principles and techniques of recreation resource planning and management are outlined. Prereq: seniors or permission.

**RMP 724 - Grantsmanship, Evaluation, and Research**  
**Credits:** 4.00  
Emphasizes understanding and application of grantsmanship, research techniques, and research writing. Addresses the process of program planning and grant proposal development. Examines research methodologies and the evaluation processes as applied to recreation and allied health settings. Critical assessment of uses and limitations of research for recreation. Prereq: RMP 557, and junior or senior RMP major or permission. Writing intensive.

**RMP 730 - Camp Administration and Leadership**  
**Credits:** 4.00  
Provides students with an understanding of administrative and organizational practices in structured camp
settings. Students are exposed to the theory, practice, and challenges of program planning for youth and adult development within the recreation context of camping. Explores current sociological, environmental, economical, and legislative trends influencing contemporary camp management. Permission required.

**RMP 750 - Aging, Advocacy, and Active Learning**  
**Credits:** 4.00  
This course explores the impact of advocacy and social action programs for the aging adult. Course content is explored through the lens of active living emphasizing how leisure and recreation contribute to optimal experiences in later adulthood. Course content includes facilitating the learners' understanding of later life issues within the broader context of health and well-being at the local, state, and national levels. There is an applied action component to this course using a service learning framework.

**RMP #768 - Theories and Philosophies of Youth Development**  
**Credits:** 4.00  
This course provides students with a foundation in the theories and philosophies associated with the field of youth development. In this course, students critically analyze the strengths, limitations, and potential applications of various theories, philosophies, and ideas. Examples include: Developmental Systems Theory, Ecological Systems Theory, protective factors, and developmental assets. Students work or volunteer with a youth program for the duration of the semester in order to facilitate application of course concepts.

**RMP 770 - Management and Design of Recreation and Park Facilities**  
**Credits:** 4.00  
Provides students with an orientation to the theories, design, operation, and functions of recreational facilities. Topics include facility development, operational considerations, and auxiliary functions that impact the manager's role. Students gain insight into key areas of facility management through visitations to actual facilities. Special fee.

**RMP 772 - Law and Public Policy in Leisure Services**  
**Credits:** 4.00  
Topics including the law of torts, contracts, property, civil rights, risk management, and legal research are addressed in the context of leisure services and recreation resources. Public policy and professional advocacy implications are examined in relation to legislative and judicial systems. Prereq: RMP 557, 663, and senior RMP major or permission. Writing intensive.

**RMP 775 - Entrepreneurial and Commercial Recreation**  
**Credits:** 4.00  
Principles of business planning and development as applied to the private sector leisure services industry. Emphasizes knowledge of key commercial leisure services profiles and their intersection with allied professions such as hospitality and tourism. Course topics include entrepreneurship, business planning, needs assessment, product development, selling, financing, legal designations, and business operations leading to the development of a business plan for a new entrepreneurial recreation enterprise.

**RMP 793 - Advanced Topics**  
**Credits:** 2.00 to 4.00  
A) Area and Site Planning, B) Concepts and Trends in Therapeutic Recreation, and C) Conference Planning. Topics presented by instructors with specialized knowledge gained through professional practice, research, and study. Descriptions of topics available in department office during preregistration. May be repeated but not in duplicate areas. 2 to

**RMP 796 - Independent Study**  
**Credits:** 1.00 to 4.00
Individual study and/or research relating to leisure-oriented topics. Prereq: permission.

**RMP 796W - Independent Study**

**Credits:** 1.00 to 4.00

Individual study and/or research relating to leisure-oriented topics. Prereq: permission. Writing intensive.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS 483W</td>
<td>History of World Religions</td>
<td>4.00</td>
<td>Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. (Also offered as HIST 483.) Writing intensive.</td>
</tr>
<tr>
<td>RS 600</td>
<td>Special Topics</td>
<td>4.00</td>
<td>Studies of particular religious traditions, or periods within those traditions, or special topics and issues of concern within religious studies such as mythology, ritual, mysticism, etc. May be repeated up to a maximum of 12 credits.</td>
</tr>
<tr>
<td>RS 601</td>
<td>Seminar in Religious Texts</td>
<td>4.00</td>
<td>Close study of sacred text(s) from a particular religious tradition (Islam, Christianity, Buddhism, Judaism, etc.) or a thematic selection of texts across religions. (Also offered as HIST 601.)</td>
</tr>
<tr>
<td>RS 699</td>
<td>Seminar in Religious Studies</td>
<td>4.00</td>
<td>Advanced discussion of a particular theme in religious studies, meant both to give students a solid foundation in classic theories of religion and to explore new authors and ideas. Past topics have included ritual, possession, magic, and apocalypticism. Classes are in seminar format and culminate in a final research paper. (Priority to minors in Religious Studies.) Prereq: permission.</td>
</tr>
<tr>
<td>RS 795</td>
<td>Independent Study</td>
<td>2.00 or 4.00</td>
<td>Independent study of traditions, topics, or figures within the scope of religious studies. Before registration, student must formulate a project and secure consent of a cooperating program/faculty member who will supervise the independent study.</td>
</tr>
<tr>
<td>RS 796</td>
<td>Independent Study</td>
<td>2.00 or 4.00</td>
<td>Independent study of traditions, topics, or figures within the scope of Religious Studies. Before registration, student must formulate a project and secure consent of a cooperating program/faculty member who will supervise the independent study.</td>
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<tr>
<td>RS XXX</td>
<td>Religious Studies place holder</td>
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### Russian

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</tr>
</thead>
<tbody>
<tr>
<td>RUSS 401</td>
<td>Elementary Russian I</td>
<td>4.00</td>
<td>For students without previous training in Russian. An introduction to contemporary standard Russian. Includes a cultural component. Topics include those which enable students to function in Russian in everyday situations (i.e. food, leisure activities, literature, transportation, music, sports, daily life.) Special fee.</td>
</tr>
<tr>
<td>RUSS 402</td>
<td>Elementary Russian II</td>
<td>4.00</td>
<td>See description for RUSS 401.</td>
</tr>
<tr>
<td>RUSS 425</td>
<td>Introduction to Russia: Contemporary Society and Culture</td>
<td>4.00</td>
<td>Introduction to contemporary Russian society and culture in English. Examines the &quot;Russian mind&quot; (as it was before 1917), the &quot;Soviet mind,&quot; and how the two have clashed. A closer examination of how the Russians are adapting to the changes that have taken place in their country since the collapse of communism. Readings, films, realia. Themes to be discussed include leadership; authority and power; the Russian soul; family; women, youth, education, holidays and celebrations; and the new Russians. Special fee.</td>
</tr>
<tr>
<td>RUSS 425M</td>
<td>Topics in Russian Culture and Society in Moscow</td>
<td>4.00</td>
<td>Introduction to contemporary Russian society and culture in English. Examines the &quot;Russian mind&quot; (as it was before 1917), the &quot;Soviet mind,&quot; and how the two have clashed. A closer examination of how the Russians are adapting to the changes that have taken place in their country since the collapse of communism. Readings, film, realia. Themes to be discussed include leadership; authority and power; the Russian soul; family; women, youth, education, holidays and celebrations, and the new Russians. Through pre-departure readings and on location, each culture and historical topic is taught on site during field trips and after field trip discussions, lectures, and round tables. A focus topic is explored on location with pre- and post program research. Special fee. Permission required.</td>
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<tr>
<td>RUSS 500</td>
<td>Selected Topics in World Literature</td>
<td>4.00</td>
<td>Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, PORT 500, SPAN 500.) May be repeated for credit. Special fee.</td>
</tr>
<tr>
<td>RUSS 500W</td>
<td>Topics in World Literature</td>
<td>4.00</td>
<td>Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, PORT 500, SPAN 500.) May be repeated for credit. Special fee. Writing intensive.</td>
</tr>
<tr>
<td>RUSS 503</td>
<td>Intermediate Russian I</td>
<td>4.00</td>
<td>Continued work in grammar, and writing with cultural components. A review of the fundamentals of grammar and syntax. Readings and cultural material included. Topics include: university life, travel, cultural activities, cooking, politics. Special fee.</td>
</tr>
</tbody>
</table>
RUSS 504 - Intermediate Russian II  
**Credits:** 4.00  
Continued work in grammar, and writing with cultural components. A review of the fundamentals of grammar and syntax. Readings and cultural material included. Topics include: university life, travel, cultural activities, cooking, politics. Special fee.

RUSS 521 - Devils, Deities, and Madness in Russian Literature  
**Credits:** 4.00  
Introduces Russian literature from a variety of perspectives. Selected works by famous and lesser known Russian writers on the themes of devils, deities, and madness. Literary texts, as well as film versions of literary texts, are considered in their historical and cultural contexts. Lectures, readings, and discussions in English. Open to all students, including freshmen. No prerequisites. Special fee.

RUSS 521W - Devils, Deities, and Madness in Russian Literature  
**Credits:** 4.00  
Introduces Russian literature from a variety of perspectives. Selected works by famous and lesser known Russian writers on the themes of devils, deities, and madness. Literary texts, as well as film versions of literary texts, are considered in their historical and cultural contexts. Lectures, readings, and discussions in English. Open to all students, including freshmen. No prerequisites. Special fee. Writing intensive.

RUSS 522W - Morality, Sex and Revolution in Russian Literature  
**Credits:** 4.00  
Introduces Russian literature from a variety of perspectives. Selected works by famous and lesser known Russian writers on themes of morality, sex, and revolution. Literary texts, as well as film versions of literary texts, are considered in their historical and cultural contexts. Lectures, readings, and discussions in English. Open to all students, including freshmen. No prerequisites. Special fee. Writing intensive.

RUSS 525 - Russia: Mythology and Propaganda  
**Credits:** 4.00  
Exploration of the relationship between mythology and culture as a part of the cultural identity of the Russian people, before the 1917 Revolution, during the Communist period, and since the fall of the Soviet Union. Focus on pre 1917 Slavic pagan, Christian, and folk mythology vis-a-vis Western mythology, on 20C propaganda and control of the "public mind" designed to reshape national identity and on the current deconstruction, reform, and rebirth of the old mythology. Special fee.

RUSS 525M - Russia:Mythology and Propaganda in Moscow  
**Credits:** 4.00  
Exploration of the relationship between mythology and culture as a part of the cultural identity of the Russian people, before the 1917 Revolution, during the Communist period, and since the fall of the Soviet Union. Focus on pre 1917 Slavic pagan, Christian, and folk mythology vis-a-vis Western mythology, on 20C propaganda and control of the "public mind" designed to reshape national identity and on the current deconstruction, reform, and rebirth of the old mythology. Course conducted on location in Russia and on line. Special fee.  
**Co-requisites:** INCO 589

RUSS 531 - Russian Language for Hertiage Speakers  
**Credits:** 4.00  
Intensive 5 week on-line course for Russian heritage speakers. Learn cursive Cyrillic; spelling rules, language structure. Build vocabulary to achieve a higher level of language expression. Grammar topics based on culture related text. Course is fully on line (quizzes, tests, video, supporting materials, on line meetings.) For students who can speak Russian, but who have not formally learned Russian. Special fee.
RUSS #593 - Myths, Visions and Issues in Russian Literature and Society  
**Credits:** 4.00  
Discussion and analysis of topics and authors in Russian literature, film, and culture. A variety of different topics or authors is covered each semester: (A) the Giants of Russian Literature: Dostoevsky and Tolstoy, (B) Dostoevsky, (C) Tolstoy, (D) Jewish Voices in the Russian Empire, (E) The Devil in Russian Literature, (F) the Myth of St. Petersburg, (G) Death and Revolution, (H) Russian Fairy Tales, (I) Drama, (J) Women's Voices, etc. Lectures, readings, and films with English subtitles, and discussions in English. Open to all students. Special fee.

RUSS 595 - Russian Practicum  
**Credits:** 2.00  
Participants earn credit for approved, uncompensated, pre-professional activities and special projects, including K-12 outreach, assisting in undergraduate courses, work with professional organizations, businesses, social services, non-profits, NGOs or educational organizations in a Russian context and with on-site supervision. Writing assignments are required and vary depending upon the project. Enrollment limited to sophomores, juniors and seniors who are Russian majors and have a B or above average in Russian language courses. Cr/F.

RUSS 601 - Russian Conversation and Phonetics  
**Credits:** 4.00  
Practical application of fundamental phonetic theory of spoken Russian. Designed to increase fluency and accuracy in conversation. Prereq: RUSS 504 with a grade of C or better; permission. Special fee.

RUSS 631 - Advanced Russian Conversation and Composition  
**Credits:** 4.00  
Advanced spoken and written Russian designed to include all four language skills (speaking, reading, writing, listening.) Readings on contemporary cultural topics and vocabulary building. Composition and conversation based on Russian-language media and literature. Special fee.

RUSS 632 - Advanced Russian Conversation and Composition  
**Credits:** 4.00  
Advanced spoken and written Russian designed to include all four language skills (speaking, reading, writing, listening.) Readings on contemporary cultural topics and vocabulary building. Composition and conversation based on Russian-language media and literature. Special fee.

RUSS 685 - Study Abroad  
**Credits:** 16.00  
Studies at a Russian institution of higher learning. Interested students should consult with a Russian advisor. Prereq: primarily for juniors and seniors who have completed RUSS 632 or equivalent with a grade of B (3.00) or better. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.)

RUSS 686 - Study Abroad  
**Credits:** 4.00 to 16.00  
Studies at a Russian institution of higher learning. Interested students should consult with a Russian advisor. Prereq: primarily for juniors and seniors who have completed RUSS 632 or equivalent with a grade of B (3.00) or better. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.)

RUSS 691 - Readings in Russian Literature  
**Credits:** 1.00 to 4.00  
Linguistic and stylistic characteristics of works of important authors of the 19th and 20th centuries.
Readings, lectures, and papers entirely in Russian. Special fee. Writing intensive.

RUSS #693 - Myths, Visions and Issues in Russian Literature and Society  
**Credits:** 4.00  
Same as RUSS 593, except that in addition majors are required to do selected readings in Russian and/or conduct research assignments in English on a specified topic. Final project required. Writing intensive option. Special fee.

RUSS 721 - Topics in Contemporary Russian Literature: From Chekhov to Post-Modernism  
**Credits:** 4.00  
Reading, discussion, and close analysis of works of prose fiction and/or poetry from post-19th-century Russian literature within various contexts (literary-historical, socio-political, cultural, artistic, etc.) of the given period. All readings, written assignments, and class discussion in Russian. Prereq: RUSS 691 or equivalent or by permission. Special fee. Writing intensive.

RUSS 725 - Topics in Russian Culture and Society  
**Credits:** 4.00  
Historical, geographical, social, political, intellectual and artistic developments in Russia that have influenced contemporary Russian society and culture. Readings, class discussions, and films. Conducted entirely in Russian. Special fee. Writing intensive.

RUSS 725M - Topics in Russian Culture and Society in Moscow  
**Credits:** 4.00  
Historical, social, political, intellectual and artistic developments in Russia that have influenced contemporary Russian society and culture. Designed to give a deeper introspection into Modern Russian and its society, and a firsthand dialogue with the most significant sites in Russian civilization. Through pre-departure readings and on location, each cultural and historical topic is taught on site during fieldtrips and after field trip discussions. Readings, class discussions and films. Conducted entirely in Russian. A focus topic is explored on location with pre and post program research. Special fee. Prereq: RUSS 504 or equivalent.

RUSS 733 - History of Slavic Languages and Culture  
**Credits:** 4.00  
A survey of the history of the Russian language in a historical and cultural context. Overview of the changes in sounds, structure and vocabulary from Proto-Indo-European through Old Church Slavic, Old Russian to contemporary Russian. Readings and discussions of historical events, culture and civilization parallel the chronology of the studied linguistic period. Special fee.

RUSS 790 - Advanced Language and Style  
**Credits:** 4.00  
For students who have a strong, active control of grammar. The most difficult problems of Russian grammar and syntax in poetry and prose. Develops confidence in expression both in everyday situations and in abstract concepts (emphasis on the latter). Prereq: grade of C or better in last Russian language course taken. Special fee. Barring duplication of material, may be repeated for a maximum of 8 credits. Writing intensive.

RUSS 795 - Independent Study  
**Credits:** 1.00 to 4.00  
Open to highly qualified juniors and seniors. To be elected only with permission of the Russian program coordinator and the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.
RUSS 796 - Independent Study
Credits: 1.00 to 4.00
Open to highly qualified juniors and seniors. To be elected only with permission of the Russian program coordinator and the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

RUSS 797 - Special Studies in Russian Language, Literature, and Culture
Credits: 2.00 or 4.00
Selected topics in language, literature, and culture. Barring duplication of subject, may be repeated for credit. Special fee. Writing intensive.

RUSS 798 - Special Studies in Russian Language, Literature, and Culture
Credits: 2.00 or 4.00
Selected topics in language, literature, and culture. Barring duplication of subject, may be repeated for credit. Special fee. Writing intensive.
ASL/English Interpreting

**INTR 430 - Introduction to Interpretation**  
**Credits:** 4.00  
A survey of traditional and contemporary perspectives on interpretation and interpreters; introduces the cognitive processes involved in interpretation and factors that influence those processes. Several models of interpretation explored. Particular attention given to interpretation as an intercultural, as well as inter-lingual, process. Students engage in a research project related to course content.

**INTR 438 - A Socio-cultural Perspective on the Deaf Community**  
**Credits:** 4.00  
Introduction to the deaf community and deaf culture. Discussion of similarities to, and differences from, mainstream hearing culture. Supplemental videotapes focus on aspects of culture including deaf education, autobiographical sketches, deaf norms and values, and deaf literature and folklore. Theoretical issues of culture and linguistics applied to deaf culture, American Sign Language, and the variety of cultural perspectives of the deaf community. Students engage in a research project related to course content. Pre-coreq: ENGL 401. Writing intensive.

**INTR 439 - Ethics and Professional Standards for Interpreters**  
**Credits:** 4.00  
Seminar course using readings, theory, and discussion of hypothetical situations and role plays to explore ethical standards and dilemmas in ASL-English interpretation. Covers personal and professional values, ethics, and morality; professional principles; power, responsibility, and group dynamics; the interpreter's role; cross-cultural issues; and the decision-making process. Students engage in a research project related to course content. Prereq: INTR 430. Writing intensive.

**INTR 539 - Comparative Linguistic Analysis for Interpreters**  
**Credits:** 4.00  
Examines the basic similarities and differences between the linguistic structure of American Sign Language and spoken English; focuses on each language's communication functions and how they serve these functions. Students engage in a research project related to course content. Prereq: ENGL 505; Pre-or Coreq: ASL 532.

**INTR 540 - Translation**  
**Credits:** 4.00  
Introduction to theory and practice of translation. Students analyze pre-prepared interpretations and translations to discover how expert interpreters and translators construct meaning in the alternate language. Particular attention paid to the form/meaning distinction. Students prepare translations from texts of their choosing. Pre- or Coreq: ASL 532. Lab.

**INTR 599 - Special Topics**  
**Credits:** 1.00 to 4.00  
Occasional offerings dependent on availability and interest of faculty. Barring duplication of subject, may be repeated up to a maximum of 8 credits.

**INTR 630 - Consecutive Interpretation I**  
**Credits:** 4.00  
Introduction to the theory and practice of consecutive interpretation. Analyzes and integrates specific subtasks of the interpreting process culminating in the performance of prepared and spontaneous
consecutive interpretations. Students work with a variety of texts, language models, and settings with the goal of engaging in the consecutive interpreting process by chunking information and constructing meaning in the alternate language. Prereq: INTR 540. Lab.

INTR 636 - Consecutive Interpretation II
Credits: 4.00
Continues and advances the theory and practice of consecutive interpretation and introduces simultaneous interpretation. The focus of this course is on interactive discourse (dialogues). Particular attention is given to processes involved in the transition from consecutive to simultaneous interpreting, and determining when to use each mode of interpretation. The advantages and limitations of both types of interpreting are compared. Students apply theoretical information to the process of simultaneous interpreting. Students also engage in a research project related to course content. Prereq: INTR 630. Lab.

INTR 732 - Simultaneous Interpretation
Credits: 4.00
Focuses on simultaneous interpretation of expository discourse (presentations). Students further explore and apply theory learned in INTR 636 to a variety of texts, language models, and settings. Students engage in a research project related to course content. Prereq: INTR 636. Lab. Writing intensive.

INTR 734 - Field Experience and Seminar I
Credits: 4.00
Gives students the opportunity to observe professional working interpreters, with some direct interpreting experience as deemed appropriate. Students integrate knowledge, theoretical understanding, and skills acquired in the interpreting program by working closely with on-site supervisors (interpreters) in addition to attending a bi-weekly seminar with the UNHM field experience coordinator. Pre- or Coreq: INTR 732.

INTR 735 - Field Experience and Seminar II
Credits: 4.00
Gives students the opportunity to gain supervised interpreting experience. Students engage in actual interpreting assignments and receive support and mentorship from a professional interpreter, enabling them to integrate knowledge, theoretical understanding, and skills acquired in the interpreting program. Students work closely with on-site supervisors (interpreters) in addition to attending a biweekly seminar with the UNHM field coordinator. Prereq: INTR 734.

INTR 798 - Special Topics
Credits: 4.00
Selected topics that vary by semester. Possible course topics are interpreting in educational settings, working with specific populations, or other topics of importance to interpretation. Descriptions available in departmental office during preregistration. Students engage in a research project related to course credit. Prereq: INTR 636; permission. May be repeated for credit if topics differ.
Social Work

SW 424 - Introduction to Social Work
Credits: 4.00
Introduces the learner to the field of social work with emphasis on the "person-in-environment" and attention to a range of practice approaches to understanding and assisting of the human condition. An overview of the history, values, and ethics of the profession. Includes various fields of practice in which social workers are employed. Special fee.

SW 440A - Honors/Healthy Communities: Personal Accountability and Social Change
Credits: 4.00
This course utilizes theory and concepts from biology, sociology, psychology, political science, history, urban planning as well as social work to examine and promote healthy communities. Students will develop an interdisciplinary knowledge of community health and a value-based understanding of social advocacy in the community context. Important course topics include: social-economic-environmental justice, sustainable communities, community organization, community capital, and empowerment. Prereq: permission.
Co-requisites:

SW 444 - You've Got Your Troubles, I've Got Mine
Credits: 4.00
A seminar for traditional first- or second-year students. Examines the many personal losses typical for students leaving home for the first time. Guest speakers from various disciplines (e.g., social work, therapeutic recreation, nursing, family studies). The various ways one may find and give informal support to others dealing with loss are explored. In addition, the personal responses allowing one to better cope with adversity and ways of expressing grief are explored. Group work brings the class together as an informal support network. Students exchange ideas in techniques used to deal with personal loss and develop an informal support network to use after the course has ended.

Credits: 4.00
An overview of the history and current status of social welfare policy in the United States. Considers the origins, development, and analysis of significant policies, values, attitudes and other issues related to the social welfare system and the delivery of service. Focuses on policy analysis from a social and economic justice perspective.

SW 550 - Human Behavior and Social Environment I
Credits: 4.00
Introduces human behavior and development as it influences and is influenced by multiple factors in the social environment, including individual genetic and biological composition, race, gender, age, socioeconomic status, ethnicity, geographic location, physical appearance, and ability. How these factors operate throughout the life cycle. Provides a knowledge base and perspective to understand a client's behavior, attitude, and values in relation to the attitudes and values of the social work professional and the larger society.

SW 551 - Human Behavior and Social Environment II
Credits: 4.00
Agents of socialization that most significantly affect family, group, and organizational development and behavior within an ecosystems framework. Particular attention is paid to the influence of class, gender,
race, ethnicity, religion, age, sexual orientation and other aspects of diversity on development and behavior of larger systems.

**SW 601 - Research Methods in Social Work**  
**Credits:** 4.00  
Introduces students to practitioner-researcher role in social work. Critical evaluation of, and introduction to research including project design, survey and evaluative methodologies. Introduction to statistics used in research process. Each student completes an individual research project. Cannot be taken for credit after SOC 601 or PSYC 502. Prereq: SW 424 and junior or senior standing or permission. Writing intensive.

**SW 622 - Social Work Practice: Interventions with Individuals and Families**  
**Credits:** 4.00  
Introduces methods and practice. Basic principles, values, and ethics, interviewing skills, problem assessment, and contracting of social work practice with individuals and families are studied. Skills training in lab sessions. Prereq: SW 424 or permission of instructor. Must have junior or senior status. Writing intensive.

**SW 623 - Social Work Practice: Interventions with Groups, Organizations and Communities**  
**Credits:** 4.00  
Continuation of SW 622. Delineation and study of intervention and change strategies differentiated with individuals, groups, and communities. Prereq: SW 622. Writing intensive.

**SW 625 - Social Welfare Policy in a Global Context**  
**Credits:** 4.00  
Builds on the curricular content covered in Introduction to Social Welfare Policy (SW 525). Both courses view social welfare policy as the framework from which social work services are developed and delivered. This course examines the macroeconomic context for policy analysis and advocacy and integrates policy and practice through student research and analysis of specific social problems. Policymaking is analyzed in legislative, community, organizational, and global environments emphasizing advocacy in the pursuit of social and economic justice. Prereq: SW 424, SW 525. Special fee.

**SW 640 - Social Work Field Experience I**  
**Credits:** 5.00  
Majors are placed in a social welfare setting for a minimum of 225 hours; individual arrangements with faculty coordinator. Prereq: SW 622. Special fee. (No credit toward a minor.) Cr/F.  
**Co-requisites:** SW 640A

**SW 640A - Social Work Field Experience I: Seminar**  
**Credits:** 3.00  
This weekly seminar, held concurrently with Social Welfare Experience I, integrates the field experience with social work theory and concepts learned throughout the curriculum by class discussion, exercises, readings and written assignments. Seminar I provides an opportunity for orientation to field, an overview of field requirements, review of the Code of Ethics, and use of small group discussion for problem solving. Students learn to use supervision effectively, to participate in the helping process, and to manage their own stress. Students learn to assess the impact of policy on the client system, agency and worker and to use research to inform practice. Prereq: SW 622.  
**Co-requisites:** SW 640

**SW 641 - Social Work Field Experience II**  
**Credits:** 5.00  
A continuation of SW 640 with a minimum of 225 hours. Prereq: SW 640. (No credit toward a minor.) Cr/F.  
**Co-requisites:** SW 641A
SW 641A - Social Work Field Experience II: Seminar
Credits: 3.00
This is a continuation of Social Welfare Field Experience I: SW 640A and builds upon the concepts presented in the student's first field practice seminar. This seminar meets weekly for one and a half hours and is held concurrently with the field placement. It is designed to integrate the field experience with social work concepts through class discussion, reading and written assignments. Topics include but are not limited to, understanding and using agency structure to enhance client interactions, preparing client assessment and other documents, enhancing the client-worker therapeutic interaction, effective use of supervision, effective use of self in practice, prevention of burn-out, termination with clients and with agency staff, and values and ethics. Prereq: SW 640/640A.
Co-requisites: SW 641

SW 650 - Exploring Social Justice and Cultural Competency Using an Experimental Learning Approach
Credits: 4.00
This course explores the use of experiential activities to address social justice issues and cultural competency. Students will experience an interactive activity-based approach to build self-awareness and techniques for working with specific client groups. The course focuses on methods and activities using metaphoric development and facilitation to promote dialogue and reflection. (can be used to satisfy SW Distribution Requirement).

SW 697 - Special Topics in Social Welfare
Credits: 4.00
Seminar for advanced majors. Topics may include: Alcohol and Alcoholism, Drugs and Chemical Dependency, Income Maintenance, Health Care, Child Welfare, Aging, Mental Health, or Developmental Disabilities, or study travel experiences. May be repeated for different topics. Prereq: permission. Special fee for course trip.

SW 701 - Women and Aging
Credits: 4.00
Analysis of the major theories about social conditioning of aging women and its effects in contemporary society. Human service response. Psychosocial, biological, legal, and economic implications. Prereq: junior, senior status or permission.

SW 705 - Child and Adolescent Risks and Resiliency: Program, Policy and Practice
Credits: 4.00
Examination of the major policy and program questions of child welfare with a focus on child care and protection, adoption and foster care, juvenile delinquency, service delivery, and concepts of treatment in public and private programs. Prereq: junior, senior status or permission.

SW 706 - Social Action in the Dominican Republic
Credits: 4.00
This course examines issues of culture, poverty, social development and social justice in the Dominican Republic through both service learning work and through preparatory and reflective class sessions and discussions. Students will examine social and economic development issues within a global framework and will explore efforts to improve conditions on this island nation. The service learning component includes working on a designated construction project and volunteering in a local elementary school. Students will also collaborate with community leaders to learn more about social, cultural and historical issues and will engage in a variety of cross-cultural activities. Students will engage with the local Haitian immigrant community, tour local schools and orphanages, and visit historical areas including the Zona Colonial of Santo Domingo. The primary part of the class will take place during March spring break. Special fee.
Co-requisites: INCO 589

**SW 711 - Understanding Mental Illness**
**Credits:** 4.00
An overview of the public mental health system focusing on people affected by severe and persistent mental illness. Reviews the current service system and its history; major mental illness, psychosocial rehabilitation, and treatment; and community support systems. Prereq: junior, senior status or permission.

**SW 712 - Understanding Developmental Disabilities**
**Credits:** 4.00
Analysis of the complex social contexts of people with developmental disabilities. Explores and questions traditional approaches and the current system. Examines family and community services and resources. Prereq: junior, senior status or permission.

**SW 713 - School Social Work**
**Credits:** 4.00
The course examines the school as a social institution that serves to educate and socialize children into US society and the role of the social worker in the school setting. Readings, activities, and discussions provide practical skills and theory for school social work practice. The course content addresses the history of school social work integrating social work values into a school setting, systemic needs within school settings, the importance of networking and professional collaboration, and working with diverse and at-risk youth and their families. Students also examine the role of school social workers in helping students, schools and families adjust to and cope with trauma, special education needs, and related topics.

**SW 714 - Drugs and Alcohol: Use, Misuse and Addiction**
**Credits:** 4.00
This course examines a) historical, cultural, social aspects of alcohol, b) impact of alcohol on body and behavior, c) progression of drinking and the treatment and prevention of alcoholism, d) impact of addiction on families. Prereq: junior, senior status or permission.

**SW 715 - Practice with Gay, Lesbian, Bisexual, and Transgender People**
**Credits:** 4.00
Sexual minorities constitute the minority group social workers most consistently encounter wherever they work. Addresses practice with gay, lesbian, and bisexual people on both professional and personal levels for the social worker. The readings include theoretical, experimental, clinical, counseling, and personal perspectives, as well as providing an introduction to the gay/lesbian/bisexual subculture. A unit on gender minorities is included. Students are also required to explore and examine their own attitudes and assumptions about gays, lesbians, bisexuals, and gender minorities. Prereq: junior, senior status or permission. (Also offered as SW 815.)

**SW 785 - Study Abroad: Comparative Social Welfare Systems**
**Credits:** 4.00
Students examine the historical development of social welfare in another country including an analysis of the underlying values and attitudes that dictate practice and policy decisions. Includes agency site visits, lectures, themed readings, and visits to important cultural sites. Prereq: SW 424 and SW 525; junior, senior status or permission. Special fee.

Co-requisites: INCO 589

**SW 795 - Independent Study in Social Service**
**Credits:** 1.00 to 6.00
Independent work under department faculty guidance. Enrollment by permission only through arrangement with specific faculty. May be repeated with a different focus to maximum of 8 credits. Prereq: 12 hours
SW 796 - Independent Study: Teaching Assistantship  
**Credits: 1.00 to 6.00**  
Participating students provide leadership and supervision for small groups of social work majors in social work practice simulations. Student teaching assistants work closely with, and under the direction of, department faculty. May be repeated to a maximum of 8 credits. Prereq: senior status; 16 hours in social work; and permission. Cr/F

SW 797 - Special Topics in Social Welfare  
**Credits: 4.00**  
Seminar for advanced majors cross-listed with SW 897. Topics may include: alcohol and alcoholism, drugs and chemical dependency, income maintenance, health care, child welfare, aging, mental health, or developmental disabilities or study travel experiences. May be repeated for different topics. Prereq: permission.

SW 797H - Honors Thesis  
**Credits: 2.00 to 4.00**  
Working with an assigned faculty adviser, students propose and develop a thesis project for both oral and written presentation before the end of the semester. Prereq for 797H: admission to the SW honors program; senior status, 16 hours in social work and permission.

SW 798H - Honors Thesis  
**Credits: 2.00 to 4.00**  
Working with an assigned faculty adviser, students propose and develop a thesis project for both oral and written presentation before the end of the semester. Prereq: satisfactory completion of 797H; senior status, 16 hours in social work and permission. 6 credit maximum for both semesters.
Sociology

SOC 400 - Introductory Sociology
Credits: 4.00
Overview of sociology as the scientific study of human social and cultural relationships. Social theory, methods and techniques of research, and current research findings on a wide range of social issues.

SOC 400H - Honors/Introductory Sociology
Credits: 4.00
Overview of sociology as the scientific study of human social and cultural relationships. Social theory, methods and techniques of research, and current research findings on a wide range of social issues. Writing intensive.

SOC 400W - Introductory Sociology
Credits: 4.00
Overview of sociology as the scientific study of human social and cultural relationships. Social theory, methods and techniques of research, and current research findings on a wide range of social issues. Writing intensive.

SOC 444A - Society in the Arctic
Credits: 4.00
Introduction to societies of the far North today, from Alaska and Canada through Greenland, Iceland, northern Scandinavia and Russia. Reviews interconnected issues of social change, environment, sustainable development, local control, and modernization vs. traditions. Arctic dilemmas highlight some basic questions facing all societies in the 21st century. Writing intensive.

SOC 502 - Statistics
Credits: 4.00
Elementary applied statistical techniques; tables, graphs, cross-clarifications; central tendency and dispersion; correlation and linear regression; confidence intervals and hypothesis testing. Other statistical classes including ADM 430, BIOL 528, ADMN 420, EREC 525, HHS 540, MATH 439, MATH 539, OHIL 412, MATH 644, PSYC 402 cannot be used to satisfy the major requirement. This is, all majors must take SOC 502 even if they have taken an introductory statistics course in another department. A student can, however, petition to receive eight credits for two introductory statistics courses, if and only if, SOC 502 is taken after the student became a sociology major and took their first statistics course prior to declaring SOC as their major. Majors cannot receive credit for statistics courses taken after they have declared SOC.

SOC 502H - Honors/Statistics
Credits: 4.00
Elementary applied statistical techniques; tables, graphs, cross-classifications; central tendency and dispersion; correlation and linear regression; confidence intervals and hypothesis testing. No credit for students who have completed ADM 430, BIOL 528, ADMN 420, EREC 525, HHS 540, MATH 439, MATH 539, MATH 644, PSYC 402, but petitions for acceptance of such courses to fulfill the sociology major requirement in statistics will be entertained.

SOC 515 - Introductory Criminology
Credits: 4.00
Introduces the scientific study of crime. Reviews the different forms of criminal behavior, theories of crime, and strategies of crime control.
SOC 520 - Family  
**Credits:** 4.00  
Sociological study of marriage and the family in American society. Following a life-cycle approach, topics include gender roles, communication and conflict, dating and mate selection, work and family economics, the transition to parenthood, middle- and late-life family, divorce, and remarriage.

SOC 525 - Juvenile Crime and Delinquency  
**Credits:** 4.00  
Crime, violence, and the criminal justice system as it affects children and youth in the role of both perpetrators and victims.

SOC 535 - Homicide  
**Credits:** 4.00  
Introduces to theory and research in homicide studies, including a review of the origins of and social responses to homicide.

SOC 540 - Contemporary Social Problems  
**Credits:** 4.00  
This course introduces students to the study of major social problems in contemporary society, including poverty, discrimination, inequality, crime, violence, and environmental degradation. Explores how and why people come to view certain social conditions as problematic. Also explores the consequences of and possible solutions to contemporary social problems. This course fulfills the requirement in the Social Science category of UNH's Discovery Program.

SOC 545 - Sexualized Violence  
**Credits:** 4.00  
Students examine the spectrum of sexualized violence in contemporary society. Topics include theoretical and methodological issues inherent in researching gender-based violence in the U.S. and in Europe. Students study sexualized violence in historical context, with particular attention to war, conflict, and military settings as well as examples of the impact of sexualized violence in everyday life. Finally, we explore how the pornography industry normalizes sexualized violence.

SOC 565 - Environment and Society  
**Credits:** 4.00  
Environmental and Society focuses on the complex interactions between human communities and the natural world. The course considers the interconnected ways that social systems, the built environment, and related technologies produce environmental changes, and in turn how shifts in resources, air, water quality, climate, biodiversity, and ecosystems force societies to adapt. This course fulfills in the Environment, Technology, and Society category of UNH's Discovery Program.

SOC 570 - Sexual Behavior  
**Credits:** 4.00  
This course approaches sexuality as a social phenomenon. We examine variability in sexual practices, sexual identities, and sexual behaviors throughout history, across cultures, and throughout the life course of individuals. Particularly, we focus on the social control of sexuality and the extent to which sexualities are socially constructed. We consider the media and other cultural influences on a diverse range of sexual experiences and take a straightforward, non-stigmatizing approach to tackling controversial issues.

SOC 595 - Independent Reading and Research  
**Credits:** 2.00 to 8.00  
Independent study of advanced or specialized topics in sociology requiring extensive reading and writing. Before registering, students must develop a project in consultation with a faculty supervisor and submit a
proposal to the undergraduate committee. Prereq: 12 sociology credits and permission.

SOC 597 - Special Topics
Credits: 4.00
Occasional or experimental offerings. May be repeated for different topics.

SOC 599 - Sociological Analysis
Credits: 4.00
Basic skills essential to sociological study, including: development of critical reading skills; evaluation of theory construction and evidence; analysis of classic and contemporary works, research, writing, and use of library resources. To be taken by sociology majors no later than the junior year. Writing intensive.

SOC 601 - Methods of Social Research
Credits: 4.00
Overview of major research methods: survey analysis, personal interview, participant observation, content analysis, and experimental design. Each student designs and completes a research project. Prereq: SOC 502 or equivalent and SOC 599; juniors and seniors only. Writing intensive.

SOC 611 - Sociological Theory
Credits: 4.00
Analysis of the origins and development of sociological theory. Includes the classical works of Marx, Weber, and Durkheim and their connections to the major strands of present day research. Writing intensive.

SOC 620 - Drugs and Society
Credits: 4.00
Provides students with an overview of drug using behavior as viewed from a sociological perspective. Highlights historical and current drug use trends, examines the social correlates of drug use, considers societal responses to drug use including treatment, prevention, and policy, and engages students in key controversial debates confronting U.S. citizens and policymakers. Provides a foundation for understanding of drugs and society.

SOC 625 - Mental Health and Society
Credits: 4.00
This course introduces students to sociological approaches for studying and understanding mental health and illness in society. With an Emphasis on the importance of social stress, we examine the distribution of mental illness in the United States and identify the factors that help to explain mental health differences across social roles and statuses.

SOC 630 - Sociology of Gender
Credits: 4.00
Gender examined as (1) socially constructed differences between the sexes, and (2) a system of social relations, which are part of the fabric of our social institutions. Topics include gender socialization, gender and education, gender and employment, and work-family intersections. Attention paid to the issue of gender inequalities and to the intersection of class, culture, race-ethnicity, age, and sexual orientation with gendered experience and gendered institutions. Focuses primarily on the contemporary United States.

SOC 635 - Medical Sociology
Credits: 4.00
Health and Illness are considered as a sociocultural phenomenon. Meanings are attached to health and illness as they are influenced by our social values and our cultural beliefs, which to a large degree are influenced by available medical technologies. People’s experiences of health and illness are shaped by a
range of social factors (e.g., race, class, gender) and follow clear patterns of social inequality. A critical approach is taken to examine topics such as the social determinants of health, illness and healthcare; the social construction of illness; the medicalization of society; and the social organization of health care.

**SOC 635W - Medical Sociology**  
**Credits:** 4.00  
Health and Illness are considered as a sociocultural phenomenon. Meanings are attached to health and illness as they are influenced by our social values and our cultural beliefs, which to a large degree are influenced by available medical technologies. People's experiences of health and illness are shaped by a range of social factors (e.g., race, class, gender) and follow clear patterns of social inequality. A critical approach is taken to examine topics such as the social determinants of health, illness and healthcare; the social construction of illness; the medicalization of society; and the social organization of health care. Writing intensive.

**SOC 640 - Religion**  
**Credits:** 4.00  
The continuing significance of religion in society is a central area of sociological inquiry. Examines the historical and cultural explanations for the persistence of religion and apply diverse sociological perspectives to explaining the personal, institutional, and cultural relevance of religion with a focus on contemporary American society. Topics studied include religious authority, identity, violence, and the impact of religion on various domains of social life including gender relations, family, politics, and economy. Writing intensive.

**SOC 645 - Class, Status and Power**  
**Credits:** 4.00  
Focuses on the major dimensions of inequality, including class, gender, and race, by exploring the distribution of economic, political, and social resources within contemporary societies.

**SOC 655 - Sociology of Law and Justice**  
**Credits:** 4.00  
Systematic study of how social factors, such as inequality, differentiation, culture, and organization, influence the justice process. Historical and cross-cultural focus on the behavior of the police, courts, and other legal institutions. Prereq: SOC 515 or permission; juniors and seniors only.

**SOC 656 - Terrorism**  
**Credits:** 4.00  
This course provides a global assessment of the definition and nature of terrorism, trends in terrorism over the course of the past several decades, perspectives concerning the degree to which cultural, economic, and political conflict contribute to terrorism, and alternative means for dealing with terrorism in the age of globalization.

**SOC 660 - Urban Sociology**  
**Credits:** 4.00  
Focuses on urban communities, urbanization, and urban social issues. Covers the historical development of cities; the differences between urban, suburban, and rural communities; urban life styles; and the significance of poverty and race for understanding contemporary American cities. Emphasizes American cities, with some consideration to world patterns of urbanization and the growth, development, and role of global cities. Writing intensive.

**SOC 665 - Environmental Sociology**  
**Credits:** 4.00  
Interactions between society and the physical environment, including environmental constraints, population...
and economic growth, social impacts of resource development, large-scale environmental change, and the social bases of environmental attitudes, behavior, and politics. Writing intensive.

**SOC #680W - Sociology of the Holocaust**

**Credits:** 4.00  
Examines the origins, realities, and consequences of the Holocaust as an all-embracing European phenomenon. Topics include the genocidal policies and procedures of the Nazis and Soviets with respect to indigenous populations as well as the role of collaborators. This course is normally offered only at UNH-Manchester. Writing intensive.

**SOC 685 - Work and Occupations**

**Credits:** 4.00  
Examines the changes in workplace organizations and workers' lives, the emergence of new service and financial occupations, and how globalization, technology, and the increased presence of women in the labor force are impacting work and individuals' experiences of work.

**SOC 693 - Global Social Change**

**Credits:** 4.00  
This course explores the causes and consequences of social change in societies around the world. Case studies of important social trends such as the diffusion of culture, international migration, health pandemics, changing status of women, environmental degradation, and promoting more equitable development enable investigation of the broad social implications of the process of globalization. Writing intensive.

**SOC #695 - Research on Family Violence in World Perspective**

**Credits:** 4.00  
The nature, frequency, causes, and consequences of family violence, including physical, verbal, material, and sexual abuse of children; of partners in dating, cohabitating, and marital relationships; and of the elderly; and also neglect of children and the elderly. Includes data analysis projects to provide experience with cross-national comparative research to test theories about social causes of family violence and the effects of family violence on society as a whole. Prereq: SOC 502 (or equivalent), SOC 601

**SOC 697 - Special Topics**

**Credits:** 4.00  
Occasional or experimental offerings. May be repeated for different topics. Writing intensive.

**SOC 699 - Senior Thesis**

**Credits:** 4.00 or 8.00  
Independent work in the library or field culminating in a written senior thesis. Recommended for, but not confined to, majors intending to pursue graduate studies. Students must arrange for supervision from two faculty members and submit a proposal to the Undergraduate Committee before registering. May be completed in one or two successive semesters during the senior year. Permission required. May be repeated up to a maximum of 8 credits.

**SOC 699H - Senior Honors Thesis**

**Credits:** 4.00 or 8.00  
Independent work in the library or field culminating in a written senior honors thesis and a formal research presentation. Recommended for, but not confined to, majors intending to pursue graduate studies. Required for students participating in the departmental honors program as part of their 16 honors credits. Students must arrange for supervision from two faculty members and submit a proposal to the Undergraduate Committee before registering. May be completed in one or two successive semesters during the senior year. Permission required. May be repeated up to a maximum of 8 credits.
**SOC 715 - Criminological Theory**  
**Credits:** 4.00  
Introduces graduate students and advanced undergraduates to the major theoretical literature in crime and delinquency. Covers both classical and contemporary theory, with empirical assessments of theories, including macro- and micro-level control, strain, and learning theories, as well as recent developments in biosocial, deterrence, labeling, and critical/feminist theories. Permission required.

**SOC 720 - Sociology of Drug Use**  
**Credits:** 4.00  
Examines licit and illicit drug use from a sociological perspective. Draws primarily from the sociology of mental health and criminology to explore a variety of drug-related topics including historical and current U.S. drug trends, dominant theoretical approaches about the initiation into, and continued use of drugs, drug-related crime, therapeutic use of drugs, prevention and treatment of drug problems, and drug-related policies. Permission required.

**SOC 725 - Social Demography**  
**Credits:** 4.00  
Social demography examines the linkages between changes in the size, composition and distribution of the population and changes in social, environmental, economic and political factors. The course examines demographic methods and the materials and the analytical techniques used by demographers to analyze population redistribution, fertility, work, marriage, migration and mortality. The policy implications of demographic change will be examined with attention to the U.S. as well as the developed and developing world. Permission required.

**SOC 730 - Communities and the Environment**  
**Credits:** 4.00  
People and the natural environments in which they live fundamentally structure communities around the globe. Economic change, expanding development, and human migration are transforming social and environmental conditions in both rural and urban settings, altering the identities of many communities as well as their relationships with the natural world. The importance of these emerging social and environmental issues has made them a focus for social science inquiry. This course exposes students to a range of sociological concepts, theories, and research approaches related to the study of communities and environmental issues. Some of the substantive themese that are covered include: population dynamics and environmental change; social capital and social networks; political economy and community development; collective action and social movements; science, technology, and environmental risks; and environmental racism and justice. The principal assignment for the course will be a research project where students investigate a community or environmental issue of their own interest. Permission required.

**SOC 733 - Gender-Based Violence: US and International Perspectives**  
**Credits:** 4.00  
Students examine the spectrum of gender-based violence occurring in the United States and Europe. Four main areas are examined: (1) Theoretical and methodological issues inherent in researching gender-based violence. (2) Different types of gender-based violence including sexual and relationship violence, harassment, pornography, and human trafficking. (3) The historical economic, and cultural contexts that facilitate gender-based violence. (4) Prevention and intervention efforts to reduce gender-based violence. Permission required.

**SOC 735 - Sociology of Community**  
**Credits:** 4.00  
This course analyzes "community" from a sociological perspective. Community is one of the fundamental concepts in the sociological literature; this course covers those aspects of the concept that are concerned
with geographic communities: neighborhoods, communities, cities, etc. It considers how American communities have changed over time and what the current characteristics are, and how these characteristics are related to the "quality of life" in the communities. Students study theoretical and empirical approaches to studying communities, particularly but not exclusively American communities. Among specific areas of community research covered are: spatial inequality and concentrated poverty; what housing research shows about the importance of community to outcomes for families and children; the impact of community on health; and community development as a strategy for community change. Permission required.

**SOC 740 - Sociology of Mental Health**  
**Credits:** 4.00  
Introduces students to different sociological approaches for studying and understanding mental health and illness. Students examine the social distribution of mental illness in the United States and the social-structural factors that help to explain mental health variations. Also addresses issues surrounding mental health treatment, systems, and policies for the mentally ill. Permission required.

**SOC 742 - Sociology and Social Policy**  
**Credits:** 4.00  
Social policy and public policy defined: description of the policy making process. The political sociology of the policy-making process; who makes policy and who influences policy, under what conditions and with what effect. Definition of social policy research and the various roles social scientists can adopt for policy-relevant work. Students are responsible for critiquing the readings and for preparing a substantial research paper. Permission required.

**SOC 745 - Race, Ethnicity, and Inequality**  
**Credits:** 4.00  
Sociological perspectives on race and ethnic relations for graduate and advanced undergraduate students. Topics include the creation of racial and ethnic identities, the nature and extent of segregation, education, employment, and wealth inequalities, and the effects of state policy. The course emphasizes both theoretical and empirical assessments. Permission required.

**SOC 773 - Childhood and Social Policy**  
**Credits:** 4.00  
Exposes students to a variety of sociological perspectives about childhood in American society. Stimulates analysis about how social institutions, like the modern family, school, economic system, justice system and communications media affect children. Assumes prior understanding of important sociological concepts, critical thinking skills and social science writing ability. Permission required. Writing intensive.

**SOC 780 - Social Conflict**  
**Credits:** 4.00  
Analysis of the social conditions associated with the major forms of conflict management in human societies: discipline, rebellion, vengeance, negotiation, mediation, law, therapy, supernaturalism, and avoidance. Permission required. Writing intensive.

**SOC 792 - Internship Independent Study**  
**Credits:** 2.00 to 8.00  
Provides upper level sociology majors with an opportunity to apply what they have learned in the classroom to the real world. This will provide the opportunity for students to work individually with a faculty member on an Internship with the option of variable credit. There is no formal class time required. Students will arrange meetings with supervising faculty to plan assigned readings, update internship progress and complete semester projects. Project ideas are developed with faculty and internship site supervisor. Permission required.
SOC 793 - Internship
Credits: 4.00
Provides upper level sociology majors with an opportunity to apply what they have learned in the classroom to the real world. Students meet weekly to discuss assigned readings, internship progress and semester project. Project ideas are developed with faculty and internship site supervisor. Permission required.

SOC 794 - Evaluation Research
Credits: 4.00
This course is designed to cover major methodological and practical issues in the field of evaluation research, including the definition and meaning of evaluation; the purposes of evaluation; the design and conduct of evaluation studies; evidence-based policy writing; and the uses of evaluation results. This is an advanced undergraduate-level and graduate-level course. The prerequisite for the course is successful coursework in methods of research and statistical analysis.

SOC 797 - Special Topics
Credits: 4.00
Occasional or experimental offerings. May be repeated for different topics. Permission required. Writing intensive.
Spanish

SPAN 401 - Elementary Spanish I
Credits: 4.00
Conducted in Spanish. For students without previous knowledge of Spanish. Aural-oral practice, fundamental speech patterns, reading and writing to achieve a firm basis for an active command of Spanish. Lab. No credit toward a major. (No credit for students who have had two or more years of Spanish in secondary school; however, any such students whose studies of Spanish have been interrupted for 5 years or more should consult the coordinator of elementary Spanish. 401-402 taken together satisfies the foreign language requirement. Special fee.

SPAN 402 - Elementary Spanish II
Credits: 4.00
Conducted in Spanish. Aural-oral practice, fundamental speech patterns, reading and writing to achieve a firm basis for an active command of Spanish. No credit toward a major. 401-402 taken together satisfies the foreign language requirement. Special fee. SPAN 401 is a prerequisite for this course. Cannot be taken separately without permission of instructor.

SPAN 403 - Review of Spanish
Credits: 4.00
Conducted in Spanish. Emphasizes aural/oral practice, reviews basic structure, reading and writing to develop active command of language. Preparation for Spanish 503. Designed for those who have had only two years of high school Spanish. Special fee. Does not satisfy the foreign language requirement. A grade of C or higher is required in the course to advance to SPAN 503.

SPAN 500 - Selected Topics in World Literature
Credits: 4.00
Topics chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, PORT 500, RUSS 500.) May be repeated for credit. Writing intensive.

SPAN 503 - Intermediate Spanish I
Credits: 4.00
Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

SPAN 503H - Honors/Intermediate Spanish I
Credits: 4.00
Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

SPAN 504 - Intermediate Spanish II
Credits: 4.00
Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

SPAN 504H - Honors/Intermediate Spanish II
Credits: 4.00
Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Satisfies the foreign language requirement.

SPAN 525 - Spanish Civilization and Culture
Credits: 4.00
Historical, geographical, and artistic expressions of Spanish civilization that have formed the character of contemporary Spanish culture. Conducted in English. Majors must take either 525 or 526, but both may not be counted for major credit. Special fee.

SPAN 526 - Latin American Civilization and Culture
Credits: 4.00
Significant historical, geographical, and artistic expressions of pre-Colombian and Latin American civilization. Conducted in English. Majors must take either 525 or 526, but both may not be counted for major credit. Special fee.

SPAN 595 - Practicum
Credits: 2.00
Practical use of Spanish language or cultural skills outside the classroom through special projects. Prereq: SPAN 504. May be repeated up to a maximum of 4 credits.

SPAN 631 - Advanced Conversation and Composition I
Credits: 4.00
Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Prereq: SPAN 504 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement.

SPAN 631H - Honors/Advanced Conversation and Composition I
Credits: 4.00
Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Prereq: SPAN 504 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement. Writing Intensive.

SPAN 632 - Advanced Conversation and Composition II
Credits: 4.00
Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Prereq: SPAN 631 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement.

SPAN 632H - Honors/Advanced Conversation and Composition II
Credits: 4.00
Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Prereq: SPAN 631 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement.

SPAN 641 - Spanish Phonetics
Credits: 4.00
Practical application of fundamental phonetic theory to spoken Spanish. Special fee. Prereq: SPAN 632 (or equivalent) or consent of instructor.

SPAN 645 - Intro to Spanish Linguistics
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>SPAN 647</td>
<td>Hispanic Cultural Studies</td>
<td>4.00</td>
<td>Contemporary approaches to the study of the cultures of Hispanic populations that examine the intersections of politics, art, religion and the forces of globalization. Prerequisites: SPAN 632 (or equivalent) or consent of instructor. Special fee.</td>
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<tr>
<td>SPAN 648</td>
<td>Readings in Current Periodicals</td>
<td>4.00</td>
<td>Advanced practice in reading, speaking, and writing, based on current events in contemporary periodicals of the Spanish-speaking world. Prerequisites: SPAN 632 (or equivalent) or consent of instructor. Special fee.</td>
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<tr>
<td>SPAN 650</td>
<td>Introduction to Critical Analysis</td>
<td>4.00</td>
<td>Methods and practice of literary criticism. Critical analysis of representative essays, fiction, poetry, and drama from Spain and Latin America. Prerequisites: SPAN 632 (or equivalent) or consent of instructor. Special fee. Writing intensive.</td>
</tr>
<tr>
<td>SPAN 651</td>
<td>Introduction to Spanish Literature and Thought</td>
<td>4.00</td>
<td>Reading and analysis of major works within the historical, cultural, and social background of the Iberian peninsula. Emphasis on works from medieval to Golden Age Spain. Prerequisites: SPAN 632 (or equivalent) or consent of instructor. Special fee. Writing intensive.</td>
</tr>
<tr>
<td>SPAN 652</td>
<td>Introduction to Spanish Literature and Thought</td>
<td>4.00</td>
<td>Reading and analysis of major works within the historical, cultural, and social background of the Iberian peninsula. Emphasis on works from 19th and 20th century Spain. Prerequisites: SPAN 632 (or equivalent) or consent of instructor. Special fee. Writing intensive.</td>
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<tr>
<td>SPAN 653</td>
<td>Introduction to Latin American Literature and Thought</td>
<td>4.00</td>
<td>Reading and analysis of major works within the historical, cultural, and social background of the New World. Emphasis on works from Colonial period and 19th century. Prerequisites: SPAN 632 (or equivalent) or consent of instructor. Special fee. Writing intensive.</td>
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<tr>
<td>SPAN 654</td>
<td>Introduction to Latin American Literature and Thought</td>
<td>4.00</td>
<td>Reading and analysis of major works within the historical, cultural, and social background of Latin America. Emphasis on works from the 20th century. Prerequisites: SPAN 632 (or equivalent) or consent of instructor. Special fee. Writing intensive.</td>
</tr>
<tr>
<td>SPAN 683</td>
<td>Summer Study in Costa Rica</td>
<td>8.00</td>
<td>Studies in San Joaquin de Flores, Costa Rica. Six week summer immersion program for undergraduate students.</td>
</tr>
</tbody>
</table>
students. Prereq: a minimum of 32 credit hours with an overall GPA of 2.5. Interested students should contact the program director. Spanish majors only. Special fee. Cr/F.

**Co-requisites:** INCO 589

**SPAN 685 - Study Abroad/Granada**

**Credits:** 16.00

Studies at a Spanish or Latin American university. Prereq: primarily for juniors and seniors who have passed SPAN 503-504 or equivalent with a grade of B (3.00) or better. Noncredit orientation meetings required during semester prior to departure. Interested students should consult with the program directors. Special fee. Cr/F. (An IA [continuous grading] grade will be assigned until official transcript is received from the foreign institution.)

**SPAN 686 - Study Abroad/Granada**

**Credits:** 20.00

Studies in Granada, Spain. Prereq: primarily for juniors and seniors who have passed SPAN 503-504 or equivalent with a grade of B (3.00) or better. Noncredit orientation meetings required during semester prior to departure. Interested students should consult with the program directors. Special fee. Cr/F. (An IA [continuous grading] grade will be assigned until official transcript is received from the foreign institution.)

**Co-requisites:** INCO 588

**SPAN 790 - Topics in Second Language Acquisition/Pedagogy/Methodology**

**Credits:** 4.00

A) Introduction to Second Language Acquisition, B) Internet Technologies and Second Language Learning. Prereq: permission of instructor. Special fee. May be taken more than once if no duplication of content.

**SPAN 795 - Independent Study**

**Credits:** 1.00 to 4.00

Guided individual study with training in bibliography and organization of materials. Topics selected by instructor and student in conference. Barring duplication of content, may be repeated for credit. Prereq: permission of of instructor. Special fee.

**SPAN 797 - Topics in Hispanic Literary and Cultural Studies**

**Credits:** 4.00


**SPAN 798 - Topics in Hispanic Linguistics and Cultural Studies**

**Credits:** 4.00

A) History of the Spanish Language, B) Study of Spanish Mood and Aspect, C) Sociolinguistics of Spanish, D) Discourse Analysis, E) Politeness and Pragmatics, F) Bilingualism and Spanish in the U.S., G) Spanish Pronouns, Agreement and Modifiers, H) Regional and Social Variation in Spanish Phonetics, I) Other. Prereq: permission of instructor. Special fee. May be taken more than once for credit if no duplication of content.
SPAN 799 - Senior Honors
Credits: 4.00
For senior Spanish majors with a minimum cumulative grade-point average of 3.40 and the same or better average in the major who want to undertake a special honors project in an area of Spanish language or literature of their choice. Prereq: permission of advisor. Special fee.
Sustainable Ag & Food Systems

SAFS 405 - Sustainable Agriculture and Food Production  
**Credits:** 4.00  
Introduces systems involved in sustainable agriculture with an emphasis on ecological and organic food production. Scientific and biological principles relating to sustainable and organic food production, and the role of sustainable agriculture within our communities. Special fee.

SAFS 410 - A Taste of the Tropics  
**Credits:** 4.00  
This course will expose students to the exciting world of tropical agriculture and the ways that people in the tropics utilize a diverse array of food crops. Our lives as consumers in the developed world are touched by tropical products every single day. Whether it's the cinnamon in your tea, the vanilla in your cookies, the black pepper on your salad, or your cup of hot coffee, you likely consume tropical crops whether you know it or not. Ever stop to wonder where these items are from and how they are produced? We will examine agriculture and food culture throughout the tropical world’s four principle areas: Latin America, Tropical Asia, Tropical Africa, and the South Pacific. Production systems ranging from large scale modern high input operations to home subsistence gardens are explored. Tropical crops are examined in five major groups: grains and legumes, starchy roots, exotic vegetables, tropical fruit, and herbs, spices, medicinal plants. Cultural uses of these crops throughout the tropical world are given special emphasis.

SAFS 502 - Agroecology  
**Credits:** 4.00  
This course introduces students to the discipline and practice of agroecology, with an emphasis on relevant ecological theory within the context of production agriculture. Students are exposed to key ecological principles from population, community, and ecosystem ecology and agronomy. Students learn about the history and consequences of modern industrial agricultural systems and the need for more sustainable management practices that consider ecological interactions.

SAFS 510 - Agriculture and Development in the Neotropics  
**Credits:** 4.00  
Course is designed as a three week immersion into tropical agriculture and Costa Rican ecology and culture. Agriculture plays a pivotal role in Costa Rica's history and in shaping current events. Production of horticultural and agronomic crops occurs on a variety of scales ranging from large export based systems, to mid-sized operations for domestic sales, and sustenance based home gardens. Examples of all systems are visited and discussions focus on their overall sustainability. Sustainability is a broad concept and requires consideration of socio-cultural, environmental, and economic factors. Agriculture and agricultural products infuse the culture as seen by large participation in farmers markets and appreciation for a wide variety of fruits and vegetables prepared in myriads of ways. An appreciation for nature also infuses the culture and is embodied by the country's extensive system of national parks and protected reserves along with the national philosophy of 'Pura Vida'. Special fee.

SAFS 600 - Field Experience  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic knowledge in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Permission required. Cr/F.
SAFS 600W - Field Experience  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic knowledge in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Permission required. Writing intensive. Cr/F.

SAFS 601 - Fruit Crop Production  
**Credits:** 4.00  
This course explores the origin, distribution, botany, and cultural practices of fruit crops. Fruit crops represent an important component of both our dietary needs and many agricultural production systems. Emphasis is given to temperate fruit crops suitable for New England growing conditions. Other topics explored include integrating fruit crops into landscapes, organic and conventional cultural practices, and post-harvesting handling. Prereq: PBIO 421 or permission.

SAFS 632 - Controlled Environment Agriculture: A Systems Approach  
**Credits:** 4.00  
This course provides a practical, species-independent approach toward understanding the control of agricultural production environmental variables from a farmer's perspective with a focus on the required system-engineering aspects. The fundamentals of controlled environments will be explored in class and lab from crop coverings to complete indoor production systems. System design approaches will be discussed using case studies to dissect a farmer's approach as a progression in designing a successful system and the means for maintaining the required environmental conditions. Prereq: PBIO 421 or SAFS 405.

SAFS 642 - Team Experience in Agroecosystems Management (TEAM - Organic)  
**Credits:** 4.00  
TEAM - Organic is a 2-semester experiential course where students are actively engaged in the operation of the COLSA/NHAES Organic Dairy Research Farm. Building on principles of agro-ecology and sustainable agriculture, students explore and practice the environmental, economic, social and production strategies needed for organic food production. Organic dairy farming methods and best practices are presented and applied. The organic food chain is addressed along with marketing and value-added strategies for organic dairy products. Instruction permission. Two semesters of SAFS 642 are required.

SAFS 679 - Food Production Field Experience I  
**Credits:** 4.00  
This is part one of a two course series to be taken during spring semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities during Part I focus on all aspects of production: propagation, crop establishment, irrigation, crop management, soil considerations, and pest and disease practices. Prereq: SAFS 405 or permission of instructor.

SAFS 680 - Food Production Field Experience II  
**Credits:** 4.00  
This is part of a two course series to be taken during fall semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities in part two focus on crop harvesting and maturity, post-harvest considerations, marketing, special event planning and execution, record keeping, and small farm business management. Prereq: SAFS 405, SAFS 679 or permission of instructor.

SAFS 689 - Greenhouse Management and Operation  
**Credits:** 4.00
Course provides introduction to greenhouse construction, design, environmental control, and current trends in the industry. Fundamentals of starting a greenhouse business including safety and labor, marketing, and post-harvest considerations also covered. Efforts towards making the greenhouse industry more sustainable are explored alongside with certification options and procedures. Crops representative of current major New England crops are grown during lab. Students learn about crop selection and practices including IPM, irrigation, and fertility management. Prereq: PBIO 421 or permission of the instructor. Lab. Special fee. (Offered alternate years). Writing intensive.

SAFS 729 - Agricultural Waste Management
Credits: 4.00
The management of agricultural wastes is crucial in the development of sustainable agricultural practices. This course covers principles of managing, handling, treating, and applying animal manures and organic byproducts from an agricultural system perspective. Topics include waste characterization, descriptions of systems and technology, utilization of wastes as resources (land application, composting electricity generation, fertilization, etc.), land application principles, preparations of waste management plans, and potential impacts to the environment. Prereq: SAFS 502 or permission of instructor.

SAFS 731 - Sustainable Landscape Design and Management
Credits: 4.00
Students examine principles and trends in sustainable sites development and apply knowledge of ecological and biological systems in the design and maintenance of residential and commercial landscapes. Understanding woody plant structure and function and plant responses to environmental factors and horticultural practices are included as an integral part of sustainable landscape establishment. Each student completes a sustainable landscape renovation plan that creates an attractive human habitat and provides ecosystem services such as biodiversity and wildlife habitat, soil and water quality protection, nutrient recycling and microclimate modification. Prereq: PBIO 421.

SAFS 733 - Advanced Topics in Sustainable Agriculture
Credits: 4.00
In this capstone course, SAFS seniors engage with their peers in critical discussion of a collection of SAFS faculty-selected seminal works (papers, books, videos, etc.) relating to agricultural and food systems sustainability across scales, local to global. The course aims to improve critical reading, discussion, presentation, and writing skills; build cohort cohesiveness; and challenge SAFS students to examine their beliefs and working assumptions about agricultural and food systems sustainability. Prereq: SAFS major, or permission.

SAFS 795 - Investigations
Credits: 1.00 to 4.00
With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required. May be repeated to a maximum of 8 credit hours.

SAFS 795W - Investigations
Credits: 1.00 to 4.00
With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required. May be repeated to a maximum of 8 credit hours. Writing intensive.

SAFS 799 - Honors Senior Thesis
Credits: 1.00 to 4.00
Independent research requiring a written proposal, thesis, and presentation of research results to an audience of faculty and/or students. Intended for students completing SAFS Honors-in-Major requirements. Contact SAFS Program coordinator prior to senior year to arrange supervision and obtain permission. Two-semester sequence; students typically register for 5 credits over two semesters. IA grade (continuous
course) given at end of first semester. Writing intensive.
Technology

TECH 400 - Introduction to CEPS Programs
Credits: 1.00
An overview of programs offered by the College of Engineering and Physical Sciences with an emphasis on skills needed to be successful academically, career opportunities and professional development. Required course of all undeclared majors in CEPS. Cr/F.

TECH 401 - Scientific Research Exploration
Credits: 2.00
This course introduces incoming freshmen to the scientific research process via a hands-on approach, which includes case studies, group work, and a two-week immersion experience under the guidance of the College of Engineering and Physical Sciences (CEPS) faculty. Course readings, discussions, and active participation in local research will facilitate the student's exploration of experimental design, hypothesis testing, data collection and analysis, interpretation of results, and effective communication of research findings. In the context of a group research project, students begin thinking like scientists, as well as strengthening their math, writing, an oral communication skills. Prereq: permission. Open to incoming freshmen only.

TECH 500 - Integrated CEPS Seminar I
Credits: 2.00
The seminar course is intended for students transferring to CEPS. The course focuses on building an interdisciplinary community among students; introducing the STEM disciplines as fields of study and professions, discussing the nature of scientific knowledge and ethics; learning how to learn, and engaging with CEPS student organizations, and with other campus academic support structures. Students are evaluated on their participation in class activities, written assignments, presentations, and posting/commenting to/on topical online blogs, which promote out-of-class discussion. Permission required. Cr/F.

TECH 501 - Integrated CEPS Seminar II
Credits: 1.00
The seminar course is intended for students transferring to CEPS. The course focuses on building an interdisciplinary community among students, advancing topics from TECH 500, and professional development via engagement in undergraduate research and career development activities. Students are required to be simultaneously involved in a research project with a faculty member of their choosing. Students are evaluated on their participation in class activities, written assignments, presentations, and posting/commenting to/on topical online blogs, which promote out-of-class discussion. Permission required. Cr/F.

TECH 564 - Fundamentals of CAD
Credits: 3.00
Fundamentals of CAD and computer-based graphics, including using CAD as a design tool to create engineering drawings. AutoCAD and Softdesk Civil software used to cover the following topics: drawing file storage and retrieval, display functions, basic drawing and editing commands, symbol libraries, plotting drawings on paper, and using parametric design features in the CAD system. Basic DOS familiarity is assumed. Prereq: civil engineering majors only. Special fee. Lab.

TECH 601 - Fundamentals Examination Review Course
Credits: 1.00
A ten-week review course for those interested in taking the fundamentals examination to be certified as an engineering-in-training (EIT). Cr/F.

**TECH 602 - Machine Shop Training**

**Credits:** 1.00  
In this course, the operation of the basic metal-cutting machine tools (e.g., engine lathe, milling machine, drill press, band saw, cut-off saw, etc.) are demonstrated. The students receive introductory training on the safe operation of these machines as well as on safe practices in the machine shop. Two small projects are completed to demonstrate basic machine shop abilities by the end of the course. Prereq: no course prerequisites, but students must successfully complete an online shop safety quiz prior to the first day of the course. Offered spring and fall semesters only. Special fee. Cr/F.

**TECH 602A - Machine Shop Training**

**Credits:** 1.00  
In this course, the operation of the basic metal-cutting machine tools (e.g., engine lathe, milling machine, drill press, band saw, cut-off saw, etc.) are demonstrated. The students receive introductory training on the safe operation of these machines as well as on safe practices in the machine shop. Two small projects are completed to demonstrate basic machine shop abilities by the end of the course. Prereq: no course prerequisites, but students must successfully complete an online shop safety quiz prior to the first day of the course. Offered January term and summer session only. Special fee. Tuition waived. Cr/F.

**TECH 685 - Budapest Program**

**Credits:** 16.00  
Enables students to pursue a semester of study at the Technical University of Budapest. For information, contact the Dean's Office, College of Engineering and Physical Sciences. Prereq: CEPS students only. Special fee. Cr/F.  
**Co-requisites:** INCO 588

**TECH 696 - Independent Study**

**Credits:** 1.00 to 4.00  
Open to all qualified students pursuing studies that do not fall within existing departmental areas. Special fee when the topic is chemistry for engineers.

**TECH 697 - CEPS Industrial Experience**

**Credits:** 1.00  
Students in the CEPS Industrial Experience must register for TECH 697 during each semester (fall and/or spring) in which they are participating in their industrial work experience. Student in the minor must get permission from the minor advisor in order to register for this course.

**TECH 750 - Intellectual Asset Management for Engineers and Scientists**

**Credits:** 4.00  
This course provides an introduction to the most important topic in the 21 century--intellectual assests. Students will receive an overview in practical, real-world aspects of managing intellectual asssets (copyright, patents, trademarks, trade secrets, etc.). Students taking this course will be exposed to lectures, guest prensentations, and case studies aimed at increasing their understansing of intellectual property strategies and related legal issues; technology assessment; technology valuation; licensing issues, strategies and negotiation techniques; business planning and start-up company development; and strategies for attracting investment for new ideas. The instructors and guest speakers for the course are involved in managing, protecting, investing in, or commercializing intellectual property asssetsin real world settings such as university technology transfer offices, patent law firms, venture capital firms, start-up companies, and related settings.
TECH 797 - Undergraduate Ocean Research Project

Credits: 2.00

Students work as members of interdisciplinary project teams on contemporary ocean-related problems under the guidance of a faculty adviser. Student team defines problem, prepares a budget, conducts literature surveys, engages in dialogue with experts in the community, deals with vendors, designs, and builds a working engineering model, gathers analyzes scientific data or conducts a comprehensive study, makes interim reports, and defends the results before a jury of experts. Prereq: normally senior standing and permission of the program director. A yearlong effort: 2 credits each semester, 4 credits total, an IA (continuous course) grade given at the end of the first semester. Writing intensive.
Theatre & Dance

THDA 435 - Introduction to Theatre
Credits: 4.00
Introduces all aspects of theatrical production: play writing, acting, directing, design, technical theatre and construction, and theatre management. Cultural and social context of theatre in our time and through the ages. Introduces major classical and modern types of theatre. Selected plays are read and discussed, and attendance at theatrical production is required. Special fee.

THDA 436 - History of Theatre I
Credits: 4.00
The history of theatre and its drama is introduced through close study of the world's greatest plays from the Greeks through the end of the 17th century -- How these plays were performed then, how they are performed now, their political, social, and cultural urgencies.

THDA 436H - Honors/History of Theatre I
Credits: 4.00
The history of theatre and its drama is introduced through close study of the world's greatest plays from the Greeks through the end of the 17th century -- How these plays were performed then, how they are performed now, their political, social, and cultural urgencies. Writing intensive.

THDA 438 - History of Theatre II
Credits: 4.00
The history of theatre and its drama is introduced through close study of the world's greatest plays of the 19th, 20th, and 21st centuries -- How these plays were performed then, how they are performed now, their political, social and cultural urgencies.

THDA 438H - Honors/History of Theatre II
Credits: 4.00
The history of theatre and its drama is introduced through close study of the world's greatest plays of the 19th, 20th, and 21st centuries -- How these plays were performed then, how they are performed now, their political, social and cultural urgencies. Writing intensive.

THDA 439 - In Bed with the Bard: Shakespearean Seduction from Romeo and Juliet to Leonardo and Claire
Credits: 4.00
Introduces the imaginative process by which actors and directors bring Shakespeare's plays to life on the stage. Detailed study of eight plays.

THDA 440A - Honors/Theatre and Social Justice
Credits: 4.00
This course that will examine to what degree dramatic literature and theatre art has effected socio-political change in the past, and in the present, through an in-depth exploration of texts, artistic methods and theatrical techniques. Students will create theatrical art related to various sociopolitical issues. Absolutely no experience in theatre is necessary, as this course is built around the premise that we all have the ability to create art and affect politics and society.
Co-requisites:

THDA 441 - Exploring Musical Theatre
Credits: 4.00
This is an introductory course designed to enhance the student's enjoyment and understanding of musical theatre. Course content and internet exploration as well as play attendance are designed to acquaint students with and nurture an appreciation for musical theatre. This course is intended for introductory students of all majors who are interested in studying musical theatre elements, styles, and significance.

THDA 442 - Introduction to the Art of Acting
Credits: 4.00
Designed for non-THDA major students interested in the art of acting. Students broaden and deepen their own creativity, gain a deeper understanding of human behavior and interaction, and strengthen analytical skills through class work and projects. Focuses on the basic skills of acting: the ability to effectively communicate, to gain access to the full spectrum of human emotions, and increase spontaneity. Important innovators and theorists in the field of theatre and acting are covered, such as Sanford Meisner, Constantine Stanislavski, Bertolt Brecht, Jerzy Grotowsky, Agusto Boal, and Jacques Lacoq. Additional topics include contemporary plays and playwrights, an historical perspective of the art of acting, and the current state of live theatrical performance. Theatre majors not allowed.

THDA 444A - What's Old Becomes New: Threading Theatrical Themes into Societal Truths
Credits: 4.00
To what degree does updating theatrical themes contribute to societal norms and relevant commentary? This course will examine how enduring dramatic ideas evolve by comparing plays that are written in reaction to or as an extension of a provocative piece, both carrying on similar themes but told in updated ways. Students also will investigate the role these adaptations play in theatre history, why they are done and whether they are justified as quality art.

THDA 444B - Famous Dancers of the 20th Century
Credits: 4.00
The purpose of this course is to provide an introduction to the dancers of the twentieth century whose contributions to the art form have made dance an important cultural necessity. This includes examining how their style of dance and unique personalities has had a major influence on our perceptions of dance and how they have had an effect on society. Writing intensive.

THDA 450 - History of Musical Theatre in America
Credits: 4.00
Study of the development of the musical and its relationship to American social history.

THDA 458 - Costume Construction
Credits: 4.00
Study and development of costuming techniques, including hand and machine sewing, pattern drafting, alterations, and fabric manipulation. Emphasis on demonstrated understanding. Special fee.

THDA 459 - Stagecraft
Credits: 4.00
Elements of play production: basic building components, tools, and materials for producing the scenery; equipment and shop layouts supporting all of the areas of the set, lighting, and costume designs; and consideration of various stage spaces and theatrical venues. Practical application on University theatre productions. Special fee. Lab.

THDA 460 - Elements of Design
Credits: 4.00
Course is designed for students who are interested in theatrical design elements including scenery, costume, lighting and sound. Class encompasses lecture, discussion, presentation and studio (work in
class) formats. Critique and discussion are essential to the creative thinking that a designer needs to have. Throughout the course, each student is expected to complete projects that incorporate the design elements they have studied.

**THDA 462 - Ballet I**  
**Credits:** 4.00  
Introductory course: technique, historical development of ballet. Students who have had several years of ballet are expected to register for THDA 562 or 662. Instructor determines appropriate level.

**THDA 463 - Theatre Dance I**  
**Credits:** 4.00  
Introductory course: techniques; improvisation; lectures on jazz, ethnic, and other theatrical dance forms. Students with prior experience are expected to register for THDA 563 or 663. Instructor determines appropriate level. Special fee.

**THDA 470 - Movement and Vocal Production**  
**Credits:** 4.00  
Expansion of the student's vocal and physical/kinesthetic awareness, utilizing basic theories and lessons of Lessac, Laban, and Alexander. Text exploration is supplemented with exercises from Berry. Permission required. Special fee.

**THDA 475 - Stage Makeup**  
**Credits:** 2.00  
Fundamentals of juvenile, old age, character, and special stage makeup techniques. Special fee.

**THDA 487 - History of Dance**  
**Credits:** 4.00  
This course will be a study of dance from prehistory to the present. Through an interactive approach students will gain methods to perceive, create and respond to the history of dance through integrated arts and technology. Activities both in and out of the classroom will aid in the understanding of dance and how it has evolved throughout history both socially and as a means of entertainment. This course will also examine how dance has influenced or collaborated with other art forms.

**THDA 500 - Musical Theatre Voice I**  
**Credits:** 1.00  
This course provides students with a foundation in healthy, relaxed, and dynamic singing of primarily musical theatre repertoire. In addition to expanding the student's knowledge of and ability to sing various styles of musical theatre repertoire, this course provides a venue to explore and develop analytical skills relating to character and script.

**THDA 520 - Creative Drama**  
**Credits:** 4.00  
Drama techniques leading to the design and execution of drama sessions with children. Includes role-playing, improvisation, and story dramatization. Lab.

**THDA 522 - Storytelling, Story Theatre, and Involvement Dramatics**  
**Credits:** 4.00  
Students actively develop storytelling techniques based on individual needs. Includes an examination of story theatre and involvement styles and the development of the ensemble. Special fee.

**THDA 531 - The London Experience: Discovery**  
**Credits:** 4.00
Learn about one of the greatest cities in the world during this 10-day trip to London. This Discovery class begins as a two-week, on-line course and then packs in a busy schedule visiting amazing sights and taking in some of the best theatre in the English speaking world. The course offers an insight into the history, politics, society and culture of London through the lens of art, architecture, music, and of course, theatre. Special fee.

**Co-requisites:** INCO 589

**THDA 532 - The London Experience**

**Credits:** 2.00  
Exploration of the culture and history of London while enhancing study of live theatre prior to active study in the country. May be repeated to a maximum of 4 credits. IA (continuous grading). Special fee.  
**Co-requisites:** INCO 589

**THDA 541 - Art and Theatre Administration**

**Credits:** 4.00  
Administration practices applied to arts, music, and theatre management. Fund raising, public relations, business and box office management, audience development and long range planning.

**THDA 546 - Costume Design for the Theatre**

**Credits:** 4.00  
How to design costumes for the theatre, not figure drawing, although drawing techniques are taught. Script analysis and research and presentational techniques for costume design explored and implemented. Special fee. Prereq: THDA 460 or permission of instructor.

**THDA 547 - Stage Properties**

**Credits:** 4.00  
Research and manufacture of period and modern stage, trim, and hand properties. Prereq: THDA 459. Special fee.

**THDA 548 - Stage Lighting Design and Execution**

**Credits:** 4.00  
Script analysis, the light plot, and instrument schedule, including cue-writing, color, instrumentation, and the mechanics of developing a functional design. Special fee.

**THDA 551 - Acting I**

**Credits:** 4.00  
Development of fundamental vocal and physical stage techniques for actors and directors through exercises, improvisation and theatre games. Special fee.

**THDA 552 - Acting II**

**Credits:** 4.00  
Focuses on strengthening the actor's ability to achieve a higher level of truth, presence, and spontaneity on stage. Building on the approach devised by Sanford Meisner, this highly intensive class creates a bridge to connect these developing skills to various forms of text. Prereq: THDA 551. Special fee.

**THDA 554 - Stage Combat**

**Credits:** 4.00  
This course actively explores stage combat techniques for unarmed combat as well as basic rapier swordplay. Students are expected to prepare hand-to-hand acting projects as well as a final rapier fight project which demonstrates proper stage combat techniques learned during the semester. Special fee.

**THDA 555 - Musical Theatre I**
Credits: 4.00
Foundations of solo musical theatre performance, including the development of the speaking and singing voice, stage movement, and character analysis explored through exercises, improvisation, theatre games, in-class performance, and written assignments. Lab. Special fee.

THDA 562 - Ballet II
Credits: 2.00
Extension of ballet I syllabus; emphasis is on technique, with additional step vocabulary. May be repeated for a maximum of 16 credits. Prereq: THDA 462 or permission.

THDA 563 - Theatre Dance II
Credits: 2.00
Technique; African-Cuban, modern, and East Indian dance; body movement through exercise and combinations involving stretch, strength, and flexibility. May be repeated for a maximum 16 credits. Prereq; THDA 463 or permission. Special fee.

THDA 564 - Compocinema
Credits: 4.00
Compocinema examines dance/movement as an interdisciplinary form that integrates the human body, digital video camera, the computer program, and site-specific and/or collaborative formats. Emphasizing conceptual and practical approaches, students (individually and in groups) will take turns developing and performing movement as well as planning, designing, shooting, editing, observing, describing, analyzing, and revising video of dance/movement as artistic expression. Prereq: THDA 442 or 462 or 463 or 551 or permission.

THDA 566 - Pointe
Credits: 2.00
Intermediate course in the art of dancing on pointe. Focus on technique involved in gaining strength and on methodology for understanding the art of the ballerina. May be repeated up to a maximum of 16 credits.

THDA 583 - Introduction to Puppetry
Credits: 4.00
Introduces the art of puppetry for general appreciation, entertainment, application in the classroom, and as a therapeutic tool. Emphasis on constructing a variety of puppets (e.g., hand, rod, shadow, and scarf) and adapting literary sources for scripts and performance. Special fee.

THDA 589 - Practicum
Credits: 1.00
The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester. Cr/F

THDA 592A - Special Topics
Credits: 1.00 to 4.00
Special topics, projects in theatre and dance. Content varies according to needs and interests of students and faculty. Course descriptions are available in department office. May be repeated for credit. Special fee.

THDA 597 - Dance Theatre Performance
Credits: 2.00
Designed for students participating in UNH Dance Theatre Company. Skill development through rehearsal and actual performance experience. May be repeated for a maximum of 16 credits.
THDA 600 - Musical Theatre Voice II  
**Credits:** 1.00  
This course is a continuation of THDA 500: Musical Theatre Voice I. Students build on the groundwork in vocal technique, analysis, and performance established in Musical Theatre Voice I and continue to explore and develop these skills.

THDA 622 - Storytelling, Story Theatre, and Involvement Dramatics  
**Credits:** 4.00  
Students actively develop storytelling techniques based on individual needs. Includes an examination of story theatre and involvement styles and the development of the ensemble. Special fee.

THDA 624 - Theatre for Young Audiences  
**Credits:** 4.00  
Introduces coaching and directing techniques for classical and contemporary acting styles in theatre for young audiences. Historical contents leads into practical exploration of actor training and coaching, production and design, choreography, and business management for theatre and for youth programs. Students develop teaching strategies for young performers and participate in a culminating project. Prereq: THDA 551 and THDA 436 or THDA 438. Special fee.

THDA 632 - Interpretation of Shakespeare in Theatre  
**Credits:** 4.00  
Increases understanding of Shakespeare's language and action, and improves ability to speak his verse and prose with clarity and verve. Students achieve insights into Shakespeare's plays through the medium of performance. Weekly oral and written assignments. Prereq: THDA 551 and THDA 552; or permission of instructor.

THDA 633 - Dance Composition  
**Credits:** 4.00  
Practical, developmental approach to process of creating dances. Prereq: THDA 561; 562; 563;/or permission. Special fee.

THDA 638 - American Theatre: 1920-1970  
**Credits:** 4.00  
A survey of American plays from O'Neill onward. Students read and analyze two plays a week. Oral, written, and theatrical assignments. Prereq: (one of the following) THDA 436, THDA 438, THDA 450 or permission of the instructor.

THDA 640 - Playwriting  
**Credits:** 4.00  
To illuminate and guide each student through the art and craft of writing for performance. This course explores the fundamental principles needed to build a realistic play that is intended to be produced upon the stage. Though the course is built around the construction of plays, the principles, writing exercises, readings, and other assignments serve as a solid base for any form of dialogue driven writing. Special fee.

THDA 640W - Playwriting  
**Credits:** 4.00  
To illuminate and guide each student through the art and craft of writing for performance. This course explores the fundamental principles needed to build a realistic play that is intended to be produced upon the stage. Though the course is built around the construction of plays, the principles, writing exercises, readings, and other assignments serve as a solid base for any form of dialogue driven writing. Special fee. Writing intensive.
THDA 641 - Stage Management  
Credits: 2.00  
Introduces to the concepts and skills needed for stage management. Stage managers perform a central role in the theatrical production, coordinating artistic and technical elements. They need a thorough understanding of the script, strong management skills, and a solid background in all aspects of the theatre. Prepares students to function as a stage manager in productions at any theatre. Prereq: (one of the following) THDA 459; 551; 597; 655; or 741. Special fee.

THDA 650 - Scene Painting for the Theatre  
Credits: 2.00  
Scene painting analyzed. Techniques and media to create a larger-than-life approach to scale, equipment for conversion, and appropriate stylistic techniques for enlargement reviewed. Employs basic painting techniques and methods of paint application, but scale conversion technique extend the training of easel painters. Prereq: THDA 459. Special fee.

THDA 651 - Rendering for the Theatre  
Credits: 2.00  
Theatrical rendering is a presentational arrangement of given items in perspective appropriate to a set or in a costume at a frozen moment during the production, indicating appropriate mood, atmosphere, and depth. For the theatre, this is generally done in watercolor, but many other media are possible and are explored. Special fee.

THDA 652 - Scene Design  
Credits: 4.00  
Scene design from script to finished design. Both aesthetic and practical viewpoints considered. Emphasis on presentational techniques: study of perspective and finished rendering. Prereq: THDA 460 or permission of instructor. Special fee.

THDA 653A - Performance Project  
Credits: 2.00  
Application of prior coursework to a formal theatre production or to an individual performance or teaching project. Substantial written work is factored into the final grade. May be repeated for up to 8 credits. Writing intensive.

THDA 653B - Performance Project/Musical Theatre  
Credits: 2.00  
Application of prior coursework to a formal theatre production or to an individual performance or teaching project related to Musical Theatre. Substantial written work is factored into the final grade. May be repeated. Special fee. Writing intensive.

THDA 654 - Scenic Arts Project  
Credits: 2.00  
Application of prior coursework to a formal theatre production or to an individual performance or teaching project. Substantial written work is factored into the final grade. May be repeated up to a maximum of 8 credits. Writing intensive.

THDA 655 - Musical Theatre Scene Study  
Credits: 4.00  
Builds on and expands the techniques learned in Acting I and Musical Theatre Voice I, with a special emphasis on partner work and scene study. Prereq: THDA 551 or permission of instructor. Special fee.

THDA 657 - Play Reading
Credits: 4.00
A high-volume reading course that introduces a breadth of dramatic literature from ancient times to the present. Reading lists vary according to interests and needs of students. Students read and analyze three plays/week.

THDA 662 - Ballet III
Credits: 2.00
Advanced-level course in technique; pointe work included. May be repeated for a maximum of 16 credits. Prereq: THDA 562 or permission.

THDA 663 - Theatre Dance III
Credits: 2.00
Extension of Theatre Dance I and II; brings students to a more advanced technical level. May be repeated for a maximum of 16 credits. Prereq: Theatre Dance II. Special fee

THDA 665 - Aerial Dance
Credits: 2.00
The study of aerial arts including two and one point trapeze and fabric. May be repeated for a maximum of 16 credits. Prereq: THDA 662 or 663. Permission required.

THDA 670 - Dialects
Credits: 4.00
Study and practice in basic dialect acquisition for performers. Prereq: THDA 470, 551. Permission required. Special fee.

THDA 683 - Advanced Puppetry
Credits: 4.00
In-depth study of the theory and practice of puppetry for the advanced student. Students develop skills in manipulation and construction of selected puppet forms and apply these skills in performance. Examines historical perspectives and the application of puppetry in the classroom and as a therapeutic tool. Prereq: THDA 583 or permission. Special fee.

THDA 684 - Special Topics
Credits: 2.00 to 4.00
Exploration of topics agreed upon by students and instructor. Topics vary. May be repeated.

THDA 691 - Internship
Credits: 2.00 to 8.00
Fieldwork with a regional or touring theatre. This advanced level internship allows the student to experience a professional theatre setting prior to graduation. Normally supervised by a qualified theatre professional, with frequent consultation with a faculty sponsor. A written report is required. May be part- or full-time with credits assigned accordingly. Permission required. Student must also register for a graded 4-credit independent study. May be repeated up to a maximum of 12 credits. Cr/F.

THDA 700 - Musical Theatre Voice III
Credits: 1.00
This course is a continuation of THDA 600: Musical Theatre Voice II. Students continue to develop their skills of vocal technique, analysis, and performance established in Musical Theatre Voice II, while focusing these skills towards their application in auditioning for, and performing in, professional theatre. This course is repeatable for up to 3 credits.

THDA 721 - Arts Integration
Credits: 4.00
This course examines the value and practical application of incorporating the arts into non-arts educational settings. From the perspective of multiple intelligences and varied learning styles, students investigate how the arts can enhance teaching methodology by developing and implementing lesson plans for a variety of non-arts subject areas. Active theatre involvement is limited; the focus is on practicing teaching methods. Special fee. Writing intensive.

THDA 727 - Methods of Teaching Theatre
Credits: 2.00 to 4.00
The capstone of the theatre education major's studies. Designed for students who are preparing to enter student teaching. Provides practical information, skills, and lesson plans that theatre teachers use as source material for the secondary classroom. Covers a wide range of teaching models. Students define and articulate a personal teaching philosophy, write comprehensive semester curricula and course syllabi, and create an extracurricular program plan and philosophy. Prereq: THDA 520. Special fee. Writing intensive.

THDA 729 - Community Oriented Drama Programs
Credits: 1.00 to 4.00
Advanced practicum in designing, developing, and producing drama programs for the school and community. Includes audience analysis and marketing skills as well as adapting spaces, soliciting volunteers, and working with a limited budget. May be repeated to a maximum of 12 credits. Special fee.

THDA 732 - Choreography
Credits: 4.00
Theoretical and practical consideration of the creative and aesthetic aspects of ballet, modern, and theatre dance. Prereq: THDA 633. Special fee.

THDA 741 - Directing
Credits: 4.00
A process oriented approach to the art of stage directing. The course begins with an in-depth focus on script analysis. Students then develop their skills as the "master storyteller" through imagination, interpretation, communication, and style. Prereq: THDA 551 and THDA 552. Special fee.

THDA 742 - Directing II
Credits: 4.00
In-depth study of the theory and practice of stage direction for the advanced student. Builds on 741, Directing. Students strengthen and expand their existing knowledge of the subject area. Exploration focuses on three areas of directorial communication: application to periods and styles, exploration of avant-garde theory, and directorial technique. Concludes with a major project mounted for public performance. Prereq: THDA 741. Special fee.

THDA 755 - Advanced Musical Theatre
Credits: 4.00
Students learn to integrate and expand on techniques in previous acting, musical theatre, and voice classes, with special emphasis given to audition techniques, repertoire expansion and specialization, and in-depth analysis of the business and personal requirements necessary to be a successful artist in the professional theatre. Prereq: THDA 551 and THDA 655, or permission of the instructor. Special fee.

THDA 758 - Acting III
Credits: 4.00
Applies the principles and techniques acquired by students in THDA 551 and THDA 552 to various genres, such as epic and absurdist, and to mediums such as television and film. Special attention is given to
characterization beyond the student's standard range and the development of the actor as a creative artist, using the techniques of such methodologists as Lacoq, Laban, and Grotowski. Prereq: THDA 551 and THDA 552. Special fee.

**THDA 759 - Acting: Period and Style**  
**Credits:** 4.00  
Techniques of style analysis and period research. For the first time in the students' undergraduate actor training, students synthesize their basic actor training with the heightened language and archetypal characterization inherent in the classical theatre of the ancient Greeks, the Commedia dell' Arte, the Renaissance, the Neoclassical period, and the Restoration period. Prereq: THDA 470, 551, 552; one semester of THDA 436 or THDA 438, or permission. Special fee.

**THDA 760 - Teacher Planning for Theatre**  
**Credits:** 4.00  
Focuses on lesson and unit planning for the areas of high school theatre history, play analysis, and play writing. Students will practice various methods of teaching these areas of drama. Prereq: THDA 436 and THDA 438. Special fee.

**THDA 786 - Dance Pedagogy**  
**Credits:** 4.00  
Methods course that focuses on the art and science of teaching the movement forms of ballet, modern, jazz and tap. Designed to prepare students who are seeking dance certification with a M.Ed. or a M.A.T., or who wish to open their own studio. Provides background into the nature of teaching, standards that make up good teaching, awareness of National/State standards, and study and practice of lesson plans in K-12 school curricula or private studios. Prereq: THDA 462 and THDA 562, or THDA 463 and THDA 563, or permission of the instructor.

**THDA 791 - Internship in Theatre and Dance**  
**Credits:** 2.00 to 8.00  
Fieldwork with a regional or touring theatre or with a theatre education program. This advanced-level internship allows the student to experience a professional theatre/theatre education setting prior to graduation. Normally supervised by a qualified theatre professional, with frequent consultation with a faculty sponsor. Written report required. May be part- or full-time with credits assigned accordingly. Permission required. May be repeated up to a maximum of 12 credits.

**THDA 795 - Independent Study**  
**Credits:** 1.00 to 8.00  
Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits.

**THDA 795W - Independent Study**  
**Credits:** 1.00 to 8.00  
Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Writing intensive.

**THDA 796 - Independent Study**  
**Credits:** 1.00 to 8.00  
Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits.
THDA 796W - Independent Study
Credits: 1.00 to 8.00
Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Writing intensive.

THDA 798 - Senior Thesis
Credits: 2.00
Supervised research leading to the presentation of a major research paper. Prereq: permission, majors only, senior standing. Writing intensive.

THDA 798H - Honors Senior Thesis
Credits: 4.00
Supervised research leading to the presentation of a major research paper; the resulting paper is defended in an oral presentation before department faculty. Required for graduation from the honors program in Theatre and Dance. Prereq: permission, majors only, and senior standing. Writing intensive.

THDA 799 - Capstone Project
Credits: 2.00 or 4.00
This required course incorporates and tests the knowledge that majors have learned over their careers in the Department of Theatre and Dance. Capstone experiences are tailored to each student through conference with their adviser in their specific Theatre and Dance track. Writing intensive.

THDA 799H - Honors/Capstone Project
Credits: 4.00
See description for THDA 799. THDa majors only. Writing intensive.
Tourism Planning & Development

TOUR 400 - Introduction to Tourism  
Credits: 4.00  
Provides an informational foundation in tourism and gives a more extensive knowledge of the tourism industry. Examines historical perspectives, tourism organization, and supply and demand of the tourism industry. Discusses the dynamic and pluralistic nature of the tourism industry.

TOUR 510 - Tourism and Global Understanding  
Credits: 4.00  
Introduces ways in which tourism can act as a vehicle to understanding foreign cultures. Responsible tourism, has the potential to help bridge cultural and psychological distances that separate people of different races, religions, and socio-economic classes. Through responsible tourism we can learn to appreciate, trust, and respect the human diversity that our world has to offer. Helps students gain an informed acquaintance with other cultures and customs, and to understand the central role of tourism in international and cross-cultural understanding. Cr/F option.

TOUR 560 - Special Topics  
Credits: 2.00 to 4.00  
A) Heritage Tourism Planning, B) Rural Tourism Development. Prereq: TOUR 400. May be repeated.

TOUR 560H - Honors/Special Topics  
Credits: 4.00  
A) Heritage Tourism Planning, B) Rural Tourism Development. Prereq: TOUR 400. May be repeated.

TOUR 615 - Tourism Planning and Development  
Credits: 4.00  
The planning and development of tourist resources and programs within a geographic region. Planning models are reviewed and analyzed. The relationship among tourists, tourist developments, and the planning of tourist attractions and services is examined. A strategic planning process is applied to the development of a regional tourism plan in New Hampshire. Prereq: TOUR 400.

TOUR 700 - Marketing Communications Research: Methodological Foundations  
Credits: 4.00  
Concepts, tools, and techniques to facilitate accurate product, service, and idea marketing communications. Specific application to tourism and economic/community development initiatives are included. Prereq: Basic statistics course or permission.

TOUR 705 - Ecotourism: Managing for the Environment  
Credits: 4.00  
Ecotourism embraces both the environment and economics. Provides a comprehensive framework for planning and managing ecotourism in order to both maximize potential benefits and minimize potential costs for people and the environment. Seminar format. Case studies used to assess the role of ecotourism in the sustainable development of natural resources. Prereq: TOUR 400, juniors or seniors only.

TOUR 767 - Social Impact Assessment  
Credits: 4.00  
Provides a cross-disciplinary perspective on the issues, problems, and methods of Social Impact Assessment (SIA). Provides analytic approach and theoretical framework for the assessment of diverse...
events, including changes in the natural environment, the local economy, or dominant technology. SIA is required of most U.S. and Canadian federal- and state-sponsored projects that come under the National Environmental Protection Act, as well as all projects funded by international donor agencies. (Juniors and seniors only.) Writing intensive.

**TOUR 792 - International Experience**

**Credits:** 1.00 to 4.00  
Travel to foreign country for study of a specific topic to be approved by the student's major adviser. Prereq: permission.  
**Co-requisites:** INCO 588

**TOUR 794 - Internship**

**Credits:** 4.00 to 12.00  
Fieldwork brings students in a full-time, 15-week (600 hours) supervised situation where they have an opportunity to achieve a synthesis, transfer, and application of the academic experience in a setting similar to that associated with professional employment. Prereq: permission. May be repeated up to a maximum of 12 credits.

**TOUR 798 - Independent Study**

**Credits:** 1.00 to 4.00  
Special assignments in readings, investigations, field problems. May include teaching experience. Prereq: permission.

**TOUR 798W - Independent Study**

**Credits:** 1.00 to 4.00  
Special assignments in readings, investigations, field problems. May include teaching experience. Prereq: permission. Writing intensive.
COM 209 - Expository Writing and Reading
Credits: 4.00
The main course goal is to produce inquisitive capable and confident writers for written communication challenges in higher education and future careers. Particular focus is paid to practice in visual description, research, argument, revision and analytical reading. Instructors focus on writing as a process of learning, not a product of learning. Includes individual conferences with students to discuss their writing and drafts. Class sessions are driven by open discusssion and group activities.

COM 210 - Public Speaking
Credits: 3.00
In a recent Graduate Management Admissions Council (GMAC) survey, 86% of recruiters for major employers claimed "communication skills" as the first trait they seek in new employees. That said, building confidence and practicing public communication is a way to stand out in both social stiuations and the workplace. In COM 210, we practice persuading, instructing and storytelling in an active atmosphere, all with an effort to build confidence in oratory, analyzing audiences and generating quality ideas.

COM 211 - Critical Reading
Credits: 2.00
Frequent readings of short nonfiction and fiction. Class discussions and writing assignments designed to develop skill in reading with critical discernment. 2 lec.

COM 212 - Writing in the Workplace
Credits: 3.00
Practice in various forms of technical and professional writing: technical instructions and descriptions, reports, proposals, business letters, and more. Applications relate to employees/employers, suppliers, customers, and others. The course emphasizes the importance of layout and design to effective communication.

COM 292 - Studies in Communications
Credits: 1.00 to 3.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research or scholarly endeavor is to explore new areas in the student's field of study or to pursue course materials in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include the art of persuasive speaking, writing, literature, or technical reporting. Permission required.

COM 591 - Studies in Communication
Credits: 1.00 to 3.00
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research or scholarly endeavor is to explore new areas in the student's field of study or to pursue course materials in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include the art of persuasive speaking, writing, literature, or technical reporting. Permission required.
TSAS Thompson Sch Applied Sci

**TSAS 235 - Introductory Chemistry**  
**Credits:** 3.00  
Introduces chemical concepts and principles, including chemical symbols, conversion factors, chemical calculations, chemical and physical properties and changes. Introduction to organic compounds--their structure, major reactions, and applications--followed by an elementary introduction to biomolecules and how they function in metabolism. Other topics include acids, bases, solutions, and radiation chemistry.

**TSAS 405A - Computers in the Workplace/Focus on Software Applications**  
**Credits:** 2.00  
A foundation course in the practical use of computer technology with a focus on intermediate functions in software applications common in the workplace; word processing (styles, tables); refining spreadsheet (charts, linking and embedding objects/documents); presentations (working with images) and working between applications. Available only for students in Thompson School of Applied Science.

**TSAS 405B - Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security**  
**Credits:** 2.00  
This half semester course focuses on hard disk management (folder structure in the latest version of Windows and in a networked environment), hardware (including various devices and output) selection criteria, basic computing networking (including the university's network), internet functions (Boolean search terms); safe computing (cloud tools, document sharing) and cyber security, and hardware teardown. Available only for students in the Thompson School of Applied Science.

**TSAS 495 - Thompson School: Special Topics**  
**Credits:** 1.00 to 4.00  
New or specialized courses not normally covered in regular course offerings. May involve one, two or more program areas within the Thompson School of Applied Science. Topics and prerequisites (if any) to be announced before registration. May be repeated up to 8 credits. May include a lab. Special fee on some sections. Some sections may be Cr/F.
TSAS Mathematics

MTH 201 - Elementary - Intermediate Algebra
Credits: 3.00
Course begins with a very thorough overview of basic math concepts including whole number operations, fractions, and integers. The course also covers algebraic/geometric topics including powers, roots, linear functions, proportions, similar figures, graphing and measurements. Course may be taken for credit as an elective, but does not fulfill any degree requirement.

MTH 202 - College Algebra
Credits: 3.00
Review of elementary algebra, coordinate system, inequalities, roots, polynomials, factoring, radicals, and functions. A significant amount of class time is spent on problem solving in all concept areas. The course provides a solid foundation of algebraic topics including logarithmic functions, exponential function, matrices, inverse functions and non-linear systems. Placement is based on satisfactory score on math assessment.

MTH 203 - Algebra and Trigonometry
Credits: 3.00
Basic algebra topics, radicals, exponents, introduction to functions and graphs, simple applications of algebra. Trigonometric functions of angles; applications of right triangles, identities, and equations. 3 lec.
### TSAS Social Science

**SSCI 201 - Human Relations**  
**Credits:** 4.00  
Learn theories of human behavior and develop skills for applying these concepts in the creation of more effective interpersonal and professional relationships.

**SSCI 202 - Social Issues**  
**Credits:** 4.00  
Study of social problems in today's world. Particular emphasis on various viewpoints of their causes and solutions. Issues covered range from individual to worldwide.

**SSCI 292 - Studies**  
**Credits:** 1.00 to 4.00  
Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include a specific social science topic. Course may be repeated up to a maximum of 8 credits.

**SSCI 403 - Environmental Issues & Society**  
**Credits:** 2.00  
Course focuses on contemporary environmental problems and their relationship to society. Students examine the nature and extent of specific problems, such as pollution or global warming, and review current thinking about causes, possible interrelationships, and proposed solutions. 2 lec.

**SSCI 404 - Leadership Effectiveness Grp P**  
**Credits:** 2.00  
By studying various theories of group development and leadership approaches, students explore the ways leaders influence group behavior and goal attainment. Students practice applying theories to specific situations and explore their own individual strengths and weaknesses as both leaders and group members.
**UNHM Independent Study**

**UMIS 599 - Independent Study**

**Credits:** 1.00 to 4.00  
Independent study with the approval and sponsorship of UNHM faculty of material not covered in regular course offerings. Barring duplication of subject, may be repeated for credit up to a maximum of 8 credits.
UNHM Special Topics

UMST 401 - First Year Seminar
Credits: 1.00
The focus of this seminar is not on a specific academic subject or field of study; instead, the focus is on the student. This course is intentionally designed and proactively delivered for the purpose of promoting personal success-in college and in life after college--by fostering the development of skills or strategies that are both applicable and valuable across subjects. The course focuses on the following topics: college expectations and opportunities, campus resources, learning styles and strategies including lecture note-taking, test taking, memory and concentration; life management, goal setting, educational planning, career decision-making, health maintenance, diversity and instructor/student relationships. The course integrates personal growth, academic and career success with problem solving, critical and creative thinking.

UMST 500 - Internship
Credits: 1.00 to 4.00
The UNHM internship places students in a variety of business and organizational settings under the direction of a faculty adviser and workplace supervisor. Students fulfill the obligations of the workplace internship plan, as well as complete individually-designed projects of academic merit under the direction of UNH faculty. Open to matriculated students with a 2.5 GPA or better. Students must receive approval of the UNHM internship coordinator. May be taken from 1-4 elective credits per semester, to a maximum of 8 credits. Credit/Fail.

UMST 501 - Money and Independence
Credits: 1.00
This course provides students with an objective, neutral and current introduction to personal financial literacy. Students develop the skills necessary to establish good financial habits and a healthy financial future. This course helps students to become familiar with fundamental financial concepts including budgeting, credit, contracts, student loans, identity theft and planning for the future. No credit for students who have completed UMST 599 Financial Literacy and Advocacy or UMST 599 Money Management and Independence.

UMST 521 - Tutor Development
Credits: 2.00 or 4.00
This interdisciplinary course, team-taught by the Director and Assistant Director of the Learning Center, is intended to prepare undergraduates for working as peer tutors. Students will study theories of adult development, learn several approaches to tutoring in their discipline(s), and practice their tutoring and communication skills. This course may be taken for 2- or 4-credits. Cannot be repeated. Prereq: permission of instructor is required.

UMST 523 - Shared Learning
Credits: 2.00
Shared Learning aims to teach students about theories of collaborative learning, tutoring, and mentoring and to provide opportunities for the students to apply the theories. Students discuss ethical issues, conflict resolution, and differences in styles or goals. They develop and practice effective communication skills, including reflective listening and constructive feedback.

UMST 525 - Exploring Leadership
Credits: 1.00
Exploring Leadership seminar is an introductory course on the foundations of student development and
leadership. There is a particular focus on student leadership with an emphasis on mentoring new students. The seminar is designed to enable students to formulate and articulate their own personal philosophy of leadership and a leadership action plan. This course is applicable to any student already involved or interested in college leadership. No credit for students who have completed UMST 599: Exploring Leadership.

**UMST 526 - Social Justice and Student Leadership**
**Credits:** 1.00
An exploration of social justice through personal and institutional lenses to analyze power and privileged, discrimination and prejudice, inclusion and equity though the intersections of multiple identities of race, gender, sexual orientation, class, nationality, ethnicity, ability and religion to develop student leaders who will also promote an equitable and inclusive environment and serve as social change agents at the college, on the campus, and in a diverse global society.

**UMST 531 - Engaging in the Community: Learning through Service**
**Credits:** 1.00 to 4.00
Students provide service to the community while engaging in meaningful experiences that build upon their skills and interests and help develop an awareness of civic issues and community needs. The primary purpose of the course is to work in the community to meet a community need. Student critically reflect on their experiences in a bi-weekly seminar through in-class discussions, readings, and journaling. Course may be repeated for a total of 8 credits.

**UMST 581 - Exploring Your Career Options**
**Credits:** 1.00
This course is designed to teach students how to make informed decisions about their career aspirations. Students will learn to identify essential resources that will assist them in gaining a better understanding of opportunities available to them. Career choice is very personal, therefore each student will identify a minimum of two paths of interest to research. By comparing and contrasting options, participants will be better prepared to accomplish and own their academic and career goals. Letter grades are assigned. This course cannot be repeated for credit. Students who enrolled in UMST 599 Internship and Career Planning Seminar previously are not eligible to take this course for credit.

**UMST 582 - Internship and Career Planning Seminar**
**Credits:** 1.00
This course is strongly encouraged for any student seeking internship and/or employment opportunities. Participants will research and evaluate opportunities related to their career interests, conduct informational interviews, create tailored resumes and cover letters, use LinkedIn as a networking and job search resource, and participate in employer-based resume reviews and mock interviews. This course is open to all students in all majors and is suited for students interning and/or seeking employment within the next six months. Letter grades are assigned. This course cannot be repeated for credit. Students who enrolled in UMST 599 Internship and Career Planning Seminar previously are not eligible to take this course for credit.

**UMST 599 - Special Topics**
**Credits:** 1.00 to 4.00
Occasional offerings dependent on availability and interest of faculty, barring duplication of subject, may be repeated for credit.

**UMST 601 - Community Based Research**
**Credits:** 4.00
Students will conduct an authentic research project(s) focused on a local community issue(s) in partnership with a local nonprofit organization(s). The primary purpose of the course is for students to experience the research process working closely with faculty and community partners. All phases of the research process
are explored in this seminar style class. Course may be repeated for a total of 8 credits. Instructor permission required.

**UMST 799 - Pre-Pharmacy Concurrent Enrollment**  
**Credits:** 1.00 to 20.00  
Registration place-holder for students completing the fourth year of their B.A. Biology Program at Massachusetts College of Pharmacy and Health Studies in the Pre-Pharmacy articulation program.
Veterinary Technology

VTEC 424 - Introduction to Veterinary Technology
Credits: 2.00
An overview of the veterinary technology field. Topics in veterinary office practice management are covered, including, appointment scheduling, inventory control, financial transactions, client communication and regulatory, legal, and ethical aspects of veterinary practice. Other topics include veterinary technician and animal science career options, professional development and domestic animal management including breed identification, terminology, and husbandry.

VTEC 497 - Veterinary Technology Work Experience
Credits:
Provides students supervised introductory hands-on experience in a veterinary medical facility. Students apply skills learned in animal handling and nursing, laboratory methods, client communication and practice management courses. Students are responsible for obtaining a position in an approved veterinary facility and need to complete a minimum of 80 hours of work to fulfill course requirements. Must have rabies vaccine series completed prior to the start of the semester. Open to veterinary technology students only. Prereq: AAS 449.

VTEC 565 - Pharmacology for Veterinary Technicians
Credits: 3.00
This course provides study in the area of veterinary medicines emphasizing classes and actions of drugs, calculating dosages, proper administration, and dispensing of drugs. Topics include general pharmacology, calculating dosages, pharmacy regulation guidelines and record keeping. Case-based learning is utilized to correlate common diseases in companion animals with associated pharmacological agents. Specifically, disease pathogenesis, diagnosis, and treatment options are discussed along with pertinent technician interventions and evaluations. Prereq: AAS 228, MTH 202.

VTEC 575 - Veterinary Anesthesia and Surgical Assisting
Credits: 4.00
Theory and practical techniques for providing safe and effective anesthesia to veterinary patients, and providing nursing care and assistance in all aspects of veterinary surgery. Veterinary dental care is covered as well. For veterinary technology majors only. Prereq: AAS 550, AAS 579, VTEC 565. Veterinary Technology majors only.

VTEC 579 - Small Animal Practicum for Veterinary Technicians
Credits: 2.00
An applied, companion animal care class held off-campus at the NHSPCA and/or Cocheo Valley Humane Society. Students work as a team to provide nursing care to shelter animals. Care includes patient evaluation, administration of medication and fluids, wound management, collection and analysis of diagnostic samples, and medical record keeping. Species are primarily dogs and cats but may also include other small mammals and birds. Prereq: AAS 579. Veterinary Technology majors only.

VTEC 582 - Pet Access to Wellness Services (P.A.W.S.)
Credits: 1.00
PAWS provides veterinary technology students a service learning opportunity. Students manage a wellness clinic for pets, developing staffing and appointment schedules and education materials, and performing appropriate procedures on pets. Students are also responsible for providing laboratory and diagnostic services to shelter pets as needed throughout the semester. 2 semesters of 1 credit each are
required. Prereq: AAS 449, VTEC 439.

**VTEC 583 - Large Animal Practicum**
**Credits:** 2.00
An applied large animal class covering basic veterinary nursing care and procedures, focusing on horses and cows. The majority of class time is spent practicing hands-on skills with animals. Restricted to veterinary technology students only. Prereq: AAS 421, AAS 250.

**VTEC 595 - Veterinary Technology Internship**
**Credits:** 3.00
Provides students supervised hands-on experience in a veterinary medical facility within a clinical setting, students apply skills learned in animal handling and nursing, diagnostics and laboratory, client communication and practice management courses. Students are responsible for obtaining a position in an approved veterinary facility prior to the start of the semester. Open to veterinary technology students only. Prereq: AAS 550, AAS 579.
Women's Studies

WS 401 - Introduction to Women's Studies  
Credits: 4.00  
Interdisciplinary survey of the major areas of women's studies: women's history, cross-cultural perspectives, women in literature, psychology of women, etc. Basic principles and concepts fundamental to more advanced women's studies research. Topics vary. Required for major and minor. Writing intensive.

WS 401H - Honors/Introduction to Women's Studies  
Credits: 4.00  
Interdisciplinary survey of the major areas of women's studies: women's history, cross-cultural perspectives, women in literature, psychology of women, etc. Basic principles and concepts fundamental to more advanced women's studies research. Topics vary. Required for major and minor. Writing intensive.

WS 405 - Gender, Power and Privilege  
Credits: 4.00  
This course explores the diversity of women's lives through the dynamics of status, power, privilege, and inequality in contemporary United States. Students will examine women's diverse experiences by using the theoretical framework of the social construction of race, gender, economic class, and sexual orientation in historical context. We will examine categories of difference and the processes, philosophical developments, institutions, and conditions that lead to and rely on power and privilege in modern American society.

WS 444 - Trans/Forming Gender  
Credits: 4.00  
Using a social construction approach, students explore the multiple ways in which gender is constructed within the lives of children, women, men, and transgender people. Specific attention focuses on the social institutions and systems that encourage both the construction and reproduction of gender identity and expression across the lifespan. Students actively participate in identifying historical and current day factors and institutions that shape gender. Students explore the roles of families, schools, educational settings, media, the workplace, recreation activities, the medical system, religion, laws, and the laws and the legal system in the construction of gender.

WS 444A - Race Matters  
Credits: 4.00  
Class examines race categories in the United States and how these historically changing categories shape our diverse realities across racial, ethnic, gendered, classed, and national identities. Students examine race as a category of difference and explore the multiple ways that individuals claim racial identities. Specific attention focuses on how diverse women have made history in their own lives and in the lives of others by resisting the interlocking systems of oppression.

WS 444B - Score!: Gender and Diversity in Sports  
Credits: 4.00  
Utilizing guest lectures, films, readings, projects and discussion, this writing intensive course provides first-year students with the opportunity to investigate the social, historic, economic and political factors that shape sports opportunities for girls and women in the United States. Students examine the extent to which sports experiences are the same for all girls and women in their diversity, as well as comparable to males across their differences. Writing intensive.
WS 444C - On the Roads to Equality
Credits: 4.00
Looking beyond what is traditionally thought of as the women's rights movement in the United States, this course remaps women's history and activism to include a diversity of women's experiences. A multicultural examination of history focuses on women's leadership and participation in immigrant rights, labor, the Black Women's Club, economic justice, reproductive rights, self determination and feminist movements during the 19th and early 20th centuries. Writing intensive.

WS 444D - Cyborgs, Avatars, and Feminists: Gender in the Virtual World
Credits: 4.00
Utilizing feminist theoretical and critical investigations of gender and techno culture, students explore women's popular and theoretical conceptions of cyberspace. Students explore numerous digital communication systems within cyberspace and examine how and why a diversity of women utilize these systems. This course provides students with the opportunity to investigate the impact that advancements in virtual technology have in the lives of women.

WS 505 - Survey in Women’s Studies
Credits: 4.00
In-depth study of topics not covered in regular course offerings. The course explores the breadth and depth of Women's Studies from a historical perspective. In order to understand Women's Studies currently, students look at the historical foundations that contribute social, political, and economic influences on the topics. Barring duplication of topic, may be repeated for credit.

WS 510 - Framing Feminism: Gender Politics in Film
Credits: 4.00
This course examines the history of feminist struggle in the U.S. by critically viewing and analyzing diverse films from the 1970s to the present. Students learn about the three waves of feminism and the various sociocultural, economic, sexual and political issues faced by women in the long and ongoing quest to achieve gender equality. Students explore methods of historical inquiry and film criticism to enable complex analyses of historical developments and contemporary arrangements of power. Attention is paid to how multiple identities and forms of oppression intersect in women's diverse lived experiences.

WS 515 - Game Girl: The Social Construction of Gender Identities in Video Games
Credits: 4.00
This course examines the representations of girls and women in digital gaming environments and patterns of digital game play. Students explore how gender intersects with the broader contexts of digital games and the game industry. Specific attention focuses on the Girl's Game Movement and the extent to which females are influenced by female characters in video games and how they are influencing the creation of new representations of females in video games.

WS 595 - Special Topics
Credits: 1.00 to 4.00
In-depth study of topics not covered in regular course offerings. Prereq: permission; WS 401.

WS 595W - Special Topics
Credits: 1.00 to 4.00
In-depth study of topics not covered in regular course offerings. Prereq: permission; WS 401. Writing intensive.

WS 632 - Feminist Thought
Credits: 4.00
Theories of women's oppression and emancipation explored from various historical, political, cultural, and
social perspectives. A major goal of the course is to increase awareness of historical and contemporary
feminist approaches to understanding women’s experiences, representations, and relative positions in
societies. The course also considers the interrelation of theory and practice and the impact of past feminist
theories on feminist movements. Prereq: WS 401 or WS 405. Writing intensive.

**WS 795 - Independent Study**
**Credits:** 1.00 to 4.00
For advanced students who have the preparation to carry out an individual project of supervised research
on a specific women's studies topic. Preparation should include WS 401 or equivalent, and/or other
women's studies courses. Barring duplication of topic, may be repeated for a maximum of 8 credits. Prereq:
permission of instructor and women’s studies coordinator.

**WS 796 - Advanced Topics**
**Credits:** 4.00
Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not
in duplicate areas. Prereq: permission.

**WS 796W - Advanced Topics**
**Credits:** 1.00 to 4.00
Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not
in duplicate areas. Prereq: Writing intensive.

**WS 797 - Internship**
**Credits:** 4.00
Students gain practical experience in a woman-focused agency or organization. Plan of study and
requirements are developed together with a faculty adviser and the student's workplace adviser. Bi-monthly
seminar with all internship students and instructor. Prereq: permission. WS majors or minors. May be
repeated up to a maximum of 8 credits.

**WS 798 - Colloquium**
**Credits:** 4.00
Intensive study of specialized topic for advanced students. Topics vary with instructor. Barring duplication
of topic, may be repeated for credit. Required for WS majors. Writing intensive.

**WS 799 - Honors Thesis**
**Credits:** 4.00 to 8.00
With a faculty sponsor, students enrolled in the honors-in-major program develop an independent,
investigative project in women's studies. Written thesis. Prereq: permission, majors only.
**Zoology**

**ZOOL 400 - Professional Perspectives in Zoology**  
**Credits:** 1.00  
Presentations by departmental faculty provide an informal overview of various zoological topics and professional opportunities. The course acquaints students with faculty, provides information on departmental research projects, and facilitates early research involvement for students. Required for all first-year zoology majors. (Fall only). Cr/F.

**ZOOL 401 - Human Biology**  
**Credits:** 4.00  
Elementary study of structure, function, and development of all systems of the body. No credit toward major or minor. Cannot be taken for credit after BMS 507-508. Special fee. Lab.

**ZOOL 406 - Evolution of Human Behavior**  
**Credits:** 4.00  
All species are subject to evolutionary forces and humans, including our vast array of behaviors, are no exception. We therefore explore human behavior in the context of evolution by natural selection, with a focus on current research in this field. By understanding the behavioral adaptations that allowed our human ancestors to better navigate the challenges of survival and reproduction, we can hope to understand our own actions on a more integrative, comprehensive level.

**ZOOL 412 - Biology of Animals**  
**Credits:** 4.00  
Fundamentals of modern animal biology from cells to organisms, including structure, function, genetics, development, ecology, and the diversity produced by animal evolution. Weekly demonstrations and virtual e-labs provide a hands-on introduction to the animal kingdom. Special fee. Lab. (Fall semester only.)

**ZOOL 444 - Dogs to Dragons: Origins of Species**  
**Credits:** 4.00  
A freshman "inquiry" seminar introducing fundamental evolutionary concepts and mechanisms, as well as examining the nature of science, and the ways in which scientists use imagination and inference to better understand the natural world. Through evolutionary case studies ranging from the very real to the purely imaginary, students learn to compare and assess explanatory hypotheses, and to use creative, scientifically-disciplined inference as working scientists do. They also develop their abilities to decide what is or isn't science, and to judge the relevance and adequacy of evidence claimed to support hypotheses. The course begins by introducing the mechanism of natural selection through the engaging example of dog domestication, move from there to broader discussions of speciation (including species definitions, and case studies of speciation in progress). The central portion of the course focuses on issues of definitions (what is a "hypothesis" anyway?), and developing increasingly sophisticated and well-informed judgments about different sorts of biological information. In the final section, we explore proper and improper roles of imagination and creativity in science: how (and why) real scientists use fictional species, and how to tell the difference between fictions and frauds while leaving room for humor and invention. Writing intensive.

**ZOOL 503 - Introduction to Marine Biology**  
**Credits:** 4.00  
Organization of marine biological communities in various marine environments pelagic, benthic, temperate, tropical. Major emphasis on the approaches (e.g., analysis of energy flow and predator-prey interactions) used to analyze marine communities and on the sampling techniques employed for each approach and the
habitat type. Prereq: BIOL 411-412. (Also offered as PBIO 503.) Special fee. Lab.

**ZOOL 518 - Vertebrate Morphology**  
**Credits:** 5.00  
Evolutionary and comparative examination of vertebrate anatomy. Covers the structure of the major systems at both the macroscopic and microscopic levels. Prereq: BIOL 411-412 or equivalent. Special fee. Lab.

**ZOOL 529 - Developmental Biology**  
**Credits:** 4.00  
Introduces developmental biology, examining basic developmental mechanisms and their evolutionary contexts. Principles and tools of the trade, overview of major developmental events in various phyla, current areas of research and other special topics. Labs include different ways to observe development (from low- to high-tech), and work with selected live material. Prereq: BIOL 411-412 or equivalent. No credit if credit earned for ZOOL 729. Special fee. Lab.

**ZOOL 542 - Ornithology**  
**Credits:** 4.00  
Identification and biology of birds, especially those of northeastern United States. Involves field trips, laboratory work, and lectures. Prereq: one semester of biology. (Spring semester only.)

**ZOOL 600 - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

**ZOOL 600W - Field Experience**  
**Credits:** 1.00 to 4.00  
A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F. Writing intensive.

**ZOOL 610 - Principles of Aquaculture**  
**Credits:** 3.00  
Introduces the culture practices employed for production of aquatic organisms. Topics include ecological and environmental considerations, selective breeding, nutrition, diseases, processing, and marketing. Emphasis on finfish. Prereq: BIOL 411-412 or equivalent.

**ZOOL 611 - Principles of Aquaculture Lab**  
**Credits:** 2.00  
Laboratory exercises in aquaculture covering the use of chemical reagents to monitor water quality; brood stock feeding and management; use of anesthesia and fish handling; spawning marine finfish; culturing algae, rotifers and Artemia for marine larviculture; larviculture of marine finfish; assessing fish growth; hatchery hygiene. Includes site visits to local production facilities. Prereq: BIOL 411-412 or equivalent. Coreq: ZOOL 610.  
**Co-requisites:** ZOOL 610

**ZOOL 613 - Animal Behavior**  
**Credits:** 5.00
Introduces the naturalistic study of animal behavior. Emphasizes the evolution, development, physiology, and ecology of behavior. Topics include the genetic and acquired bases of behavior, neuroethology and behavioral endocrinology, communication, orientation, foraging strategies, reproductive ecology, and the evolution of altruistic behavior. Prereq: BIOL 412 or equivalent. Lab. Writing intensive. Special fee.

**ZOOL 625 - Principles of Animal Physiology**  
*Credits: 3.00*  
Introduces the principles of animal function. The major systems (digestion, metabolism, respiration, circulation, osmotic and ionic regulation, nerve-muscle function, endocrine control) are covered with emphasis on functional mechanisms at the cell and tissue levels. Prereq: one year of introductory biology is required.

**Co-requisites:**

**ZOOL 626 - Animal Physiology Laboratory**  
*Credits: 2.00*  
Basic training in the measurement of function in animals, data analysis and expression, and the development of scientific communication skills. Special fee. Writing intensive.

**Co-requisites: ZOOL 625**

**ZOOL 628 - Marine Invertebrate Evolution and Ecology**  
*Credits: 5.00*  
Stresses the rich diversity of marine invertebrates by integrating phylogenetic trends with physiological and behavioral adaptation, and with ecological and symbiotic interactions. Offers a comparative survey of invertebrates from protozoans to protochordates; deals with aspects of form and function, development, evolution, classification, ecology, and natural history. Students work with live and preserved animals. Extensive dissections and a field component are required. Prereq: BIOL 411-412. Special fee. Lab. (Not offered every year.)

**ZOOL 690 - Evolution**  
*Credits: 4.00*  
Biological evolution is the changes within populations of organisms that extend beyond the lifetime of individuals. Darwin's mechanism of evolution by natural selection, and other evolutionary forces, explain the diverse adaptations of organisms to different environments. Topics include principles of heredity, sources and maintenance of variation, adaptation, speciation, classification, development, the history of life and the earth, and current controversies. Prereq: BIOL 411-412 or equivalent. Writing intensive.

**ZOOL 710 - Ichthyology**  
*Credits: 4.00*  
Introduces the evolution, systematics, anatomy, physiology, and ecology of fishes, with emphasis on New England species. Prereq: principles of biology or equivalent. Lab. (Offered in alternate years.) Special fee.

**ZOOL 717 - Lake Ecology**  
*Credits: 4.00*  
Introduces the ecology of freshwater systems, with emphasis on lakes. Origins of lakes and the effects of watersheds on lake chemistry, nutrient cycling, and the lake food web are explored. Other topics include the impact of human disturbances on productivity and aquatic food webs and methods used for the management and restoration of lakes. Comparisons are made of the structure and functions of lake ecosystems found in temperate, tropical and arctic regions. Prereq: general biology. (Also offered as PBIO 717.)

**ZOOL 719 - Field Studies in Lake Ecology**  
*Credits: 4.00*
Ecology of lakes and other freshwater habitats examined through field studies. Emphasizes modern methods for studying lakes; analysis and interpretation of data; and writing of scientific papers. Seminars on research papers and student presentations of class studies. Field trips to a variety of lakes, from the coastal plain to White Mountains to investigate problems, such as eutrophication, acidification, biodiversity and biotoxins. Capstone experiences include interaction with state agencies lake stakeholders, and the submission of written manuscripts for publication. Prereq: introductory biology. (Also offered as PBIO 719.) Special fee. Lab. Writing intensive.

**ZOOL 721 - Aquatic Invasive Species**
**Credits:** 4.00
Capstone course for a limited number of biological science majors to work closely with and help teach a Discovery course for non-majors in biology. Involves lectures, discussions, and laboratory and field exercises and write-ups focusing on managing aquatic invasive species based on an understanding of their ecology. Special fee.

**ZOOL 725 - Marine Ecology**
**Credits:** 4.00
Marine environment and its biota, emphasizing intertidal and estuarine habitats. Includes field, laboratory, and an independent research project. Prereq: general ecology; permission. Marine invertebrate zoology, oceanography, and statistics are desirable. (Also offered as PBIO 725.) Special fee. (Not offered every year.)

**ZOOL 726 - Conservation Behavior**
**Credits:** 4.00
Conservation biology is well established as a crucial bridge between basic biology and resource management. Recently, biologists have begun to recognize the importance of the link between conservation and animal behavior. Management strategies can have very real impacts on the behavior of animals; likewise, animal behavior (in captivity and the wild) should inform our approach to conservation in a variety of contexts. This interdisciplinary course explores the causes and consequences of this relationship. Prereq: at least one of the following ZOOL 713, NR 650, or permission. Writing intensive.

**ZOOL 732 - Lake Management: A Multidisciplinary Approach**
**Credits:** 4.00
Lectures and seminars on interpreting lake water quality, developing a natural history inventory for lakes, the process of creating a lake management plan, and resolution of conflicting uses of lakes. Students develop actual lake management plans in cooperation with government agencies and lake associations. Guest speakers from state agencies and non-governmental organizations. Introduction to GIS (Geographic Information Systems) methods for the analysis of lakes and watersheds. Present lake management issues from scientific and social science points of view. Open to students from all disciplines. (Also offered as PBIO 732.) Special fee. Lab.

**ZOOL 733 - Behavioral Ecology**
**Credits:** 4.00
Behavioral adaptations of animals to their environment, including the evolution of behavior and behavioral genetics; foraging and competition for resources; reproductive ecology, mating systems and parental care; and the evolution of cooperative behavior. Examples include both vertebrates and invertebrates. Emphasizes critical understanding of concepts as exhibited in oral and written exercises. Students conduct independent investigations. Prereq: ZOOL 713 or permission. Lab. (Offered in alternate years.) Writing intensive.

**ZOOL 736 - Genes and Behavior**
**Credits:** 4.00
Genes and behavior examines the genetic underpinnings of animal behavior, and how behavior evolves on a genetic level. The course primarily relies on readings from the primary literature, using examples from laboratory model organisms, animals in their natural habitats, and humans. Topics include aggressiveness, social behavior, personality, parental care, communication, mating behavior, novelty seeking behavior, and foraging. This interdisciplinary course examines these behaviors at multiple levels, including genomics, population genetics, molecular genetics, epigenetics, endocrinology, and neurobiology. Prereq: GEN 604 and ZOOL 713 or equivalent.

**ZOOL 745 - Biology and Diversity of Insects**  
**Credits:** 4.00  
The lecture examines the unique biology and structure of insects, the most diverse group of organisms. The laboratory project is based on past public requests for an understanding of aquatic insect biodiversity in streams. Experience in sampling, sorting, and identifying aquatic insects is developed, and an understanding of biodiversity indices is developed for a formal report and presentation. Prereq: BIOL 411-412 or equivalent. Special fee. (Not offered every year).

**ZOOL 750 - Biological Oceanography**  
**Credits:** 4.00  
Biological processes of the oceans, including primary and secondary production, trophodynamics, plankton diversity, zooplankton ecology, ecosystems and global ocean dynamics. Field trips on R/V Gulf Challenger and to the Jackson Estuarine Laboratory. Prereq: one year of biology or permission of the instructor. (Also offered as ESCI 750.) Special fee. Lab. (Not offered every year.)

**ZOOL 772 - Fisheries Biology**  
**Credits:** 3.00  
Principles of fisheries science, with emphasis on techniques used to assess the biological characteristics of exploited fish populations, and the use of such information for fisheries management. Prereq: ZOOL 710 or equivalent; permission. (Not offered every year.)

**ZOOL 773 - Physiology of Fish**  
**Credits:** 4.00  
Investigates the physiological processes responsible for maintaining homeostasis in fishes. Focuses on the function and regulation of the major organ systems during stress and environmental adaptation. Topics include reproduction, osmoregulation, digestion, endocrinology, and sensory perception.

**ZOOL 777 - Neurobiology and Behavior**  
**Credits:** 4.00  
Survey of fundamental concepts and recent discoveries in neurobiology. Topics include structure and function of neurons, development, cellular basis of behavior (sensory and motor systems), neuropharmacology, and neural plasticity (learning). Prereq: BIOL 411-412 or permission. Physiology (ZOOL 625) also desirable.

**ZOOL 795 - Special Investigations**  
**Credits:** 1.00 to 4.00  
Independent study in various areas including but not limited to animal behavior, developmental biology, ecology, endocrinology, evolution, ichthyology, genetics, history of biology, invertebrate biology, neurobiology and behavior, protozoology, teaching practices, underwater research, vertebrate biology, and biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences. Prereq: permission of instructor needed.

**ZOOL 795W - Special Investigations**  
**Credits:** 1.00 to 4.00
Independent study in various areas including but not limited to animal behavior, developmental biology, ecology, endocrinology, evolution, ichthyology, genetics, history of biology, invertebrate biology, neurobiology and behavior, protozoology, teaching practices, underwater research, vertebrate biology, and biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences. Prereq: permission of instructor needed. Writing intensive.

**ZOOL 799 - Honors Senior Thesis**  
**Credits:** 1.00 to 4.00  
Working under the direction of a faculty sponsor, the student plans and carries out independent research resulting in a written thesis. Limited to students entering their senior year; required for students in the honors program or working toward honors-in-major. Prereq: permission. A two-semester sequence. 2-4 credits each semester; 8 credits maximum. IA (continuous grading) given at the end of the first semester. Writing intensive.
# UNH Faculty | Emeritus Faculty

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Dijkstra, Semme J  
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B.A. San Jose State University 1980  
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Mathematics & Statistics
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M.S. University of Chicago 1942
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Jaffee, Eleanor M
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Carsey School
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M.A. University of South Florida 1993
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B.A. University of Minnesota 1961
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M.S. University of Minnesota 1968
Ph.D. University of Minnesota 1973

Jamison, Tyler B*
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B.A. Miami University - Ohio 2006
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Ph.D. University of Missouri - Columbia 2012

Janson-Sand, Colette H*
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B.A. Bridgewater State University 1967
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Lannamann, John W  ASSOCIATE PROFESSOR  Communication  B.S.  Babson College 1977  M.A.  University of Massachusetts - Amherst 1980  Ph.D.  University of Massachusetts - Amherst 1983

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Laue, Thomas M*  PROFESSOR  Molecular, Cellular, & Biomedical  B.A.  Johns Hopkins University 1971  Ph.D.  University of Connecticut 1981


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Natural Resources & The Environment  
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- Tsang, Paul C* PROFESSOR Molecular, Cellular, & Biomedical A.B. Cornell University 1978
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<td>State University of New York at Binghamton</td>
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<td>Ed.D.</td>
<td>Rutgers University</td>
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<td>Zercher, Charles Kent*</td>
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<td>B.A.</td>
<td>Messiah College</td>
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<td>Ph.D.</td>
<td>Notre Dame College</td>
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<td>Zhang, Jichun *</td>
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<td>Space Science Center</td>
<td>B.S.</td>
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<td>Peking University, China</td>
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<td>B.S.</td>
<td>Worcester State College</td>
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<td>Ziervogel, Kai *</td>
<td>RESEARCH ASSISTANT</td>
<td>Ocean Process Analysis Lab</td>
<td>Ph.D.</td>
<td>University of Rostock, Germany</td>
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<td>B.A.</td>
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ADA Acknowledgement | Contact Us
Introduction

The Graduate School offers a wide range of programs leading to the master’s degree, one program leading to education specialist (Ed.S.), and a number of programs leading to the Ph.D. degree. Graduate programs have been developed systematically to achieve academic excellence by careful utilization of institutional resources and regional opportunities. A highly qualified graduate faculty supervises programs and establishes the requirements for admission and degrees, which are administered by the dean of the Graduate School. The Graduate School extends its programs to central and southern New Hampshire through the UNH Graduate School Manchester Campus, offering a number of part-time professional master’s programs.

Admissions

Persons holding a baccalaureate degree from an accredited college or university and wishing to take graduate-level courses at the University of New Hampshire as part of a graduate degree program must apply for admission to the Graduate School. Admission to the Graduate School is both limited and competitive and is based solely upon academic qualifications and potential.

Applications for admission and the Graduate Catalog, containing detailed descriptions of graduate programs, may be obtained online at the Graduate School website, www.gradschool.unh.edu.

Accelerated Master's--University of New Hampshire Seniors

Qualified senior students at the University of New Hampshire may be admitted to the Graduate School provided they have followed normal application procedures; they must have been admitted for the semester in which they wish to enroll in courses for graduate credit. A 3.20
cumulative grade-point average is normally required to be considered for admission to the accelerated master's program.

Such seniors are normally admitted prior to the start of their last undergraduate semester, but may be eligible to apply for admission to the first semester of their senior year. Seniors who have been admitted under the Accelerated Master's program may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree. Such courses may upon recommendation of the department and approval of the Graduate School count toward both a bachelor's and master's degree.

When seniors admitted to the accelerated master's program have registered for graduate courses, they must maintain a grade-point average of 3.20, complete their undergraduate degree as planned, and pass graduate courses taken for credit with a grade of B- or better. If these conditions are not met, admission is withdrawn.

Not all graduate programs participate; each program's faculty retain discretion regarding whether their program admits students under the accelerated master's program, as well as the maximum number of graduate credits permitted (not exceeding 12; e.g., some programs will allow for only 4 graduate credits during Senior year). Applicants are strongly encouraged to meet with the graduate coordinator in the program's faculty to discuss specifics.

Dual-credit forms must be completed and approved by the dean of the Graduate School at the beginning of the semester for which dual credit is sought.

Financial Assistance

Graduate assistantships are available in most departments. These involve part-time work in connection with the University’s instructional or research activities. University awards, such as tuition scholarships, are also available to qualified students. Assistantships and scholarships are awarded on the basis of academic qualifications.

Financial assistance in the form of college work study and loans may be available through the Financial Aid Office.

UNH Graduate School Manchester Campus

The UNH Graduate School Manchester Campus offers a wide range of post-baccalaureate programs for professionals in business, education, social services, health care, government, and related fields. All graduate programs supported by the center are directed by UNH faculty and are administered by the UNH Graduate School. Currently, master's degree or other post-
baccalaureate courses and programs are offered at UNH Manchester in business administration, counseling, educational administration, teacher education, public administration, public health, social work, management of technology, and software systems engineering.

**Professional Development and Training**

Professional Development and Training, part of the UNH Graduate School Manchester Campus, serves individuals, businesses, and organizations in New Hampshire and surrounding regions by offering a wide range of professional development opportunities throughout the year, including one-day seminars, special institutes and conferences, and short-term Certificate Programs.

Programs are designed to assist professionals in developing new or advanced knowledge and skills in a variety of fields. Instruction provides a balance of theory and practical skills that participants can immediately apply to the workplace.

Offerings focus on pertinent topics in business, management and supervision, professional coaching, human resources, computers, CAD, teaching and school administration, health and human services, engineering, manufacturing, surveying, soil science, town and state planning, fundraising and grant writing, and more.

Training is offered on the Durham campus, the UNH Manchester campus, and at the UNH training facility at Pease International Tradeport in Portsmouth, N.H.

From time to time, institutes and conferences are held to address current topics of concern at an in-depth level.

Professional Development and Training also offers customized training services—helping companies assess their training needs, and then designing and delivering customized training to meet these needs.
Introduction

Continuing education provides public access to higher education for individuals not formally admitted to a UNH degree program. Taking courses as a non-degree student is an excellent way to prepare for matriculation into a degree program, help advance or change careers, or study a topic of interest.

Non-Degree Student Status

Undergraduate

Undergraduate courses (numbered 200-799) are open to individuals with a high school diploma, GED, or home-schooled secondary education equivalency. Individuals may register for a maximum of 11 credits per semester.

Graduate

Graduate courses (numbered 800-999) are open to individuals with a baccalaureate degree from an accredited college or university. Individuals may register for a maximum of 8 credits per semester.

Full-Time Special Student Status

Undergraduate

Non-degree students who wish to register for 12 or more credits in a single semester must receive formal permission from UNH Undergraduate Admissions. Special tuition and fee rules apply. Visit http://admissions.unh.edu/additional-resources/contact-us-2 for more information.

Graduate

Non-degree students who wish to register for 9 or more credits in a single semester must receive permission from the University Advising and Career Center. Students approved for this special status must pay full-time graduate tuition and fees at the time of registration. Visit
Pre-Admission Program

The Pre-Admission Program allows students an opportunity to strengthen their academic credentials in preparation for admission to a baccalaureate program by completing coursework that satisfies both general education and introductory-level major requirements. Students complete two semesters in the program, register for up to 12 credits per semester, and then transfer to a baccalaureate program upon successful completion of the outlined criteria. Visit [http://admissions.unh.edu/apply/non-traditional-students/how-to-apply/pre-admission-program/](http://admissions.unh.edu/apply/non-traditional-students/how-to-apply/pre-admission-program/) for details.

CATS Program

The CATS (Challenging Academically Talented Students) Program is open to highly motivated and academically strong high school juniors and seniors who want to enrich their academic experience with a college-level course. Students may choose from freshman-level courses (400-500 numbered courses). For an application and more information, please visit [http://admissions.unh.edu/academics/high-school-students](http://admissions.unh.edu/academics/high-school-students).

Prerequisites

Individuals are responsible for meeting all course prerequisites before registering for classes. Visit [www.learn2.unh.edu/courses/prerequisites.html](http://www.learn2.unh.edu/courses/prerequisites.html) for undergraduate and graduate course descriptions and prerequisite information.

Academic Standards and Expectations

A cumulative grade-point average of 2.00 (C grade) is the minimum acceptable level for undergraduate work and 2.67 (B- grade) is the minimum acceptable level for graduate work at the University. The records of non-degree students are examined periodically and academically deficient students may be warned or excluded from registering. All non-degree students are expected to become familiar with and adhere to the current UNH [Student Rights, Rules, and Responsibilities](http://www.unh.edu/student/rights) available online at [http://www.unh.edu/student/rights](http://www.unh.edu/student/rights).

Student Resources

Non-degree students are encouraged to take advantage of the wide range of resources available on campus. Visit [www.learn2.unh.edu/resources/](http://www.learn2.unh.edu/resources/) for a complete list of student services and campus resources.

Professional Development and Training
Professional Development and Training, an affiliate office of the Graduate School, serves individuals, businesses, and organizations by offering a wide range of non-credit professional development opportunities throughout the year. Programs are designed to assist professionals in developing new or advanced knowledge and skills in a variety of fields. Training is offered in Durham, Manchester, and Portsmouth, N.H. For more information, visit [www.learn.unh.edu](http://www.learn.unh.edu).

**Summer Session**

Summer Session provides a wide range of credit and non-credit courses, institutes, and programs in a variety of term lengths from May to August. From youth-enrichment programs to advanced-level institutes, Summer Session provides educational opportunities for learners of all ages. On-campus housing is available for students enrolled in summer credit courses. Please note: summer credit courses are held to the same academic standards as regular term courses but are typically offered at an accelerated pace. For more information, please visit [www.learn2.unh.edu](http://www.learn2.unh.edu).

**January Term**

January Term is a three-week learning opportunity held during winter break. Online, on-campus, and study-away credit courses are available in a variety of academic disciplines at both the undergraduate and graduate levels. Because of the intensive course of study, students may register for only one course during January Term. For more information, visit [http://unh.edu/januaryterm/](http://unh.edu/januaryterm/).
Introduction

Interim Dean: Charles K. Zercher

Interim Associate Dean: Sharon McCrone

The College of Engineering and Physical Sciences (CEPS) provides an opportunity for students to achieve educational objectives appropriate to their interests in engineering, computer science, information technology, mathematics, the physical sciences, and the teaching of mathematics and physical sciences. The college offers an education in each of its primary disciplines leading to the bachelor of science, as well as bachelor of art degrees with majors in mathematics and each of the three physical sciences. All programs include an opportunity for study in the arts, humanities, and social sciences.

The key to an undergraduate program in the college is flexibility, with a strong emphasis on personal and individualized education. In addition to specific programs, a wide range of options within several majors are available. Special programs can be developed to meet the specific interests of individual students.

Degree Requirement

MATH 425 and 426 (Calculus I and II) or the equivalent in transfer credits or advanced placement approved by the Department of Mathematics and Statistics are required by all departments of the college. The exception is the information technology major, which only requires Math 425 (Calculus I). The prerequisites for calculus are three years of college-preparatory mathematics, including a half-year of trigonometry. Before students can register for MATH 425, they are required to take the Mathematics Placement Test or to have taken MATH 418 (or its equivalent) and received a grade of C or better.

Mathematics Placement

First-year students arrive with a wide range of mathematical skills based upon their high school preparation. The college wants students to have a solid mathematics foundation so that they
will enjoy an enriched first-semester experience. A student’s mathematics development will be assessed as part of the June orientation program. Based upon the Mathematics Placement Test, students are enrolled in the mathematics class that will allow them to continue that development. The initial mathematics entry course is Analysis and Applications of Functions (MATH 418). However, a student is placed into Math 425 (Calculus I) if he or she demonstrated a certain level of proficiency in algebra and precalculus through the Mathematics Placement Test. Students with AP credit for Calculus I and/or Calculus II may elect to accept those credits and continue with a math course at the next level.

**Accreditation**

The baccalaureate-level programs in chemical, civil, computer, electrical, environmental, and mechanical engineering are accredited by the Engineering Accreditation Commission of [ABET](http://www.abet.org), Inc. The baccalaureate-level program in computer science and bioinformatics is accredited by the Computing Accreditation Commission of ABET, Inc. ABET contact information: 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700. The Department of Chemistry’s undergraduate bachelor of science program is approved by the American Chemical Society.

**Tech Courses**

The following courses are designed for students of the college and other majors within the University. These courses are offered through and administered by the Dean's Office.

- TECH 400, Introduction to CEPS Programs, 1 cr.
- TECH 564, Fundamentals of CAD, 3 cr.
- TECH 583, Technology: Cultural Aspects, 4 cr.
- TECH 583H, Honors/Technology: Cultural Aspects, 4 cr.
- TECH 601, Fundamentals Examination Review Course, 1 cr.
- TECH 696, Independent Study, 1 to 4 cr.
- TECH 797, Undergraduate Ocean Research Project, 2 cr.
Bachelor of Arts

Programs leading to a bachelor of arts degree are offered in the departments of chemistry, earth sciences, mathematics, and physics. These programs provide a broad liberal education along with a major in one of these fields. See University Academic Requirements for requirements for the bachelor of arts degree.

Bachelor of Science

The programs leading to the bachelor of science degree, offered in each of the departments of the college, emphasize students' preparation for a professional career and continuing or graduate education.

The degree requirements for the bachelor of science include the University Academic Requirements and the specific departmental requirements for graduation. A minimum grade-point average of 2.0 must be achieved. Graduation credit requirements established by the departments range from 128 to 134. There are entrance requirements in some programs, and it is not possible to guarantee all change-of-major requests.
Environmental Engineering

Chemistry*
Civil Engineering*
Computer Engineering*
Computer Science*
   Bioinformatics

Earth Sciences
   Climate Science
   Geology
   Geophysics
   Oceanography

Electrical Engineering*
Engineering Physics
Environmental Engineering*†
   Municipal Process

Environmental Sciences*
   Hydrology

Information Technology

Mathematics*
Mathematics, Applied
   Computation
   Dynamics and Controls
   Economics
   Fluid Dynamics
   Solid Mechanics and Vibrations

Mathematics Education*
   Elementary
   Middle/Junior High
   Secondary

Mechanical Engineering*

Ocean Engineering

Physics*
   Astronomy
   Chemical Physics
   Materials Science

Statistics

*Designated degree (the name of the specialization is on the diploma, e.g., B.S. in chemistry)
†Multidisciplinary; e.g., offered in collaboration with two departments
Undergraduate Course Catalog 2016-2017
College of Engineering and Physical Sciences

Interdisciplinary Programs

Bachelor of Science in Environmental Sciences
The environmental sciences program is offered jointly with the College of Life Sciences and Agriculture (COLSA) and consists of three options: hydrology, soil and watershed management, and ecosystems.

Minors
Interdisciplinary minors enable students to obtain experience in a specialized area and to retain identification with their major professional area. The college's interdisciplinary minors are:

- Applied Mathematics
- Environmental Engineering
- Geology
- Information Technology
- Materials Science
- Mathematics
- Mechanical Engineering
- Ocean Engineering
- Oceanography
- Physics
- Statistics

For requirements regarding minors, see University Academic Requirements.
Independent Study and Projects

All departments within the college offer independent study opportunities and projects. The content of these courses varies and is based upon current scientific and technological needs in addition to the interests of the student and faculty involved.

Permission of the faculty member and/or department chairperson is required. One should review the course descriptions for the independent study and project courses for specific requirements. Students interested in working with a faculty member on a project or independent study should discuss this with the faculty member and their academic adviser prior to registering for the course.

Research Opportunities

The talents and expertise of the faculty in all departments are reflected in the number of ongoing research projects. Undergraduates are included in many of these research projects with the intent that they will discover and foster their creative talents. When involved with a funded research project, students may have an opportunity to receive pay while learning about the research area.

The college has world-class laboratories and computer facilities in many areas. A few of these are coastal and ocean mapping, space science, environmental engineering and science, fluid dynamics, wind turbulence, information systems, materials science, nanotechnology, sustainability, and medical imaging. These and other ongoing research areas within the college are described on the college’s website: [www.ceps.unh.edu/research](http://www.ceps.unh.edu/research).

Students have the opportunity to acquire applied experience by working with faculty members who undertake sponsored professional projects in technical and managerial areas for business, industry, and federal, state, and local governments.

Special Provisions
The requirement of a given topic/course prescribed to meet the requirements of major curriculum may be waived by the faculty of a student’s department. This rule offers students the opportunity to develop a somewhat individualized plan of study with intellectual incentives and opportunities in addition to those found in a regular curriculum. The student’s petition must be approved by his/her major adviser and the dean of the college. This power usually will be delegated by the faculty to the dean or to a committee (Senate Rule 05.21(s): Waiver of Requirements in a Prescribed Curriculum).

A student with senior status and a grade point average of 3.2 may petition to take a graduate course for undergraduate credit. In addition, upon the recommendation of the department chairperson, a superior student may be allowed to count credits from up to two 800-level courses toward both a bachelor’s degree and a master’s degree, provided that the student has been admitted to the master’s program.

Study Abroad Programs

Scotland, Heriot-Watt University Exchange Program
College of Engineering and Physical Sciences students are eligible to participate in a spring semester exchange with Heriot-Watt University in Edinburgh, Scotland. The current program is designed for civil and environmental engineering majors. For more information, contact Ray Cook at (603) 862-1411 or the Center for International Education, Hood House.

Global E3 Exchange Programs
Engineering and computer science majors are eligible to participate in international exchange programs through the Global E3 program. Programs are offered in the fall, spring, and summer, as well as for the full academic year. For more information on Global E3, please refer to www.iie.org/programs/globale3. For more information on eligibility as student in the College of Engineering and Physical Sciences, contact Caitlin Baldwin at caitlin.baldwin@unh.edu.

Preparing for Teaching
Students interested in mathematics education (elementary, middle/junior high, or secondary) or Earth science teaching should refer to the appropriate department for a description of the program requirements.
Combined Programs of Study

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

*Minors:* See [University Academic Requirements](http://www.unh.edu/archive/undergrad-catalog/2016-2017/otherprograms.cfm); see also [Degrees and Major Programs of Study](http://www.unh.edu/archive/undergrad-catalog/2016-2017/otherprograms.cfm) and [Departmental Programs of Study](http://www.unh.edu/archive/undergrad-catalog/2016-2017/otherprograms.cfm).


*Interdisciplinary majors:* Many departments in the college offer programs that combine a major with another field of interest. See the descriptions that follow.


*Student-designed majors:* See [Special University Programs](http://www.unh.edu/archive/undergrad-catalog/2016-2017/otherprograms.cfm).

*Other combined and interdisciplinary opportunities:* See [Special University Programs](http://www.unh.edu/archive/undergrad-catalog/2016-2017/otherprograms.cfm).
Bioengineering (BENG)

Chairperson: Russell T. Carr
Professor: Dale P. Barkey, Russell T. Carr, Palligarnai T. Vasudevan
Associate Professor: Nivedita R. Gupta, Xiaowei Teng
Assistant Professor: Jeffrey M. Halpern, Kyung Jae Jeong, Harish Vashisth, Kang Wu, Nan Yi
Lecturer: Adam St. Jean
Adjunct Faculty: Deborah Audino

Bioengineering, as defined by the NIH, is "the application of life sciences, mathematics, and engineering principles to define and solve problems in biology, medicine, health care, and other fields."

The bioengineering program will train graduates in biology and physiology as well as engineering. The program will provide graduates with capabilities in advanced mathematics (including differential equations and statics), science, and engineering. Graduates will be conversant with solving problems at the interface of biology and engineering that may arise in the fields of biotechnology and pharmaceuticals, as well as medicine and biofuels. By graduation, students will have experience measuring and interpreting data from living systems and addressing the interactions between living and non-living materials.

Students are required to obtain a minimum 2.0 grade-point average in CHE 501/502 and in overall standing at the end of the sophomore year in order to continue in the major. Study abroad (Exchange) students are required to have a cumulative GPA of 3.0 or better in math, physics, chemistry, and other required courses at the end of the semester prior to their exchange semester.

For more information on the bioengineering program, please contact Russell Carr, professor
and chair, Russell.Carr@unh.edu.

### Freshman Year

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<td>General Chemistry</td>
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<td>604</td>
<td>Genetics</td>
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<td>PHYS</td>
<td>407</td>
<td>Physics I</td>
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<td>BIOL</td>
<td>410</td>
<td>Cellular Biology</td>
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<td>ENGL</td>
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1. CHEM 405 satisfies the Discovery Physical Science (with lab) category. Bioengineering students cannot take CHEM 401, CHEM 402, or CHEM 409 toward degree requirements.

2. MATH 425 satisfies the Discovery Foundation Quantitative Reasoning category.

3. ENGL 401 satisfies the Discovery Foundation Writing Skills category.

### Sophomore Year

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<td>Organic Chemistry/Lab</td>
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<td>Statistics for Engineers and Scientists</td>
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<td>CHE</td>
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<td>Biomaterials</td>
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<tr>
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<td>16</td>
<td>16</td>
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</table>

### Senior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
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<tbody>
<tr>
<td>BENG</td>
<td>763-764</td>
<td>Bioengineering Design I and II</td>
<td>1</td>
<td>4 WI</td>
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<tr>
<td>CHE</td>
<td>614</td>
<td>Separations</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Discovery Program Electives (2)</td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Bioengineering Electives (2)</td>
<td></td>
<td></td>
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<td>4</td>
</tr>
<tr>
<td>Bioengineering Electives (2)</td>
<td></td>
<td></td>
<td>8</td>
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</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
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<td>15</td>
</tr>
</tbody>
</table>

33 credits engineering, 16 credits math, 14 credits chemistry, 13 credits life science

Five electives: 15 to 16 credits engineering; 4 credits science, math, or engineering

» Click to view course offerings
Chemical Engineering (CHE)

Click to view course offerings

Chairperson: Russell T. Carr
Professor: Dale P. Barkey, Russell T. Carr, Palligarnai T. Vasudevan
Associate Professor: Nivedita R. Gupta, Xiaowei Teng
Assistant Professor: Jeffrey M. Halpern, Kyung Jae Jeong, Harish Vashisth, Kang Wu, Nan Yi
Lecturer: Adam St. Jean
Adjunct Faculty: Deborah Audino

The Department of Chemical Engineering currently offers the undergraduate degree program in chemical engineering with options in bioengineering, energy engineering, and environmental engineering.

The B.S. program in chemical engineering is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

Chemical engineering is concerned with the analysis and design of processes that deal with the transfer and transformation of energy and material.

The practice of chemical engineering includes the conception, development, design, and application of physicochemical processes and their products; the development, design, construction, operation, control, and management of plants for these processes; and activities relating to public service, education, and research.

The curriculum prepares students for productive careers in industry or government and provides a foundation for graduate studies. The college’s program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bioengineering.

Traditional employment areas in the chemical process industries include industrial chemicals, petroleum and petrochemicals, plastics, pharmaceuticals, metals, textiles, and food. Chemical engineers are also working in increasing numbers in the areas of energy engineering, pollution abatement, and biochemical and biomedical engineering; in addition, they are employed by many government laboratories and agencies as well as private industries and institutions.
**Mission**

The department strives to prepare students for productive careers in industry or government as well as to provide a foundation for graduate studies. The program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bioengineering.

**Program Educational Objectives**

The chemical engineering program seeks to provide an environment that enables students to pursue their goals in an innovative, rigorous, and challenging program with a diversity of offerings.

The program has the following major educational objectives with the expectation that our alumni will have successful careers in the many diverse areas of the chemical engineering profession. Within a few years of obtaining a bachelor's degree in chemical engineering, we expect our graduates to have the following attributes:

**Depth.** To be effective in applying chemical engineering principles in engineering practice or for advanced study in chemical engineering.

**Breadth.** To have a productive career in the many diverse fields of chemical engineering such as bioengineering, energy, and the environment, or in the pursuit of graduate education in disciplines such as chemical engineering, medicine, law, or business.

**Professionalism.** To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

**Bachelor of Science in Chemical Engineering**

Chemical engineering is concerned with the analysis and design of processes that deal with the transfer and transformation of energy and material.

The practice of chemical engineering includes the conception, development, design, and application of physicochemical processes and their products; the development, design, construction, operation, control, and management of plants for these processes; and activities relating to public service, education, and research.

The curriculum prepares students for productive careers in industry or government and provides a foundation for graduate studies. The program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bioengineering.

Traditional employment areas in the chemical process industries include industrial chemicals, petroleum and petrochemicals, plastics, pharmaceuticals, metals, textiles, and food. Chemical
engineers also are working in increasing numbers in the areas of energy engineering, pollution abatement, and biochemical and biomedical engineering; in addition, they are employed by many government laboratories and agencies as well as private industries and institutions.

Graduates from the program have the ability to apply knowledge of mathematics, science, and engineering to identify, formulate, and solve chemical engineering problems as well as to design and conduct experiments safely and analyze and interpret data. They are prepared to pursue advanced studies in chemical engineering. Program graduates gain a sense of professional and ethical responsibility with the ability to apply environmental, safety, economic, and ethical criteria in the design of engineering processes. They learn to function in individual and group working environments, and learn skills in written and oral communication and the effective use of computers for engineering practice, including information search in the library and on the Internet. They also understand the need for lifelong learning and the significance of societal and global issues relevant to chemical engineering.

A minimum of 129 credits is required for graduation with the degree of bachelor of science in chemical engineering. There are ten electives in the chemical engineering curriculum. Six of these are for the Discovery Program requirements. The remaining four electives should consist of three chemical engineering electives and one additional technical elective.

Students are required to obtain a minimum 2.0 grade-point average in CHE 501-502 and in overall standing at the end of the sophomore year in order to continue in the major. Study abroad (Exchange) chemical engineering students are required to have a cumulative GPA of 3.0 or better in math, physics, chemistry, and CHE courses at the end of the semester prior to their exchange semester.

**Freshman Year**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL</td>
<td>401</td>
<td>First-Year Writing</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>MATH</td>
<td>425-426</td>
<td>Calculus I and II</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>PHYS</td>
<td>407</td>
<td>General Physics I</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>CHEM</td>
<td>405</td>
<td>General Chemistry</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>CHE</td>
<td>400</td>
<td>CHE Lectures</td>
<td>1</td>
<td>-</td>
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<tr>
<td>Discovery Program Electives (3)</td>
<td></td>
<td></td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>17</td>
<td>16</td>
</tr>
</tbody>
</table>

1. PHYS 407 OR CHEM 405 satisfies the Discovery Physical Science (with lab) category.
Chemical engineering students cannot take CHEM 401, CHEM 402, or CHEM 409 toward degree requirements.

2. MATH 425 satisfies the Discovery Foundation Quantitative Reasoning category.

3. ENGL 401 satisfies the Discovery Foundation Writing Skills category.

4. CHE students do not have to take a course in the Discovery ETS category since they satisfy this requirement through a combination of courses in the CHE curriculum.

### Sophomore Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM</td>
<td>683-684</td>
<td>Physical Chemistry I and II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CHEM</td>
<td>685-686</td>
<td>Physical Chemistry Laboratory</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MATH</td>
<td>527</td>
<td>Differential Equations with Linear Algebra</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>PHYS</td>
<td>408</td>
<td>General Physics II</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>CHE</td>
<td>501-502</td>
<td>Introduction to Chemical Engineering I and II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MATH</td>
<td>740 or 644</td>
<td>Design of Experiments or Statistics for Engineers</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Discovery Program Elective (1)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

| Total        | 16            | 16                                   |      |        |

1. CHE 502 satisfies the Discovery Inquiry requirement.

2. Math 740 (Design of Experiments) or MATH 644 (Statistics for Engineers or Scientists) is the recommended technical elective.

### Junior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM</td>
<td>651-652A</td>
<td>Organic Chemistry</td>
<td>3</td>
<td>3</td>
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<tr>
<td>CHEM</td>
<td>653</td>
<td>Organic Chemistry Laboratory</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>CHE</td>
<td>601</td>
<td>Fluid Mechanics and Unit Operations</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CHE</td>
<td>602</td>
<td>Heat Transfer and Unit Operations</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>
### Undergraduate Course Catalog

**CHE 603** Applied Mathematics for Chemical Engineers 4 -

**CHE 604** Chemical Engineering Thermodynamics - 3

**CHE 612** Chemical Engineering Laboratory I - 3

**Discovery Program Elective (1)** - 4

**Total** 16 16

### Senior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE</td>
<td>614</td>
<td>Separations</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CHE</td>
<td>703</td>
<td>Mass Transfer and Stagewise Operations</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CHE</td>
<td>707</td>
<td>Chemical Engineering Kinetics</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CHE</td>
<td>708</td>
<td>Chemical Engineering Design</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>CHE</td>
<td>713</td>
<td>Chemical Engineering Laboratory II</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CHE</td>
<td>752</td>
<td>Process Dynamics and Control</td>
<td>-</td>
<td>4</td>
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<tr>
<td>CHE Electives (2)</td>
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<td>4</td>
</tr>
<tr>
<td>Discovery Program Elective (1)</td>
<td></td>
<td></td>
<td>4</td>
<td>-</td>
</tr>
</tbody>
</table>

**Total** 17 15

1. CHE 708 satisfies the Discovery Capstone Experience/Course.

### Bioengineering Option

Under this option, the required courses deal with the application of basic biological sciences and chemical engineering principles to the design and operation of large-scale bioprocesses for the production of high-value medicinal, food and beverage, pharmaceutical, biomedical, genetic engineering, and health care products. The elective courses permit the student to study topics of special interest in more depth or gain a broader perspective in bioengineering or some closely related subjects such as biochemistry or biotechnology experience in manufacturing or
research. Three courses are required, and a minimum of two additional courses of at least three credits each should be selected from the electives list. Students interested in the bioengineering option should declare their intention to the department faculty during the sophomore year. They may consult with Russell Carr, (603) 862-1429.

**Required Courses**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE</td>
<td>651</td>
<td>Biomanufacturing</td>
<td>4</td>
</tr>
<tr>
<td>CHE</td>
<td>761</td>
<td>Biochemical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CHE</td>
<td>766</td>
<td>Biomaterials</td>
<td>4</td>
</tr>
<tr>
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**Elective Courses**

<table>
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<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHE</td>
<td>695</td>
<td>Chemical Engineering Project</td>
<td>3-4</td>
</tr>
<tr>
<td>CHE</td>
<td>696</td>
<td>Independent Study</td>
<td>3-4</td>
</tr>
<tr>
<td>CHE</td>
<td>762</td>
<td>Biomedical Engineering</td>
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<tr>
<td>BMCB</td>
<td>750</td>
<td>Physical Biochemistry</td>
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<tr>
<td>BMCB</td>
<td>751</td>
<td>Principles in Biochemistry</td>
<td>4</td>
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<tr>
<td>BMCB</td>
<td>752</td>
<td>Principles in Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td>MATH</td>
<td>740</td>
<td>Design of Experiments I</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
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<td>6-8</td>
</tr>
</tbody>
</table>

**Energy Option**

This option covers the major areas of current interest in the energy field. The required courses provide students with a general background knowledge of fossil fuels, nuclear power, solar energy, and other alternative energy resources. The elective courses will permit the student to study topics of special interest in more depth or gain a broader perspective on energy and some closely related subjects. Three courses are required, and a minimum of two additional courses of at least three credits each should be selected from the electives list. Students interested in the energy option should declare their intention to the department faculty during the sophomore year. They may consult with Russell Carr, (603) 862-1429.

**Required Courses**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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## Undergraduate Course Catalog

### Number

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE</td>
<td>705</td>
<td>Fossil Fuels and Renewable Energy Sources</td>
<td>4</td>
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<tr>
<td>CHE</td>
<td>706</td>
<td>Electrochemical Methods for Energy Applications</td>
<td>4</td>
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<tr>
<td>CHE</td>
<td>712</td>
<td>Introduction to Nuclear Engineering</td>
<td>4</td>
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<tr>
<td><strong>Total</strong></td>
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### Elective Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE</td>
<td>695</td>
<td>Chemical Engineering Project</td>
<td>3-4</td>
</tr>
<tr>
<td>CHE</td>
<td>696</td>
<td>Independent Study</td>
<td>3-4</td>
</tr>
<tr>
<td>CHE</td>
<td>761</td>
<td>Biochemical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>ENE</td>
<td>772</td>
<td>Physicochemical Processes for Water/Air Quality</td>
<td>4</td>
</tr>
<tr>
<td>MATH</td>
<td>740</td>
<td>Design of Experiments I</td>
<td>4</td>
</tr>
<tr>
<td>ME</td>
<td>705</td>
<td>Thermal Systems Analysis and Design</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Special Topics on Energy*</td>
<td>3-4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>6-8</td>
</tr>
</tbody>
</table>

* This requires approval of the department; students should check with their adviser. Courses offered in the past include Renewable Electrical Power, Renewable Energy, and Peak Oil.

### Environmental Engineering Option

The chemical engineering program, with its substantial requirements in chemistry, fluid dynamics, heat transfer, mass transfer, unit operations, and reaction kinetics, provides students with a unique preparation to deal with many aspects of environmental pollution problems. The option gives students a special focus on the application of chemical engineering principles and processes to the solution of problems relating to air pollution, water pollution, and the disposal of solid and hazardous waste. Three required courses must be selected, plus two electives from the electives list. Each course must carry a minimum of three credits. Students interested in the environmental engineering option should declare their intention to the department faculty during the sophomore year. They may consult with Russell Carr, (603) 862-1429.

### Required Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>
Undergraduate Course Catalog

Table: Fundamentals of Air Pollution and Its Control (ENE 709, 4 credits)
Table: Physicochemical Processes for Water/Air (ENE 772, 4 credits)
Table: Solid and Hazardous Waste Engineering (ENE 742, 3 credits)
Total: 11 credits

Elective Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE</td>
<td>695</td>
<td>Chemical Engineering Project</td>
<td>3-4</td>
</tr>
<tr>
<td>CHE</td>
<td>696</td>
<td>Independent Study</td>
<td>3-4</td>
</tr>
<tr>
<td>CHE</td>
<td>744</td>
<td>Corrosion</td>
<td>4</td>
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<tr>
<td>ENE</td>
<td>746</td>
<td>Bioenvironmental Engineering Design</td>
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<tr>
<td>ENE</td>
<td>749</td>
<td>Water Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>MATH</td>
<td>740</td>
<td>Design of Experiments I</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>6-8</td>
</tr>
</tbody>
</table>

» Click to view course offerings

Chemistry (CHEM)

http://www.unh.edu/chemistry/

» Click to view course offerings

Chairperson: Glen P. Miller


Associate Professor: Erik Berda, Margaret E. Greenslade, Gonghu Li, Samuel Pazicni, Roy Paul Planalp, John G. Tsavalas

Assistant Professor: Marc Andrew Boudreau, Christine A. Caputo, Leila Deravi

A study in chemistry is the pathway to multiple options. These options include careers in education, law, forensics, medicine, biotechnology, environmental protection, technical sales, pharmaceutical research, semiconductors, and industrial chemical production. The potential is limitless. Students interested in pursuing chemistry as an undergraduate degree have two options available to them, which are based on their career plans. These are the bachelor of science degree (B.S.) and a bachelor of arts degree (B.A.). Since the required chemistry courses in each degree program are the same the first year, it is easy to change from one...
program to another. A chemistry faculty adviser is assigned to a student once she/he enters the program. The student's adviser provides academic guidance concerning the choice of courses to meet requirements for the major and overall.

First-Year Student Requirements
In general, a first-year student should register for the following courses, and this applies to both programs (B.A. and B.S.):

- **Semester I**: Freshman Seminar, Chemistry 400; General Chemistry with lab, Chemistry 403; Calculus I, Mathematics 425
- **Semester II**: General Chemistry with lab, Chemistry 404; Calculus II, Mathematics 426; First-Year Writing, English 401W

  - Math 425 satisfies the Discovery Foundation Quantitative Reasoning category and fulfills a chemistry major science requirement.
  - ENGL 401 satisfies the Discovery Foundation Writing Skills category and is one of the four required writing-intensive courses.

Chemistry Major Requirements
1. UNH Discovery Program requirements must be satisfied.
2. Specific chemistry major course requirements are listed in the Baccalaureate Degree Required Chemistry Courses table.
3. Chemistry majors cannot use CHEM 403, CHEM 404, or CHEM 405 to satisfy Discovery Program requirements.

Inquiry Course
Chemistry 574 provides an Inquiry Course experience for chemistry majors. This 4-credit course has a mandatory recitation session that enables students to explore and inquire about the open-ended lecture material in greater depth. This enhances the term project experience within the course.

Writing-Intensive Courses
Chemistry 698, Senior Seminar, and Chemistry 699, Senior Thesis, are writing-intensive courses for chemistry majors. Writing-intensive courses are required for every program, but these two courses serve to enhance a student's educational program by being capstone courses as well.

Capstone Experience
A capstone experience is required for all chemistry majors during their senior year. The B.S. major requires CHEM 699, Senior Thesis, as the capstone experience.

Senior thesis is a year-long project involving literature research, developing scientific writing
skills, and obtaining lab experience using a variety of techniques and equipment. Senior thesis research is focused on an area of specialty within a research group in the Department of Chemistry. Possible areas of research include analytical, inorganic, organic, physical, and materials chemistry. Students must interview with a faculty member before choosing to register for CHEM 699. The interview process enables the student to explore areas of interest and the faculty adviser to determine a potential project. The senior thesis experience immerses the student in the lab environment: working with peers, graduate students, and the faculty research adviser. This creates a community to facilitate discussion, questions, and new ideas for projects.

Completing a senior thesis in chemistry provides valuable field experience for careers in chemistry or closely related fields. Students combine their research with another course, CHEM 698, Senior Seminar, to develop posters exhibiting their research. These are presented at the UNH Undergraduate Research Conference. This is in addition to creating a written, bound thesis. Copies of student theses are displayed in the chemistry library and the adviser’s personal library, and students retain personal copies. Choosing to complete a senior thesis enables a student's B.S. degree to be ACS certified.

The B.A. major offers CHEM 698, Senior Seminar, as the capstone experience. Students work with the faculty member teaching the seminar to prepare a presentation based upon a research project or subject-driven professional engagement. The ability to integrate detailed subject matter and communicate this to the broader community, both scientific and general society, is encouraged. This exercise enhances the student’s writing ability, aids in the development of broader communication skills, and enables the student to obtain valuable research experience.

B.A. majors have an additional research opportunity by taking CHEM 696, Independent Study. This course can be taken prior to, or in parallel with, the capstone course to enhance the program of study.

**Bachelor of Arts in Chemistry**

**Bachelor of Arts in Chemistry**
This curriculum offers students the opportunity to combine the chemistry major with other interests, such as pre-professional programs, education, or business.

**Requirements**
1. UNH Discovery Program requirements must be satisfied.
2. For specific course requirements, see the B.A. section in the Baccalaureate Degree Required Chemistry Courses table.
   
   - Math 425 satisfies the Discovery Foundation Quantitative Reasoning category and fulfills
a chemistry major science requirement.

### Baccalaureate Degree Required Chemistry Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>BS</th>
<th>BA</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>Freshman Seminar</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>403, 404</td>
<td>General Chemistry</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>517, 518</td>
<td>Quantitative Analysis</td>
<td>x</td>
<td>x</td>
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<td>547 &amp; 549</td>
<td>Organic Chemistry I</td>
<td>x</td>
<td>x</td>
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<td>548 &amp; 550</td>
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<tr>
<td>574</td>
<td>Introduction to Inorganic Chemistry</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>683 &amp; 685</td>
<td>Physical Chemistry I</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>684 &amp; 686</td>
<td>Physical Chemistry II</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>762 &amp; 763</td>
<td>Instrumental Methods of Chemical Analysis</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>698</td>
<td>Seminar</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>699</td>
<td>Thesis</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>755 &amp; 756</td>
<td>Advanced Organic Chemistry</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>774 &amp; 775</td>
<td>Advanced Inorganic Chemistry</td>
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<tr>
<td>776</td>
<td>Physical Chemistry III</td>
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<td>x</td>
</tr>
<tr>
<td>708</td>
<td>Spectroscopic Investigations of Organic Molecules</td>
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<td></td>
</tr>
</tbody>
</table>

### Other Requirements:

All majors: MATH 425-426, Calculus I and II. Math 425 satisfies the Discovery Foundation Quantitative Reasoning Category.

B.S. degree: General Physics I and II, PHYS 407-408; Biochemistry, BCHM 658 or 751; one chemistry-related course.† Check course listings to see which meet a physical science discovery criteria or a biological science course criteria as a part of the Discovery Program.

B.A. degree, chemistry major: General Physics I, PHYS 407, or Introduction to Physics I and II, PHYS 401-402; two other CHEM courses, except 698, or two approved chemistry-related courses.†

† Suggested courses: MATH 527, 528; PHYS 505; EE 620; the student's adviser may approve an alternative.
**Bachelor of Science in Chemistry**

This curriculum prepares students for careers requiring a thorough knowledge of chemistry and provides a strong foundation for careers in industry, professional schools (e.g., medical schools), and for graduate study in chemistry or in interdisciplinary areas. The curriculum requires a greater depth in chemistry and physics than do the other degree programs.

**Requirements**

1. UNH Discovery Program requirements must be satisfied.
2. For specific course requirements, see the B.S. section in the Baccalaureate Degree Required Chemistry Courses table.

**Minor in Chemistry**

**Minor in Chemistry**

A chemistry minor is achieved by taking courses with a "CHEM" label. The student must have a total of 20 credit hours in chemistry unless she/he has completed Physical Chemistry 1 (CHEM 683) and the accompanying laboratory course (CHEM 685), in which case 18 credit hours suffice.

Biochemistry (BMCB) courses do not count toward a chemistry minor. The following CHEM courses are not acceptable as part of the 20 credits: CHEM 400 (Freshman Seminar), CHEM 696 (Independent Study), CHEM 698 (Seminar), and CHEM 501/502 (Peer-Led Team Learning).

No more than 8 credit hours of chemistry coursework required by the student’s major may be counted toward the chemistry minor. The remaining credits must come from CHEM courses that are not required for the student’s major. None of the chemistry courses for a chemistry minor can be taken on a pass/fail basis. A grade of C- or better is required in all chemistry minor coursework. A cumulative GPA of 2.00 is also required for all chemistry minor coursework.

Transfer credits can only be applied to the chemistry minor with the permission of the Chemistry Department undergraduate coordinator or chair, and only up to a maximum of 8 credit hours. The transferred courses must meet the minimum grade requirements.

A student interested in obtaining a chemistry minor should discuss his/her plan with the Chemistry Department’s undergraduate coordinator.
Civil engineering involves the planning, design, and construction of public works: buildings, bridges, roads, dams, water transmission systems, water treatment systems, tunnels, and more. These facilities must provide efficient service, be cost effective, and be compatible with the environment. Moreover, civil engineers work under a code of ethics in which their primary, overriding responsibility is to uphold the public’s trust by working to plan, design, build, and restore safe, sustainable, and environmentally responsible public works.

Civil engineers work as private consultants and for government agencies in a wide variety of indoor and outdoor settings around the world. There is a strong and constant market for civil engineers due to the demands placed on the profession to construct, maintain, and repair the infrastructure.

As civil engineering is such a broad field, it is traditionally divided into sub-disciplines. At the University of New Hampshire, six are offered: civil engineering materials, environmental engineering, geotechnical engineering, structural engineering, and water resources engineering. Civil engineering majors may choose the sub-discipline in which to focus their studies during their senior year. Additionally, the College of Engineering and Physical Sciences, through the Department of Civil & Environmental Engineering offers a B.S. in environmental engineering (ENE), which is a major for students who choose to specifically focus their attention solely in that area. (Students who are interested in environmental engineering but who also want a broader or more traditional civil engineering focus should pursue the civil engineering major and elect environmental engineering courses in their senior
Students may readily transfer between the civil engineering (CIE) and ENE programs within the first two semesters. Both the B.S. in civil engineering and the B.S. in environmental engineering provide a firm base in mathematics and engineering, and all majors are expected to develop excellent communication and computer skills. Graduates are prepared to enter the profession and to pursue advanced study. Because of the broad technical background attained, some graduates also successfully pursue further education in business, architecture, education, and law.

**Mission**

The mission of the Department of Civil and Environmental Engineering at the University of New Hampshire is fourfold:

- To pursue and disseminate knowledge through teaching, scholarship, and public service.
- To provide excellent undergraduate and graduate education.
- To conduct research and engagement activities, advancing the state of the art in science and engineering.
- To enhance the quality of life for people in New Hampshire and beyond.

**Educational Objectives**

In accordance with its University, college, and department missions, the faculty of the Department of Civil & Environmental Engineering has established clear educational objectives for graduates to help them find rewarding professional employment, primarily in the civil and environmental engineering disciplines; to help them participate in post-graduate continuing education, coursework, and research; to help them attain positions of leadership, directing the work of others; to help them achieve professional licensure or certification in civil engineering disciplines and other professions; and to help them participate and find positions in community, public, and professional service. Thus, the civil engineering program is designed to provide the following student outcomes:

1. To have obtained a working knowledge in the areas of civil engineering materials, environmental engineering, geotechnical engineering, structural engineering, and water resources engineering
2. To be able to locate, assess, and compile existing information and data, to design and perform experiments to gather new information and data, and to analyze such to draw conclusions.
3. To have an ability to use and independently learn new techniques, skills, and modern engineering tools and software necessary for engineering practice.
4. To be able to work effectively as a team member or a team leader on multidisciplinary teams.
5. To be able to communicate and defend ideas in documents and public presentations to a
variety of audiences and to make effective use of visuals in doing so.
6. To be able to apply mathematics, science, and engineering to identify, formulate, and solve engineering problems.
7. To have been prepared for and have taken the fundamentals of engineering examination.
8. To have the broad education necessary to have an understanding of contemporary issues and the interaction between sustainable and ethical engineering practice and global, social, economic, political, and environmental issues.
9. To have a recognition of the need for, and an ability to engage in, lifelong learning and to understand the importance of professional licensure.
10. Given realistic economic, environmental, social, political, and ethical constraints, to be able to critically analyze and design equipment, structures, systems, or processes to meet society’s current needs without compromising the ability of future generations to meet theirs.

**Bachelor of Science in Civil Engineering**

Matriculating students should have strong aptitudes in mathematics and science along with imagination, spatial and graphic abilities, communication skills, and creativity. Students then follow a four-year program that conforms to the guidelines of, and is accredited by, the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

The first two years of the program provide the necessary technical knowledge in mathematics, chemistry, and physics, while introducing and developing problem-solving techniques in eight courses tailored to civil engineering students. The junior year provides courses in each of the civil engineering sub-disciplines, providing students with skills in each and allowing students to determine which they wish to pursue further. The senior year is flexible, allowing students to choose where to focus attention by selecting from more than thirty elective courses in civil and environmental engineering.

The required curriculum includes eight writing-intensive courses, thereby not only satisfying but exceeding the University’s writing requirement. (See [University Academic Requirements](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm?id=1&page=programs.html).)

**Electives**

Approximately one-third of the major’s total credits and nearly all of the senior-level courses are elected by the student. Of these, there are Discovery Program electives required by the University and other electives required by the department in order to satisfy departmental objectives and accreditation requirements.
1. The Discovery Program is described in University Academic Requirements. Courses required by the BSCE major fulfill requirements in Inquiry (CIE 402); Writing Skills (ENGL 401); Quantitative Reasoning (MATH 425); Physical Sciences (PHYS 407); Laboratory Coursework (PHYS 407); Environment, Technology, and Society (CIE 402); and a Senior Capstone Experience (CIE 784/788). Therefore, students select electives to satisfy Discovery requirements in Biological Science, Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science.

2. In the senior year, students take seven 700-level electives subject to the following restrictions:
   a. Four of six concentration areas (environmental, geotechnical, civil engineering materials, structural, sustainability, and water resources) must be covered.
   b. Of the four concentration-area electives, at least three must be design courses.
   c. Of the three design courses, at least one must be a principal design elective.
   d. Electives that do not have a concentration area cannot be taken as one of the four concentration area courses.
   e. One of the seven 700-level courses is a senior technical elective, which can be any CEPS 700-level course of 3 credits or more including CIE and ENE courses, GEOG 757 (cross listed as NR 757), and TECH 759. Lists of courses that fulfill these electives are available from the department.

Additional Program Policies and Requirements

1. To transfer into the BSCE major, a student must have the following:
   a. an overall grade-point average of 2.33 or greater;
   b. an overall grade-point average of 2.33 or greater for all CIE and ENE courses taken to date;
   c. a grade-point average of 2.33 in courses taken to date of MATH 425, PHYS 407, CHEM 405 or CHEM 403, CIE 525 or ME 525, and CIE 526 or ME 526;
   d. if CIE or ME 525 has been taken, a minimum grade of C+ in CIE or ME 525 if CIE or ME 526 has not yet been taken or an average grade of 2.33 in CIE or ME 525 and CIE or ME 526.

2. Students who are transferring into the BSCE major may only transfer in CIE and ENE 600- and 700-level courses in which the student has received a grade of C- or better.

3. BSCE majors wishing to participate in domestic or international exchange programs must achieve a cumulative grade-point average of 2.50 or better in all CIE, and ENE courses taken to date at the time of application to the exchange program.

4. To begin taking the required 600-level courses in the junior year, students must complete CIE or ME 525, CIE or ME 526, MATH 425, PHYS 407, and CHEM 405 or CHEM 403 and achieve a GPA of 2.00 or greater in each of the following categories:
   a. CIE or ME 525 and CIE or ME 526
b. CIE and ENE courses

c. CIE or ME 525, CIE or ME 526, MATH 425, PHYS 407, and CHEM 405 or CHEM 403

5. To graduate with a bachelor of science in civil engineering, a student must achieve the following:

a. 129 or more credits,

b. credit for the civil engineering program’s major and elective courses,

c. satisfaction of the University’s Discovery Program requirements,

d. satisfaction of the University’s writing-intensive course requirements,

e. a cumulative grade-point average of 2.0 or better for all courses,

f. a cumulative grade-point average of 2.0 or better for all CIE and ENE courses.

### First Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
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<tr>
<td>CIE</td>
<td>402</td>
<td>Intro. to Civil Engineering</td>
<td>4</td>
<td>-</td>
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<tr>
<td>ENGL</td>
<td>401</td>
<td>First-Year Writing</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>TECH</td>
<td>564</td>
<td>Fundamentals of CAD</td>
<td>3</td>
<td>-</td>
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<td>Elective (2)</td>
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<td>Discovery Program requirement*</td>
<td>4</td>
<td>4</td>
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<tr>
<td>CIE</td>
<td>505</td>
<td>Surveying and Mapping</td>
<td>-</td>
<td>4</td>
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<tr>
<td>MATH</td>
<td>425</td>
<td>Calculus I</td>
<td>-</td>
<td>4</td>
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<tr>
<td>PHYS</td>
<td>407</td>
<td>General Physics I</td>
<td>-</td>
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*A course satisfying one each of the Discovery Program categories of Biological Science, Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science.

### Sophomore Year

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<tr>
<td>CIE</td>
<td>525</td>
<td>Statics</td>
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<td>ENGL</td>
<td>502</td>
<td>Technical Writing</td>
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<td>-</td>
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<td>MATH</td>
<td>426</td>
<td>Calculus II</td>
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<td>-</td>
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<tr>
<td>PHYS</td>
<td>408</td>
<td>General Physics II</td>
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<td>-</td>
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<tr>
<td>ENE</td>
<td>520</td>
<td>Environmental Pollution and Protection</td>
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<tr>
<td>Elective</td>
<td></td>
<td>Discovery Program requirement*</td>
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</table>
## Undergraduate Course Catalog

### Junior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>CIE</td>
<td>622</td>
<td>Engineering Materials</td>
<td>4</td>
<td>-</td>
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<tr>
<td>CIE</td>
<td>642</td>
<td>Fluid Mechanics</td>
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<td>CIE</td>
<td>681</td>
<td>Classical Structural Analysis</td>
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<td>CIE</td>
<td>665</td>
<td>Soil Mechanics</td>
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<tr>
<td>ENE</td>
<td>645</td>
<td>Fundamental Aspects of Environmental Engineering</td>
<td>-</td>
<td>4</td>
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<tr>
<td>MATH</td>
<td>644</td>
<td>Statistics for Engineers and Scientists</td>
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<td>Elective (2)</td>
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*A course satisfying one each of the Discovery Program categories of Biological Science, Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science.

### Senior Year

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<th>Spring</th>
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<tbody>
<tr>
<td>CIE</td>
<td>784</td>
<td>Intro. to Project Planning and Design***</td>
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<td>Elective (1)</td>
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<td>Principal Design Elective**</td>
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<td>Elective (1)</td>
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<td>Design Elective 2**</td>
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<td>-</td>
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<td>Elective (2)</td>
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<td>3</td>
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<td>Elective (1)</td>
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<td>Discovery Program requirement*</td>
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<tr>
<td>CIE or ENE</td>
<td>788</td>
<td>Project Planning and Design***</td>
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<td>3</td>
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</table>

*A course satisfying one each of the Discovery Program categories of Biological Science, Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science.
| Elective (1) | - | Design Elective 3** | - | 3 |
| Elective (1) | - | Area Elective | - | 3 |
| Elective (1) | - | Senior Technical Elective** | - | 3 |
| Total | | | | 16 | 15 |

*A course satisfying one each of the Discovery Program categories of Biological Science, Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science.

** Approved list available in the CIE office.

*** Satisfies capstone requirement for Discovery.

» Click to view course offerings

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** Computer Science (CS)**

» [http://www.cs.unh.edu](http://www.cs.unh.edu)

» Click to view course offerings

Chairperson: Radim Bartos
Professor: Philip J. Hatcher, Colin Ware
Affiliate Professor: Jason H. Moore
Associate Professor: Radim Bartos, Michel Charpentier, Wheeler Ruml, Elizabeth Varki, James L. Weiner
Affiliate Associate Professor: Sylvia Weber Russell
Affiliate Assistant Professor: Kevin Ma, Michael S. Deutsch, Michael Jonas, Kurt Schwehr
Lecturer: Mark L. Bochert, Michael Gildersleeve, Alejo Hausner, Sofia Lemons, Arvind Narayan, Matthew Plumlee, Collette Mathias Powers, Karl Shump, Israel J. Yost

**Computer Science**

Undergraduate students may choose from one of two degree options: the B.S. in computer science, which is intended for students interested in the design and implementation of software systems, or the B.S. in information technology, which focuses on the application of existing computing technologies to meet the information needs of organizations and individual computer
users. The B.S. in computer science also offers a bioinformatics option, which is designed for students who wish to apply computer science expertise in the life sciences.

**Bachelor of Science in Computer Science**

Computer science focuses on problem solving with a particular emphasis on the design of computer-efficient solutions. Within a few years of obtaining a bachelor's degree in either of the two computer science options, alumni will have:

1. Engaged in successful careers in diverse areas of software development and will be pursuing advanced education in computer science or related fields;
2. Applied the full range of core computer science concepts and techniques to fill software development needs of an organization;
3. Adapted to changing directions of computing technology and used state-of-the-art techniques to confront new problems effectively;
4. Navigated the complex interconnections between software and the goals and constraints of the organization served;
5. Participated responsibly in the pervasive and changing role of computing technology in global society as both software engineers and citizens;
6. Operated collaboratively in a team environment and assumed leadership roles.

The B.S. in computer science programs are accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

**B.S. in computer science requirements:**

Computer science majors must complete the following coursework in computer science, mathematics, computer engineering, science, English, and philosophy (all courses are 4 credits unless indicated otherwise):

**Computer science courses:**

One of the course sequences:
CS 415, Introduction to Computer Science I, and CS 416, Introduction to Computer Science II;
or CS 414, From Problems to Algorithms, and CS 417, From Programs to Computer Science;
or CS 410, Introduction to Scientific Programming, and CS 417, From Programs to Computer Science
CS 400, Introduction to Computing (1 cr)
IT 403, Introduction to Internet Technologies,
CS 501, Professional Ethics and Communication in Technology-Related Fields
CS 515, Data Structures
CS 520, Assembly Language Programming and Machine Organization
CS 619, Introduction to Software Design and Development
CS 620, Operating System Fundamentals
CS 659, Introduction to the Theory of Computation
CS 671, Programming Language Concepts and Features
CS 7.., CS elective 1
CS 7.., CS elective 2
CS 7.., CS elective 3
CS 7.., CS elective 4
CS 791, Senior Project I (senior capstone experience) (2 cr)
CS 792, Senior Project II (senior capstone experience) (2 cr)

A professional elective, chosen from a list of approved courses. One of the four CS electives must be "implementation intensive" (CS 712, CS 720, CS 730, CS 735, CS 770); another one must be "theory" (CS 712, CS 745, CS 758).

Mathematics courses:
MATH 425, Calculus I
MATH 426, Calculus II
MATH 531, Mathematical Proof
MATH 539 or MATH 644, Statistics

Electrical and computer engineering courses:
ECE 543, Introduction to Digital Systems
ECE 562, Computer Organization

Science courses:
Science 1 and 2 (two-course sequence): BIOL 411-412 or CHEM 403-404 or ESCI 401-402 or ESCI 409-402 or PHYS 407-408
Science 3: any Discovery lab science course (DLAB)

Other courses:
ENGL 502, Technical Writing

Discovery requirements not already covered by required courses

Computer science majors must maintain an overall grade-point average of 2.0 or better in all required computer science, mathematics, and computer engineering courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as a CS major.

CS 414 must be passed with a B- or better. The following courses must be passed with a
grade of C- or better: IT 403, CS 415, CS 416, CS 417, CS 515, and CS 520. If a student wishing to transfer into the computer science major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in computer science. The student must have an overall grade-point average of 2.0 or better in all courses taken at the University.

**First Year**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
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<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>CS</td>
<td>400</td>
<td>Introduction to Computing</td>
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<td>IT</td>
<td>403</td>
<td>Introduction to Internet Technologies</td>
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<tr>
<td>CS</td>
<td>415</td>
<td>Introduction to Computer Science I</td>
<td>4</td>
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<td>MATH</td>
<td>425</td>
<td>Calculus I</td>
<td>4</td>
<td></td>
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<tr>
<td>CS</td>
<td>416</td>
<td>Introduction to Computer Science II</td>
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<td>MATH</td>
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<td>ECE</td>
<td>543</td>
<td>Introduction to Digital Systems</td>
<td>4</td>
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**Sophomore Year**

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<tr>
<td>CS</td>
<td>515</td>
<td>Data Structures</td>
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<td>MATH</td>
<td>531</td>
<td>Mathematical Proof</td>
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<tr>
<td>CS</td>
<td>520</td>
<td>Assembly Language Programming and Machine Organization</td>
<td>4</td>
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<tr>
<td>CS</td>
<td>659</td>
<td>Introduction to the Theory of Computation</td>
<td>4</td>
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### Junior Year

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<td>CS</td>
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<td>Operating System Fundamentals</td>
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<td>Programming Language Concepts and Features</td>
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</tr>
<tr>
<td>ECE</td>
<td>562</td>
<td>Computer Organization</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>619</td>
<td>Introduction to Software Design and Development</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>7...</td>
<td>CS elective 1</td>
<td>4</td>
<td></td>
</tr>
<tr>
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<td></td>
<td>Other Requirements</td>
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</tr>
<tr>
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<td>Total</td>
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</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>791</td>
<td>Senior Project I</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>7..</td>
<td>CS Elective 2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>7..</td>
<td>CS Elective 3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Requirements</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>792</td>
<td>Senior Project II</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>7..</td>
<td>CS Elective 4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Professional Elective</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Requirements</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

**Bachelor of Science in Computer Science: Bioinformatics Option**
The bioinformatics field is an increasingly important sub-discipline in computer science. The demand for computer science graduates who can apply their knowledge in the life sciences is significant and is expected to continue to grow. Students who choose this path are still computer science majors but have a concentration in the life sciences. The option has the same core as the B.S. program but requires appropriate coursework in chemistry, biology, genetics, and statistics.

The B.S. in computer science programs are accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

**Bioinformatics Requirements**

Bioinformatics students must complete the following coursework in computer science, mathematics, computer engineering, science, and English. (All courses are 4 credits unless indicated otherwise.):

*Computer science courses:*

Choose one of the following sequences: CS 415 and CS 416; CS 414 and CS 417; or CS 410 and CS 417
CS 400
IT 403
CS 501, CS 515, CS 520, CS 619, CS 620, CS 659, CS 671
CS 758, Algorithms (CS theory)
CS 7.., CS WI elective with project in bioinformatics
CS 775, Database Systems
CS 791, Senior Project I (senior capstone experience) (2 cr)
CS 792, Senior Project II (senior capstone experience) (2 cr)

*Mathematics courses:*

MATH 425, Calculus I
MATH 426, Calculus II
MATH 531, Mathematical Proof
MATH 539 or MATH 644, Statistics 1
MATH 739, Statistics 2

*Electrical and computer engineering course:*

ECE543, Introduction to Digital Systems

*Science courses:*

BIOL 411, Introductory Biology: Molecular and Cellular
BIOL 412, Introductory Biology: Evolution, Biodiversity and Ecology
BIOL 604/GEN 604, Genetics
CHEM 405, Chemical Principles for Everyone
GEN 711, Genomics and Bioinformatics

Other courses:
ENGL 502, Technical Writing

Discovery requirements not already covered by required courses

Minor in Computer Science

The minor in computer science is designed for students in other majors who want to learn the fundamentals of designing and implementing computer software.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

Requirements:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>415 or 414 or 410</td>
<td>first introductory course</td>
</tr>
<tr>
<td>CS</td>
<td>416 or 417</td>
<td>second introductory course</td>
</tr>
<tr>
<td>CS</td>
<td>515</td>
<td>Data Structures</td>
</tr>
</tbody>
</table>

Two additional courses chosen from:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>619</td>
<td>Introduction to Software Design and Development</td>
</tr>
<tr>
<td>CS</td>
<td>520</td>
<td>Assembly Language Programming and Machine Organization</td>
</tr>
<tr>
<td>CS</td>
<td>620</td>
<td>Operating System Fundamentals</td>
</tr>
<tr>
<td>*CS</td>
<td>659</td>
<td>Introduction to the Theory of Computation</td>
</tr>
<tr>
<td>CS</td>
<td>671</td>
<td>Programming Language Concepts and Features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>An approved CS 700-level course</td>
</tr>
</tbody>
</table>
*CS 659 has mathematics prerequisites: MATH 425, MATH 426, and MATH 531.

**Bachelor of Science in Information Technology**

Information technology is concerned primarily with the application of existing computing technologies to the information needs of organizations and individual computer users. The IT program aims to provide graduates with the skills and knowledge to take on appropriate professional positions in information technology upon graduation and grow into leadership positions in the field. Potential careers include network administrator, database developer, system administrator, and webmaster.

**The broad objectives for B.S. in information technology graduates are:**

1. Apply the full range of core IT concepts and techniques to fill the IT needs of an organization and be prepared to assume managerial and other advanced responsibilities,
2. Confront new problems effectively and anticipate the changing directions of technology,
3. Communicate effectively with diverse stakeholders as well as function appropriately in a team environment,
4. Navigate within the complex relationships between IT and larger organizational goals, and
5. Understand the pervasive and changing role of computing technology in global society, and participate responsibly as both IT professional and citizen.

The B.S. in information technology program is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012. Phone: (410) 347-7700. [www.abet.org/](http://www.abet.org/).

**B.S. in information technology requirements:**

*Information technology courses:*

One of the following sequences:

CS 415, Introduction to Computer Science I, and CS 416, Introduction to Computer Science II; or CS 414, From Problems to Algorithms, and CS 417, From Programs to Computer Science; or CS 410, From Scientific Programming/C, and CS 417, From Programs to Computer Science

CS 400, Introduction to Computing (1 cr)

IT 403, Introduction to Internet Technologies

C 501, Professional Ethics and Communication in Technology Related Fields

IT 502, Intermediate Web Design

IT 505, Database Programming

IT 520, Computer Architecture

IT 609, Network/Systems Administration
IT 666, Computer Security
IT 699, Internship (1 cr)
IT 6.., IT elective 1
IT 6.., IT elective 2
IT 7.., IT elective 3
IT 705, Project Management for Information Technology
IT 710, Senior Project (senior capstone experience)
IT 775, Database Technology

Mathematics courses:
MATH 425, Calculus I
MATH 539, Introduction to Statistical Analysis

Other courses:
Science 1 and 2 (two-course sequence): BIOL 411-412 or CHEM 403-404 or ESCI 401-402 or ESCI 409-402 or PHYS 401-402
ENGL 502, Technical Writing
Second discipline (see below for details)

Information technology majors must maintain an overall grade-point average of 2.0 or better in all required information technology and computer science required courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as an IT major. CS 414 must be passed with a B- or better. The following courses must be passed with a grade of C- or better in order to meet IT major requirements: IT 403, CS 415, CS 416, CS 417, IT 502, IT 505, IT 520.

If a student wishing to transfer into the information technology major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in information technology. The student must have an overall grade-point average of 2.0 or better in all courses taken at the University.

In addition to the above requirements, each student must choose a second discipline in a particular domain outside of IT to which the student's IT skills can be applied. Second disciplines (typically four courses) have been defined by the CS department in such areas as business administration, health management and policy, and justice studies. If a student is interested in an area that is not currently defined, the option of a student-designed second discipline is also available.

The following is a sample schedule depicting the necessary requirements and the layout of the curriculum. Students must consult with their advisers in order to come up with the proper
schedule for themselves.

## First Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>400</td>
<td>Introduction to Computing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MATH</td>
<td>425</td>
<td>Calculus I (Discovery)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>403</td>
<td>Introduction to Internet Technologies</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>415</td>
<td>Introduction to Computer Science I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discovery</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>416</td>
<td>Intro to Computer Science II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>502</td>
<td>Intermediate Web Design</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discovery</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGL</td>
<td>401</td>
<td>First-Year Writing (Discovery)</td>
<td>4</td>
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<tr>
<td></td>
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<td>Total</td>
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</table>

## Sophomore Year

<table>
<thead>
<tr>
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<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH</td>
<td>539</td>
<td>Introduction to Statistical Analysis</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>505</td>
<td>Database Programming</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discovery</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lab Science I &amp; II (Discovery)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>IT</td>
<td>520</td>
<td>Computer Architecture</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGL</td>
<td>502</td>
<td>Technical Writing</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Second Discipline I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

## Junior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>501</td>
<td>Professional Ethics and Communication in Technology-related Fields</td>
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</table>
## Undergraduate Course Catalog

### Senior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT</td>
<td>705</td>
<td>Project Management</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>775</td>
<td>Database Technology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Second Discipline III</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discovery</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>710</td>
<td>Senior Project</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Second Discipline IV</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>700-Level IT Elective</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Free Elective</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

### Minor in Information Technology

The information technology (IT) minor is a way for students in non-technical majors to bridge the gap between a primarily non-technical education and a technical world. Graduates from a variety of fields are discovering that there is a great need to have computer competency in addition to the knowledge they gain in their major; the IT minor, which is tailored to grow students’ understanding of computer and information technology applications, helps prepare students for the future.

Students who minor in IT must complete a minimum of 20 credits of IT courses. All students must take IT 520, Computer Architecture, as well as an approved introductory programming course. The other three courses may be chosen from the list below.
*Courses not in the list below may be allowed at the discretion of the minor coordinator, but approval for such exceptions should be sought before the courses are taken.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student’s major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor coordinator.

**Requirements:**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 520</td>
<td>Computer Architecture</td>
<td></td>
</tr>
<tr>
<td>CS 405</td>
<td>Introduction to Applications Programming with Visual Basic</td>
<td></td>
</tr>
<tr>
<td>CS 410</td>
<td>Introduction to Scientific Programming</td>
<td></td>
</tr>
<tr>
<td>CS 414</td>
<td>From Problems to Algorithms to Programs</td>
<td></td>
</tr>
<tr>
<td>IT 403</td>
<td>Introduction to Internet Technologies</td>
<td></td>
</tr>
<tr>
<td>CS 417</td>
<td>From Programs to Computer Science</td>
<td></td>
</tr>
<tr>
<td>IT 502</td>
<td>Intermediate Web Design</td>
<td></td>
</tr>
<tr>
<td>IT 505</td>
<td>Database Programming</td>
<td></td>
</tr>
<tr>
<td>IT 604</td>
<td>Intermediate Web Development</td>
<td></td>
</tr>
<tr>
<td>IT 609</td>
<td>Network/System Administration</td>
<td></td>
</tr>
<tr>
<td>IT 666</td>
<td>Computer Security</td>
<td></td>
</tr>
</tbody>
</table>

**Earth Sciences (ESCI)**

» [http://ceps.unh.edu/earth-sciences](http://ceps.unh.edu/earth-sciences)

» Click to view course offerings
Chairperson: Julia G. Bryce
Professor: William C. Clyde, John E. Hughes-Clarke, Larry A. Mayer, David C. Mosher, Samuel B. Mukasa
Research Professor: Stephen E. Frolking, Cameron P. Wake
Affiliate Professor: Andrew Armstrong, Christopher E. Parrish
Associate Professor: Margaret S. Boettcher, Julia G. Bryce, J. Matthew Davis, Joel E. Johnson, Jo Laird, Joseph M. Licciardi, Thomas C. Lippmann, Michael W. Palace, James M. Pringle, Ruth K. Varner
Research Associate Professor: Jack E. Dibb, Larry G. Ward
Affiliate Associate Professor: Mary D. Stampone
Assistant Professor: Rosemarie E. Came, Anne Lightbody
Affiliate Assistant Professor: Joseph Salisbury
Affiliate Research Professor: Erik A. Hobbie, Douglas C. Vandemark

The courses offered in the Department of Earth Sciences cover the broad spectrum of geosciences, with emphases on geology, climate, geochemistry, geophysics, hydrology, and oceanography. The curriculum encompasses a group of related disciplines concerned with an understanding of Earth and its environment. Studies of the processes that shape the continents and oceans, drive the hydrologic cycle and ocean circulation, and affect climate change and the evolution of life are based on a foundation of basic mathematics, physics, and chemistry.

The need for people trained in the Earth and environmental sciences has been increasing in response to growing societal demands for sound environmental and resource management. Issues of particular concern include global climate change impacts, management of water resources, development of energy and mineral resources, waste disposal, and the assessment of natural hazards. In addition, the demand for well-trained secondary school teachers of Earth sciences has been steadily increasing.

The Department of Earth Sciences offers four majors: B.S. Earth sciences, B.S. environmental sciences (interdisciplinary with the College of Life Sciences and Agriculture), B.A. Earth sciences, and B.A. Earth sciences teaching. These programs prepare students for advanced study in the geosciences; for entry-level professional employment in public or private institutions concerned with environmental and resource management, including consulting firms, government agencies, energy- and resource-extraction firms, utilities, and nonprofit organizations; and for secondary-school teaching of Earth sciences.

The Department of Earth Sciences also offers a minor in Earth sciences, as well as an interdisciplinary minor in oceanography.
Descriptions and requirements for the majors and minors are arranged alphabetically.

**Bachelor of Arts in Earth Sciences**

The bachelor of arts in Earth sciences is offered through the Department of Earth Sciences. This program provides students an opportunity to obtain a broad education and a general background in the Earth sciences with a greater degree of freedom in choosing electives than in the bachelor of science programs. Through careful choice of electives, students can prepare for graduate school, business, or industry.

**Requirements**

1. Satisfy the [Discovery Program requirements](#). Note that ESCI 401, 402, 405, 409, 420, 501 cannot be taken to fulfill Discovery Program requirements for majors in the Department of Earth Sciences.
2. Satisfy the [bachelor of arts degree requirements](#).
3. Complete (with a C- or better in each course) a minimum of eight courses in the department, including ESCI 401, The Dynamic Earth, or ESCI 409, Geology and the Environment; ESCI 402, Earth History; ESCI 512, Principles of Mineralogy; and five advanced-level courses, two of which must be 700-level or above.
4. Math requirements: 425, Calculus I, and 426, Calculus II.

It is strongly advised that students complete, as early as possible, a year each of college chemistry and physics.

**Bachelor of Arts in Earth Sciences Teaching**

The bachelor of arts in Earth sciences teaching program is offered by the Department of Earth Sciences in coordination with the Department of Education. The program is specifically designed to prepare students to teach Earth sciences in secondary school. With careful planning, upon graduation from this program, qualified students are prepared to complete a M.A.T./M.Ed. degree in education with an additional year of graduate study, which includes a year-long internship (EDUC 900/901). After completing this typically five-year program, students receive full teacher certification for New Hampshire, which is recognized in many other states.

**Requirements**

1. Satisfy the [Discovery Program requirements](#).
2. Satisfy the [bachelor of arts degree requirements](#).
3. Complete the following: ESCI 401, The Dynamic Earth, or ESCI 409, Geology and the Environment; ESCI 402, Earth History; ESCI 501, Introduction to Oceanography; GEOG 473,
The Weather; CHEM 403 and 404 (or CHEM 405 if applicable), General Chemistry; PHYS 401 and 402 or PHYS 407 and 408; PHYS 406, Introduction to Modern Astronomy; plus 12 approved elective credits from intermediate and/or advanced Earth sciences courses.

4. Math requirements: 425, Calculus I, and 426, Calculus II.

5. Satisfy the secondary-school teacher education program.

General Science Certification

Students majoring in animal sciences, biochemistry, biology, Earth sciences, environmental conservation studies, environmental sciences, forestry, microbiology, plant biology, wildlife management, or zoology may seek certification to teach science at the middle, junior, or high school level.

For further information, contact the coordinator of teacher education in the Department of Education.

Bachelor of Science in Earth Sciences

The bachelor of science in Earth sciences is offered through the Department of Earth Sciences. The program represents a strong concentration in the Earth sciences and is especially well-suited for students who plan to continue their studies in graduate school. Beyond a central core of courses, there are several possible specializations (geology, geophysics, oceanography, climate) from which students must chose in order to develop depth in a particular area of Earth sciences. Students are encouraged to attend a summer off-campus field experience, for which scholarship funds may be available.

Requirements

1. Satisfy the Discovery Program requirements and the bachelor of science degree requirements.

2. Satisfactorily complete MATH 425 and 426, CHEM 403 and 404 (or CHEM 405 if applicable), PHYS 407 and 408. Some of these courses may also satisfy Discovery Program requirements.

3. Complete the core curriculum that includes a ESCI 401, The Dynamic Earth, or ESCI 409, Geology and the Environment; ESCI 402, Earth History; ESCI 501, Introduction to Oceanography; ESCI 512, Principles of Mineralogy; ESCI 530, Geological Field Methods, or ESCI 534, Techniques in Environmental Sciences; and ESCI 654, Fate and Transport in the Environment, ESCI 701, Quantitative Methods in the Earth Sciences, or ESCI 731, Geodynamics.

4. Complete one of the approved concentrations:

   Climate: ESCI 514; ESCI 561; at least two of the following four courses: ESCI 758, ESCI
5. Complete three additional approved science/math electives. The following should be considered: additional 700-level Earth sciences courses; additional chemistry, mathematics, and physics courses; courses in computer science, engineering, and the biological sciences; and an off-campus field camp.

**Capstone Experience**

A capstone experience is required of all undergraduate Earth sciences majors during their senior year. All capstone experiences at UNH must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.
4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

Examples of Department of Earth Sciences capstone experiences include Senior Thesis (ESCI 799), UROP/SURF projects, environmental or geologic field camps, or Earth sciences education and outreach activities. Additional experiences may qualify (e.g., ESCI 795/796 field courses, INCO 590, INCO 790, internships) if they are designed according to the above criteria. Students should work closely with their advisers to define the most appropriate capstone experience for the Earth sciences degree option and all capstone experiences must be approved by the Department of Earth Sciences undergraduate coordinator. Presentation of projects or experiences developed for the capstone is encouraged at the annual UNH Undergraduate Research Conference or other appropriate venue.

**Earth Sciences Minor**

The Department of Earth Sciences offers a minor in Earth sciences available to all University students. The Earth sciences minor provides an opportunity for students to complement their major field of study with foundational knowledge and essential skills in the geosciences. As with all minors offered at UNH, the Earth sciences minor adheres to the following University requirements:

- The minor consists of at least 20 semester hours of credit. For the Earth sciences minor,
the 20 credits typically come from five ESCI courses and may include research credits supervised by an Earth sciences faculty member.

- A grade of C- or better must be earned in each course, and an overall 2.00 grade point average must be maintained for all courses applied toward the minor.
- Courses taken on a pass/fail basis may not be used for the minor.
- No more than two courses (8 credits) can be used to satisfy simultaneously requirements for a student's major and minor, or two minors.
- No more than two courses (8 credits) may be transferred from another accredited institution and applied toward the minor, provided UNH has accepted them as transfer credits.

Courses in the Earth sciences minor must include both introductory and more advanced ESCI courses. Strongly recommended introductory courses include ESCI 401, The Dynamic Earth, or ESCI 409, Geology and the Environment, (students may not receive credit for both ESCI 401 and ESCI 409) and ESCI 402, Earth History. More advanced courses must include at least one at the 600 or 700 level. Specific courses in the program are selected in consultation with a minor adviser in the Department of Earth Sciences, with flexibility in approved courses to accommodate interests in different aspects of the geosciences. Interested students should see the Earth sciences undergraduate program coordinator, Jo Laird, (603) 862-3140; jl@cisunix.unh.edu, and complete an Intent to Minor form no later than their junior year. Forms can be picked up in the Earth sciences main office, 214 James Hall.

**Oceanography Minor**

The minor in oceanography is available to all students in the University interested in obtaining a broad background in oceanography. The minor consists of a minimum of five courses with grades of C (2.00) or better and no pass/fail courses. No more than 8 major requirement credits may be used. All courses in the program are selected in consultation with the oceanography minor adviser, Dr. Jamie Pringle, (603) 862-5000, jpringle@unh.edu. Students must complete an Intent to Minor form no later than their junior year. Forms can be picked up in the Earth Sciences departmental office, 214 James Hall.

Required courses include one (1) ESCI 501, Introduction to Oceanography; two (2) of the following courses: ESCI 750, Biological Oceanography; ESCI 752, Chemical Oceanography; ESCI 758, Introductory Physical Oceanography; ESCI 759, Geological Oceanography; 3) any two of the following courses, or a suitable substitute approved by the minor adviser (at least one of these courses should be in the biological sciences): PBIO 625, 722; CIE 757; ENE 747, 753; ESCI 653, 701, 754, 756, 760, 770, 771; MICR 707; OE 690, 710, 753, 754, 757, 785; EREC 611; TECH 797; ZOOL 503, 560, 674, 720, 725, 730, 751, 753, 772, 775; ZOOL/ESCI 750.
Bachelor of Science in Environmental Sciences
http://www.envsci.unh.edu/

The College of Engineering and Physical Sciences (CEPS), together with the College of Life Science and Agriculture (COLSA), jointly offers a bachelor of science degree in environmental sciences. Environmental sciences is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to effectively communicate with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The program has 125 full-time faculty members, with major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include: environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has three options: ecosystems, soils and watersheds, and hydrology. Environmental science B.S. degrees with options in ecosystems and soil and watersheds are managed by the Department of Natural Resources and the Environment in COLSA. The Department of Earth Sciences in CEPS offers the hydrology option of the B.S. environmental sciences degree. Specific course requirements for the major vary by option.

Requirements
In addition to Discovery Program and University writing requirements, all students will take Introduction to Environmental Science (NR 403) and Professional Perspectives in Natural Resources (NR 400). Students in the ecosystems or soils and watersheds option will also take either NR 435 (Issues in Natural Resource Conservation) or NR 437 (Principles of Sustainability), while hydrology majors will choose an introductory environmental science course from a list of approved courses.
Foundation courses for the hydrology degree option include:
Biology: BIOL 411 or 412
Physics: PHYS 407 and 408
Chemistry: CHEM 403 and 404, or 405
Calculus: MATH 425 and 426
Statistics: BIOL 528 or MATH 644
Geology: ESCI 401, 402, or 409

Core courses for all options comprise Techniques in Environmental Sciences (ESCI 534), Introduction to GIS (NR 658), Fate and Transport in the Environment (ESCI 654), Natural Resources and Environmental Policy (NR 602), or Issues in Environmental Geography (GEOG 673), and a capstone experience (NR 791 and an independent study or capstone course approved by their adviser and the program coordinator). Successful completion of the EcoQuest program, which is an interdisciplinary field studies program in applied ecology, resource management, and environmental policy in New Zealand, satisfies the policy and capstone requirements.

Students must complete additional courses for the hydrology option to total 23 courses in the major, plus a capstone experience:

Landscape Evolution: ESCI 561
Soils/Mineralogy: NR 501 or ESCI 512
Surface Water Hydrology: ESCI 705 or CIE 745
Groundwater Hydrology: ESCI 710
A course in quantitative analysis
Two or three approved electives

For a list of approved elective courses and for further information about the major, students may consult with the program coordinator: Michael Palace, Michael.Palace@unh.edu, (603) 862-4193.

» Click to view course offerings
The Department of Electrical and Computer Engineering offers a B.S. in electrical engineering and a B.S. in computer engineering. Both degree programs are accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (401) 347-7700.

Electrical engineers design, develop, and produce the electrical and electronic systems upon which modern society has come to depend: basic infrastructure, such as the electric power grid and fiber optic communication lines; public conveniences, such as mag lev transporters and LED signs; consumer products, such as iPods and MP3 players; personal communication devices, such as smart phones; military systems, such as rail guns and laser weapons; instruments that can image the ocean floor or analyze the Earth’s atmosphere from satellites; and medical diagnostic machines like CAT and MRI scanners. Almost every facet of modern life is touched by the work of electrical engineers.

At UNH, the cornerstone of the electrical engineering program is the involvement of students in the solution of real-world problems. Students electing this major gain knowledge of advanced electronic circuit and system design through the use of computer-aided design tools, hardware circuit prototyping, and hands-on laboratory testing.

Computers have become embedded in virtually every engineering system, including everyday items ranging from watches to automobiles. Computer engineering, traditionally a subset of electrical engineering, is a rapidly growing field that emphasizes the design, interfacing, hardware/software tradeoffs, and real-time applications of embedded computers. Students who elect this major will gain a knowledge of both hardware and software concepts, and will learn to design, build, and test systems containing digital computers.

**ECE Department Mission**

The mission of the department is to foster and advance knowledge in electrical and computer engineering.

The mission involves:

- teaching courses in electrical and computer engineering and related fields at the bachelor’s, master’s, and doctoral levels;
- advancing knowledge through research and scholarship;
• serving the state and nation by making the department’s intellectual resources available to industry and government agencies. The undergraduate EE and CE programs shall provide a firm foundation in electrical and computer engineering theory and practice, with a mix of laboratory and design experiences. The programs also shall foster teamwork and project management skills.

The graduate ECE program shall lead to the degrees of master of science in electrical engineering and the doctor of philosophy in electrical and computer engineering. Research and scholarship are core components of the department’s mission and they directly impact undergraduate and graduate education. Success in obtaining funds to procure equipment and support research efforts is therefore an essential objective for the department.

The department recognizes the need to conduct periodic reviews and adjustments to meet the current and projected needs of the state and nation according to its mission objectives. The current mission was approved by the ECE faculty in March 2001 and again on October 27, 2009, approved by the ECE Student Advisory Board in October 2001, and ratified by the ECE Industrial Advisory Board in April 2002. The mission was reaffirmed by the ECE Industrial Advisory Board in November 22, 2004 and on October 26, 2009.

**Electrical Engineering and Computer Engineering Program Educational Objectives**
The Department of Electrical and Computer Engineering has adopted a set of program educational objectives that consists of statements describing the expected accomplishments of graduates during the first several years following graduation from either program:

**Electrical Engineering Program Educational Objectives**

**Depth:** To be effective in applying electrical engineering principles in engineering practice or for advanced study in electrical engineering.

**Breadth:** To have a productive career in the many diverse fields of electrical engineering such as analog engineering, bioengineering, communications, and electromagnetics and waves, or in the pursuit of graduate education in disciplines such as electrical engineering, medicine, law, or business.

**Professionalism:** To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

**Computer Engineering Program Educational Objectives**

**Depth:** To be effective in applying computer engineering principles in engineering practice or for advanced study in computer engineering.
**Breadth:** To have a productive career in the many diverse fields of computer engineering such as digital engineering, bioengineering, communications, and embedded systems, or in the pursuit of graduate education in disciplines such as computer engineering, medicine, law, or business.

**Professionalism:** To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

The electrical and computer engineering educational program objectives were approved by the ECE faculty and the ECE Student Advisory Board in September 2012 and then ratified by the ECE Industrial Advisory Board in October 2012.

**Electrical Engineering and Computer Engineering Program Educational Outcomes**

The Department of Electrical and Computer Engineering has adopted a set of program educational outcomes that consists of statements describing what students are expected to know and be able to do by the time of graduation, the achievement of which indicates that the student is equipped to achieve the program objectives. The current electrical engineering program educational outcomes and computer engineering program educational outcomes are:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design and conduct experiments, as well as to analyze and interpret data;
- an ability to design a system, component, or process to meet desired needs;
- an ability to function on multidisciplinary teams;
- an ability to identify, formulate, and solve engineering problems;
- an ability to communicate effectively;
- an understanding of professional and ethical responsibility;
- the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- a recognition of the need for, and ability to engage in, lifelong learning;
- a knowledge of contemporary issues;
- an ability to use techniques, skills, and modern engineering tools necessary for engineering practice.

Electrical and computer program educational outcomes were approved by the ECE faculty in March 2001 and again on October 27, 2009, approved by the ECE Student Advisory Board in October 2001, and ratified by the ECE Industrial Advisory Board in March 2002. The program educational outcomes were reaffirmed by the ECE Industrial Advisory Board on November 22, 2004 and on October 26, 2009.

Students contemplating a decision between the electrical engineering and computer engineering degree programs should consider both the similarities and differences of the two
programs. The two curricula require the same foundational courses in mathematics, physics, analog and digital electronic circuits, and a capstone senior design project. The computer engineering degree program requires additional fluency in software development and advanced computer system and hardware design. The electrical engineering degree program requires advanced study in analog and mixed-signal electronic circuit and system analysis and design. Discovery Program requirements are identical for both degree programs.

**Electrical Engineering Program**

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements.

1. Any electrical engineering major whose cumulative grade-point average in ECE courses is less than 2.0 during any three semesters will not be allowed to continue as an electrical engineering major.
2. Electrical engineering majors must achieve a 2.0 grade-point average in ECE courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department’s undergraduate committee. Mindful of these rules, students, with their advisers’ assistance, should plan their programs based on the distribution of courses in the following chart.

### First Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
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<tbody>
<tr>
<td>ECE</td>
<td>401</td>
<td>Perspectives in Electrical &amp; Computer Engineering</td>
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</tr>
<tr>
<td>MATH</td>
<td>425</td>
<td>Calculus I</td>
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<td>-</td>
</tr>
<tr>
<td>CS</td>
<td>410C</td>
<td>Introduction to Scientific Programming/C*</td>
<td>4</td>
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<tr>
<td>ECON or</td>
<td>402 or</td>
<td>Principles of Economics (Micro) or Environmental and Resource Economics Perspectives</td>
<td>4</td>
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<tr>
<td>EREC</td>
<td>411</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>PHYS</td>
<td>407</td>
<td>Physics I</td>
<td>-</td>
<td>4</td>
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<td>First-Year Writing</td>
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<td>4</td>
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<tr>
<td>MATH</td>
<td>426</td>
<td>Calculus II</td>
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<td>4</td>
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</table>
*Students who wish to preserve the option of transferring to the computer engineering major without incurring a delay in graduation should consult with their academic adviser before electing these courses. It is recommended that such students take CS 415, Introduction to Computer Science I, in the fall semester and CS 416, Introduction to Computer Science II, in the spring semester in place of the listed courses.

Students are required to take either ECON 402 or EREC 411 to fulfill the Social Science Category of the Discovery Program.

Fulfilling the EE Program curriculum automatically meets Discovery Category, "Environment, Technology and Society."

### Sophomore Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<th>Title</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
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<td>Electrical Circuits</td>
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<td>ECE</td>
<td>543</td>
<td>Introduction to Digital Systems</td>
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<td>PHYS</td>
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<td>Physics II</td>
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<td>Differential Equations with Linear Algebra</td>
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<tr>
<td>ECE</td>
<td>548</td>
<td>Electronic Design I</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>ECE</td>
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<td>Computer Organization</td>
<td>-</td>
<td>4</td>
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<td>ME</td>
<td>523</td>
<td>Introduction to Statics and Dynamics</td>
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### Junior Year

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<th>Spring</th>
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<tr>
<td>ECE</td>
<td>602</td>
<td>Engineering Analysis</td>
<td>4</td>
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<tr>
<td>ECE</td>
<td>617</td>
<td>Junior Lab I</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>ECE</td>
<td>633</td>
<td>Signals and Systems I</td>
<td>3</td>
<td>-</td>
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<tr>
<td>ECE</td>
<td>651</td>
<td>Electronic Design II</td>
<td>4</td>
<td>-</td>
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<tr>
<td>CHEM</td>
<td>405</td>
<td>Chemical Principles for Engineers</td>
<td>4</td>
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<tr>
<td>ECE</td>
<td>603</td>
<td>Electromagnetic Fields &amp; Waves</td>
<td>-</td>
<td>4</td>
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<tr>
<td>ECE</td>
<td>618</td>
<td>Junior Laboratory II</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>ECE</td>
<td>634</td>
<td>Signals and Systems II</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Course Number</td>
<td>Title</td>
<td>Fall</td>
<td>Spring</td>
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<tr>
<td>ECE</td>
<td>647</td>
<td>Random Processes and Signals in Engineering</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>ECE</td>
<td>694</td>
<td>Engineering Professional Principles</td>
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### Senior Year

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<th>Spring</th>
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<td>Professional Elective**</td>
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<td></td>
<td>Discovery Program Category</td>
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<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discovery Program Category</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>ECE</td>
<td>791</td>
<td>Senior Project I*</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Professional Elective**</td>
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<td>Professional Elective**</td>
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<td>Discovery Program Category</td>
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<td>4</td>
</tr>
<tr>
<td>ECE</td>
<td>792</td>
<td>Senior Project II*</td>
<td>-</td>
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<td>Total</td>
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<td>18</td>
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</table>

*ECE 791 and 792 fulfill Discovery Program Capstone Experience.

**Four professional electives must be selected from the following categories of courses:

- At least two from: ECE 7XX not including ECE 795 and ECE 796
- No more than one from: ADMIN 640, DS 773, DS 774
- Any of these: ECE 649, ECE 795, ECE 796

Honors students who complete ECE 791H and ECE 792H satisfy one professional elective requirement as well as the requirements for ECE 791 and ECE 792.

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**Computer Engineering Program**

In addition to Discovery Program requirements, the department has a number of grade-point...
average and course requirements:

1. Any computer engineering major whose cumulative grade-point average in ECE and computer science courses is less than 2.0 during any three semesters will not be allowed to continue as a computer engineering major.
2. Computer engineering majors must achieve a 2.0 grade-point average in ECE and CS courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department’s undergraduate committee. Mindful of these rules, students, with their advisers’ assistance, should plan their programs based on the distribution of courses in the chart below.

### First Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE</td>
<td>401</td>
<td>Perspectives in Electrical &amp; Computer Engineering</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>MATH</td>
<td>425</td>
<td>Calculus I</td>
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<td>-</td>
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<tr>
<td>CS</td>
<td>415</td>
<td>Intro to Computer Science I</td>
<td>4</td>
<td>-</td>
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<td>ECON or EREC</td>
<td>402 or 411</td>
<td>Principles of Economics (Micro) or Environmental and Resource Economics Perspectives</td>
<td>4</td>
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</tr>
<tr>
<td>ECE</td>
<td>543</td>
<td>Intro to Digital Systems</td>
<td>-</td>
<td>4</td>
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<tr>
<td>MATH</td>
<td>426</td>
<td>Calculus II</td>
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<tr>
<td>CS</td>
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<td>Intro to Computer Science II</td>
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<tr>
<td>Total</td>
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</table>

Students are required to take either ECON 402 or EREC 411 to fulfill the Social Science Category of the Discovery Program.

Fulfilling the CE Program curriculum automatically meets Discovery Category, "Environment, Technology and Society."

### Sophomore Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>ECE</td>
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<td>Computer Organization</td>
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<td>-</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Course Number</td>
<td>Title</td>
<td>Fall</td>
<td>Spring</td>
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<td>--------</td>
</tr>
<tr>
<td>ECE</td>
<td>541</td>
<td>Electrical Circuits</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>ECE</td>
<td>602</td>
<td>Engineering Analysis</td>
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<td>-</td>
</tr>
<tr>
<td>ECE</td>
<td>633</td>
<td>Signals and Systems I</td>
<td>3</td>
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<td>Discovery Program Category</td>
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<tr>
<td>ECE</td>
<td>548</td>
<td>Electronic Design I</td>
<td>-</td>
<td>4</td>
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<tr>
<td>ECE</td>
<td>603</td>
<td>Electromagnetic Fields and Waves</td>
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<td>ECE</td>
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<td>Random Processes &amp; Signals in Engineering</td>
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<td>ECE</td>
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<td>Embedded Microcomputer Based Design</td>
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<td>ECE</td>
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<td>Engineering Professional Principles</td>
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**Junior Year**

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<td>Professional Elective**</td>
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<td>-</td>
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<td>Professional Elective**</td>
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<tr>
<td>ECE</td>
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<td>Senior Project I*</td>
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<tr>
<td></td>
<td></td>
<td>Discovery Program Category</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

**Senior Year**
ECE  792  Senior Project II*  -  2

** Four professional electives must be selected from the following categories of courses:

At least two from: ECE 7XX not including ECE 795 and ECE 796

No more than one from: ADMIN 640, DS 773, DS 774

Any of these: ECE 634, ECE 651, ECE 795, ECE 796, CS 620, CS 645, CS 659, CS 671, CS 7XX.

Honors students who complete ECE 791H and ECE 792H satisfy one professional elective requirement as well as the requirements for ECE 791 and ECE 792.

* ECE 791 and 792 fulfill Discovery Program Capstone Experience.
Mission
The environmental engineering program offers an undergraduate degree in environmental engineering that prepares students for productive careers in the public and private sectors and for graduate studies. The program emphasizes fundamental principles in environmental engineering and design, built upon a strong base of chemistry, physics, mathematics, and engineering science. The program prepares students to work in multidisciplinary teams that analyze, formulate, and communicate sustainable solutions to complex environmental problems. The importance of developing sustainable solutions that provide economic, social, and environmental benefits to society is emphasized. The program instills in its students an appreciation for the responsibilities engineers have to society and teaches them the skills necessary to continue learning and improving their professional expertise throughout their careers.

The ENE degree program provides an opportunity for students to specialize in municipal processes. The curriculum prepares students to plan and design systems to minimize the impact of human activity on the environment and protect human health.

Educational Objectives
ENE program graduates will have the skills, experience, and knowledge to pursue successful careers as environmental engineers. They also will have demonstrated the ability to identify information needs; locate information resources and/or design laboratory or field experiments to attain required information; and evaluate and synthesize data with sound engineering principles, methodologies, and the latest technology into creative, sustainable, safe, and economical engineering solutions to environmental engineering problems. The solutions they develop will minimize the impact of human activities on the environment and protect human health. Program graduates will have a foundation for advanced studies in environmental engineering and oral and written communication skills that will enable them to clearly explain engineering options and recommend solutions to stakeholders. ENE program graduates will have demonstrated in-depth knowledge within environmental engineering and an awareness of potential social, economic, political, and environmental impacts of engineering practices. They will have an appreciation for the contribution of environmental engineers to the benefit of society and the responsibilities of a professional environmental engineer. They will work as part of multidisciplinary teams to arrive at solutions to environmental engineering problems. ENE program graduates will be prepared to obtain professional engineering licensure; have the capacity to continue learning and improving their professional expertise and skills by participating in professional associations, conferences, workshops and courses; and understand the importance of continued professional development.
At the end of the sophomore year, students are required to have a minimum overall grade-point average of 2.00 and a grade-point average of 2.00 in ENE 400, MATH 425, CHEM 405, PHYS 407, MATH 426, CIE 525, and ENE 520 to be permitted to enroll in junior-level courses. To qualify for graduation, an ENE major must: have satisfied the previously specified course requirements, have satisfied the University’s Academic Requirements, have a minimum cumulative grade-point average of 2.00, and have a minimum grade-point average of 2.00 in engineering courses.

**Bachelor of Science in Environmental Engineering**

Environmental engineers graduating with a B.S. ENE degree will plan, design, and construct public and private facilities to minimize the impact of human activity on the environment and to protect human health. For example, environmental engineers design and build drinking water treatment systems, municipal and industrial wastewater treatment plants, solid waste management facilities, contaminated ground water remediation systems, and hazardous waste remediation facilities. These facilities must meet regulatory requirements, be cost effective to build and maintain, be safe to operate, and have minimal environmental impact. ENE students can also focus on sustainable engineering with a required course (ENE 751) in junior year and two or three senior year electives, including design electives.

In ENE 400, students are introduced to the full spectrum of environmental engineering projects that they will subsequently explore in design teams during their degree program. As part of these experiences, students visit and tour field sites (ENE 520), and through junior and senior year classes and seminars (ASCE, EWRI, ERG), they interact with engineers who talk about engineering consulting and design practices applied to local projects. As part of these projects, students: (i) analyze treatment alternatives; (ii) recommend a system that meets regulatory operational needs, and is sustainable; and (iii) prepare an implementation schedule and project budget. Detailed design projects are performed in ENE 744 and two design electives. CIE/ENE 784 and 788 serve as a capstone design experience where students work on a multi-interdisciplinary environmental engineering project and apply skills learned in other courses while working with real-world clients. ENE students do not have to take a course in the Discovery Biological Science category since they satisfy this category with ENE 756, Environmental Engineering Microbiology.

The following schedule is a sample of a planned program for environmental engineering students completing the major.

**First Year**
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENE</td>
<td>400</td>
<td>Environmental Engineering Lectures</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ENGL</td>
<td>401, 502</td>
<td>First-Year Writing</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MATH+</td>
<td>425, 426</td>
<td>Calculus I, II</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Discovery Electives*</td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CHEM</td>
<td>405</td>
<td>General Chemistry</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>PHYS</td>
<td>407</td>
<td>General Physics I</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>19</td>
<td>16</td>
</tr>
</tbody>
</table>

+Students who are required to take MATH 418, Analysis and Applications of Functions, because they did not pass the placement examination as determined by the Mathematics Department prior to the fall semester, will enroll in MATH 425 during the spring semester. Subsequent MATH courses (426, 527, 644) will be taken one semester later than shown here.

**Second Year**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery or Geospatial Science Course*</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>ENE</td>
<td>520</td>
<td>Environmental Pollution and Protection</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>CIE</td>
<td>525</td>
<td>Statics</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>MATH</td>
<td>527, 644</td>
<td>Differential Equations with Linear Algebra, Statistics for Engineers and Scientists</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CIE</td>
<td>533</td>
<td>Project Engineering</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>TECH</td>
<td>564</td>
<td>Fundamentals of CAD</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Public Health Elective</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Discovery Elective</td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>18</td>
<td>17/19</td>
</tr>
</tbody>
</table>

* GIS elective may also be taken in the third year with a second Discovery elective taken in second year.
### Third Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENE</td>
<td>751</td>
<td>Sustainable Engineering</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CIE</td>
<td>642</td>
<td>Fluid Mechanics</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>ENE</td>
<td>645</td>
<td>Fundamental Aspects of Environmental</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>ENE</td>
<td>756</td>
<td>Environmental Engineering Microbiology</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>ENE</td>
<td>742</td>
<td>Solid and Hazardous Waste Engineering</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>ESCI</td>
<td>654</td>
<td>Fate, Transport in Environment</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Hydrology Elective*</td>
<td></td>
<td></td>
<td>-</td>
<td>3-4</td>
</tr>
<tr>
<td>Discovery or Geospatial Science Course**</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>14</td>
<td>14/16</td>
</tr>
</tbody>
</table>

*Approved lists of technical, hydrology, hydraulics, and ENE design and non-design electives are available from the ENE undergraduate coordinator, Nancy Kinner. Students must take a minimum of four 700-level ENE electives totaling at least 12 credits. Two ENE elective courses must be from the design category.

**Discovery elective or GIS elective can be taken here as appropriate.

### Fourth Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulics Elective**</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>CIE/ENE Design Electives</td>
<td></td>
<td></td>
<td>3-4</td>
<td>3-4</td>
</tr>
<tr>
<td>CIE/ENE Electives**</td>
<td></td>
<td></td>
<td>3-4</td>
<td>3-4</td>
</tr>
<tr>
<td>Engineering Lab Elective</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENE</td>
<td>744</td>
<td>Physicochemical Treatment Design</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>ENE</td>
<td>749</td>
<td>Environmental Chemistry</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>ENE</td>
<td>784</td>
<td>Intro to ENE 788</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
**Environmental Engineering Minor**

The environmental engineering minor is intended primarily for students in engineering and physical sciences who are not in the chemical, civil, or environmental engineering degree programs. Students contemplating such a minor should plan on a strong background in the sciences and mathematics (including differential equations).

The minor provides a comprehensive introduction to major areas of interest in environmental protection through the three required courses. Further breadth in environmental engineering or depth in specific areas can be attained through the choice of appropriate elective courses.

The minor requires a minimum of five courses, as follows: 1) The three required courses: ENE 645, Fundamental Aspects of Environmental Engineering; ENE 744, Physicochemical Treatment Design, or ENE 743, Environmental Sampling and Analysis; and ENE 751, Sustainable Engineering; and 2) a minimum of two elective ENE courses.

Choice of elective courses should be made in consultation with the minor area adviser, Nancy Kinner. The approved lists of technical, hydrology, hydraulics, and ENE design and non-design electives are available from the ENE undergraduate coordinator, Nancy Kinner. Students must take a minimum of four 700-level ENE electives totaling at least 12 credits. Two ENE design electives must be from the design category.

The ENE program requires a minimum of 129 total credits for graduation.

*See Discovery Program requirements. The Discovery requirements for Writing, Quantitative Reasoning, and Physical Science are fulfilled by ENGL 401, MATH 425, and PHYS 407, respectively. ENE 520 fulfills the Environmental, Technology, and Society requirement. ENE 784 and 788 fulfill the Senior Capstone requirement. Environmental Engineering Microbiology fulfills the Biological Science requirement. Courses in the ENE curriculum designated Discovery Electives can be selected from the University’s approved Discovery Program courses in Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science. One of these electives must have an Inquiry attribute.

**Approved lists of technical, hydrology, hydraulics, and ENE design and non-design electives are available from the ENE undergraduate coordinator, Nancy Kinner. Students must take a minimum of four 700-level ENE electives totaling at least 12 credits. Two ENE design electives must be from the design category.

The ENE program requires a minimum of 129 total credits for graduation.
Materials science is an interdisciplinary field that involves the research, development, and design of new materials. In the past century, materials scientists have enabled major
technological advances in areas such as electronic materials for semiconductors, new metal alloys for aircraft and automotive applications, and new polymers for a host of medical and consumer applications. In order to prepare students for continuing growth and innovation in materials science, the materials science program offers this minor, which is open to all students as UNH.

The minor offers a broad introduction to materials science, which reflects the interdisciplinary nature of the field. Students must complete at least 18 credits and a minimum of five courses, as described below, with C- or better and a minimum 2.0 grade-point average. No more than 8 credits used to satisfy the student's major requirements may be used toward the minor. Students interested in the minor should contact the director of the materials science program (Prof. James Krzanowski, james.krzanowski@unh.edu) as early as possible and preferably before the end of their sophomore year.

To complete the minor in materials science, students must take the following courses: ME 561; one course from group A below; one course from group B below; and two to three additional courses from either group A or B (as needed to reach the required 18 credits).

List of approved courses:

**Required:**
ME 561, Introduction to Materials Science, 4 cr. (It is strongly recommended that students take this course during their sophomore year).

**Group A: Thermodynamics, Kinetics and Structure of Materials**
CHEM 683/685, Physical Chemistry with lab, 5 cr.\(^1\)
PHYS 508, Thermodynamics and Statistical Mechanics, 4 cr.\(^1,2\).
ME 760, Physical Metallurgy, 4 cr.
   or ME 795, Special Topics: Physical Metallurgy of Automotive and Aerospace Materials, 3 cr..
MS 762, Electronic Materials Science, 4 cr.
ME 761, Diffraction and Imaging Methods in Materials Science, 4 cr.

**Group B: Materials Applications and Properties**
CHEM 744/775, Inorganic Chemistry, 5 cr.
CHEM 545/546 or CHEM 547/549 or CHEM 651/653, Organic Chemistry I with lab, 5 cr.
PHYS 718, Condensed Matter Physics, 4 cr.
ME 731, Fracture and Fatigue Engineering Material, 4 cr.
ME 744, Corrosion, 4 cr.
ME 763, Thin Film Science and Technology, 4 cr.
ME 786, Introduction to Finite Element Analysis, 4 cr.
ME 735, Mechanics of Composite Materials, 4 cr.
ME 795, Special Topics: Materials Processing, 4 cr.

1. Students cannot receive credit towards the minor for both PHYS 508 and CHEM 683/685.
2. Students cannot receive credit towards the minor for PHYS 508 if they have taken ME 503.

Mathematics and Statistics (MATH)

» [http://ceps.unh.edu/mathematics-statistics](http://ceps.unh.edu/mathematics-statistics)

» Click to view course offerings

Professor: Maria Basterra, Liming Ge, Karen J. Graham, Donald W. Hadwin, Rita A. Hibschweiler, A. Robb Jacoby, Ernst Linder, Sharon M. McCrone, Dmitri A. Nikshych, Samuel D. Shore, Kevin M. Short, Marianna A. Shubov, Yitang Zhang

Associate Professor: David V. Feldman, Edward K. Hinson, Linyuan Li, Mark Lyon, Junhao Shen

Assistant Professor: John F. Gibson, HaiYing Wang

Instructor: Philip J. Ramsey

Lecturer: Adam Boucher, Mehmet Orhon, Neil Portnoy

The Department of Mathematics and Statistics offers a variety of programs leading to five different degrees: B.A. degree: mathematics major; B.S. in mathematics degree; B.S. in applied mathematics degree; B.S. in mathematics education degree; and B.S. in statistics degree. These programs provide flexibility through elective choices and are designed to maximize educational and employment opportunities. Each student must enroll in one specific program; however, changes between programs usually can be accommodated.

The first two years of all programs are similar. In the first year, students are expected to take Calculus I (MATH 425) and Calculus II (MATH 426), as well as an introductory programming course (either MATH 445 or CS 410). A sophomore typically takes follow-up calculus courses in differential equations (MATH 527) and multidimensional calculus (MATH 528), an introductory statistics course (MATH 539), and a course in mathematical proof (MATH 531). The senior capstone experience is fulfilled by a variety of designated courses in each of the degree programs; specific details are given in each program's course listing below.

For more information about the department's undergraduate programs, visit [www.math.unh.edu](http://www.math.unh.edu).
Standards for Graduation

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Bachelor of Arts, Mathematics Major

The bachelor of arts degree with the mathematics major may offer a broader liberal arts program than the bachelor of science degree programs. By a careful selection of electives, students can shape this major into a preparation for graduate school, business, or industry.

Required MATH Courses

MATH 425, Calculus I,
   which satisfies the QR requirement for the Discovery Program
MATH 426, Calculus II
MATH 445, Mathematics and Applications with MATLAB
   or CS 410, Introduction to Scientific Programming
MATH 527*, Differential Equations with Linear Algebra
MATH 528*, Multidimensional Calculus
MATH 531, Mathematical Proof
MATH 539, Introduction to Statistical Analysis
MATH 545, Introduction to Linear Algebra
   or MATH 645*, Linear Algebra for Applications
MATH 761, Abstract Algebra
MATH 767, One-Dimensional Real Analysis

THREE approved MATH courses chosen in consultation with the major adviser

MATH 797**, Senior Seminar,
   or MATH 799**, Senior Thesis

* These requirements can be satisfied by MATH 525-526, Linearity I-II.
** This course satisfies the capstone experience requirement for the Discovery Program.

Foreign Language Requirement

Foreign language requirement as defined by the University for the B.A. degree

Bachelor of Science in Mathematics

This program offers the strongest concentration in mathematics, requiring courses that are
intended to prepare the student for graduate work in mathematics. Through a judicious choice of electives, students may design stronger pre-graduate programs, a program in applied mathematics, or slant the program toward a career in business or industry.

**Required MATH Courses**

MATH 425, Calculus I

*which satisfies the QR requirement for the Discovery Program*

MATH 426, Calculus II

MATH 445, Mathematics and Applications with MATLAB, or CS 410, Introduction to Scientific Programming

MATH 527*, Differential Equations with Linear Algebra

MATH 528*, Multidimensional Calculus

MATH 531, Mathematical Proof

MATH 539, Introduction to Statistical Analysis

MATH 545, Introduction to Linear Algebra; or MATH 645*, Linear Algebra for Applications

MATH 761, Abstract Algebra

MATH 762, Linear Algebra

MATH 767, One-Dimensional Real Analysis

MATH 784, Topology

MATH 788, Complex Analysis

THREE approved MATH courses chosen in consultation with the major adviser, two of which are chosen from the following:

MATH 765, Algebraic Geometry

MATH 768, Real Analysis II

MATH 769, Introduction to Differential Geometry

MATH 770, Foundations of Number Theory

MATH 772, Combinatorics

MATH 797**, Senior Seminar; or MATH 799**, Senior Thesis

* These requirements can be satisfied by MATH 525-526, Linearity I-II.

** This course satisfies the capstone experience requirement for the Discovery Program.

**Other Required Courses**

PHYS 407, General Physics I,

*which satisfies the PS and Lab requirement for the Discovery Program*

PHYS 408, General Physics II
Bachelor of Science in Applied Mathematics

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems. Students pursuing this degree must choose one of the following options:

Computation, Dynamics and Control, Economics, Fluid Dynamics, or Solid Mechanics and Vibrations.

Required Courses for All Options

MATH 425, Calculus I,

*which satisfies the QR requirement for the Discovery Program*

MATH 426, Calculus II

MATH 445, Mathematics and Applications with MATLAB

*which satisfies the ETS requirement for the Discovery Program*

MATH 527*, Differential Equations with Linear Algebra

MATH 528*, Multidimensional Calculus

MATH 531, Mathematical Proof

MATH 539, Introduction to Statistical Analysis

MATH 645*, Linear Algebra for Applications

MATH 753, Introduction to Numerical Methods I

MATH 797**, Senior Seminar;

MATH 798**, Senior Project:

or MATH 799**, Senior Thesis

PHYS 407, General Physics I,

*which satisfies the PS and lab requirement for the Discovery Program*

* These requirements can be satisfied by MATH 525-526, Linearity I-II.

** This course satisfies the capstone experience for the Discovery Program.

Additional Option-specific Course Requirements

Computation Option

PHYS 408, General Physics II

MATH 647, Complex Analysis for Applications

MATH 745, Fundamentals of Applied Mathematics

CS 415, Introduction to Computer Science I

CS 416, Introduction to Computer Science II

CS 515, Data Structures
CS 659, Introduction to Theory of Computation
CS 758, Algorithms
IAM 751, Introduction to High-Performance Computing

*Dynamics and Control Option*
PHYS 408, General Physics II
MATH 647, Complex Analysis for Applications
MATH 747, Introduction to Nonlinear Dynamics and Chaos
ME 525, Statics
  or CIE 525, Statics for Civil Engineers
ME 627, Dynamics
ECE 633, Signals and Systems I
ECE 634, Signals and Systems II
ECE 772, Control Systems

*Economics Option*
MATH 739, Applied Regression Analysis
MATH 755, Probability with Applications
ONE approved MATH elective at the 700-level, chosen in consultation with the major adviser
ECON 401, Principles of Economics (Macro)
ECON 402, Principles of Economics (Micro)
ECON 605, Intermediate Microeconomic Analysis
ECON 611, Intermediate Macroeconomic Analysis
ECON 726, Introduction to Econometrics
ONE approved ECON or DS elective

*Fluid Dynamics Option*
PHYS 408, General Physics II
MATH 647, Complex Analysis for Applications
MATH 745, Fundamentals of Applied Mathematics I
ME 503, Thermodynamics
ME 525, Statics
  or CIE 525, Statics for Civil Engineers
ME 608, Fluid Dynamics
ME 627, Dynamics
TWO of the following:
  ME 707, Analytic Fluid Dynamics
  ME 709, Computational Fluid Dynamics
  ME 712, Waves in Fluids
Solid Mechanics and Vibrations Option
PHYS 408, General Physics II
MATH 647, Complex Analysis for Applications
MATH 745, Fundamentals of Applied Mathematics I
ME 525, Statics
   or CIE 525, Statics for Civil Engineers
ME 526, Mechanics of Materials
   or CIE 526, Strength of Materials
ME 561, Introduction to Materials Science
ME 627, Dynamics
TWO of the following:
   ME 724, Vibration Theory and Applications
   ME 727, Advanced Mechanics of Solids
   ME 730, Mechanical Behavior of Materials
   ME 731, Fracture and Fatigue Engineering Materials

Bachelor of Science in Statistics

This program prepares students for employment and/or graduate study in a variety of fields and research specializations in which statistical analysis and its applications play a critical role. In addition to its degree programs, the department has an active interest in the actuarial profession. Those interested in actuarial science should seek the advice of Professor Linyuan Li.

Required MATH Courses
MATH 425, Calculus I,
   which satisfies the QR requirement for the Discovery Program
MATH 426, Calculus II
MATH 445, Mathematics and Application with MATLAB,
   or CS 410, Introduction to Scientific Programming
MATH 527*, Differential Equations with Linear Algebra
MATH 528*, Multidimensional Calculus
MATH 531, Mathematical Proof
MATH 539, Introduction to Statistical Analysis
MATH 645*, Linear Algebra for Applications
MATH 739, Applied Regression Analysis
MATH 755, Probability with Applications
MATH 756, Principles of Statistical Inference
THREE MATH courses chosen from:
  MATH 736, Statistical Methods for Research
  MATH 737, Statistical Methods for Quality Improvement
  MATH 740, Design of Experiments I
  MATH 741, Survival Analysis
  MATH 743, Time Series Analysis
  MATH 744, Design of Experiments II
TWO approved MATH electives at least one of which is at the 700-level, chosen in consultation with the major adviser
  MATH 797**, Senior Seminar,
  or MATH 798**, Senior Project
  or MATH 799**, Senior Thesis

* These requirements can be satisfied by MATH 525-526, Linearity I-II.
** This course satisfies the capstone experience requirement for the Discovery Program.

Bachelor of Science in Mathematics Education

This professional degree program prepares students for mathematics teaching at the elementary, middle/junior high, or secondary level. The program is coordinated with the education department’s teacher certification programs. For the elementary option, full certification requires the five-year program. Students may complete the degree requirements for middle/junior high or secondary option with full teacher certification in either four or five years. Students electing the four-year option must plan for one semester of student teaching (EDUC 694) in their senior year and must consult with the departmental adviser in order to accommodate the scheduling of required MATH courses. The five-year program requires a year-long teaching internship in the fifth year that can be coupled with other graduate work leading to a master’s degree. See Education, College of Liberal Arts.

Elementary School Option

Required MATH Courses
MATH 425, Calculus I,
  which satisfies the QR requirement for the Discovery Program
MATH 426, Calculus II
MATH 445, Mathematics and Applications with MATLAB,
  or CS 410, Introduction to Scientific Programming
MATH 531, Mathematical Proof
MATH 539, Introduction to Statistical Analysis
MATH 545, Introduction to Linear Algebra,
or MATH 645, Linear Algebra for Applications
MATH 621, Number Systems for Teachers
MATH 622, Geometry for Teachers
MATH 623, Topics in Mathematics for Teachers
MATH 700, Introduction to Mathematics Education
MATH 703, The Teaching of Mathematics, K-6
MATH 760, Geometry
MATH 790, Historical Foundations of Mathematics
MATH 797**, Senior Seminar;
   or MATH 799**, Senior Thesis

** This course satisfies the capstone experience requirement for the Discovery Program.

Other Required Courses

PHYS 406, Introduction to Modern Astronomy,
   which satisfies the PS and Lab requirement for the Discovery Program
EDUC 500, Exploring Teaching
EDUC 700, Educational Structure and Change
EDUC 701, Human Development and Learning: Educational Psychology
EDUC 705, Alternative Perspectives on the Nature of Education
EDUC 706, Introduction to Reading Instruction in the Elementary Schools

Note: EDUC 703F, EDUC 703M, and EDUC 751A are requirements for certification that may
be taken as an undergraduate.

Middle/Junior High School Option

Required MATH Courses

MATH 425, Calculus I,
   which satisfies the QR requirement for the Discovery Program
MATH 426, Calculus II
MATH 445, Mathematics and Applications with MATLAB,
   or CS 410, Introduction to Scientific Programming
MATH 531, Mathematical Proof
MATH 539, Introduction to Statistical Analysis
MATH 545, Introduction to Linear Algebra,
   or MATH 645, Linear Algebra for Applications
MATH 621, Number Systems for Teachers
MATH 622, Geometry for Teachers
MATH 623, Topics in Mathematics for Teachers
MATH 700, Introduction to Mathematics Education
MATH 708, Teaching Middle School Mathematics
MATH 760, Geometry
MATH 790, Historical Foundations of Mathematics
ONE approved MATH course chosen in consultation with the academic adviser
MATH 797**, Senior Seminar,
or MATH 799**, Senior Thesis

** This course satisfies the capstone experience requirement for the Discovery Program.

Other Required Courses
EDUC 500, Exploring Teaching
EDUC 700, Educational Structure and Change
EDUC 701, Human Development and Learning: Educational Psychology
EDUC 705, Alternative Perspectives on the Nature of Education

Note: EDUC 751B is a requirement for certification that may be taken as an undergraduate.

Secondary School Option

Required MATH Courses
MATH 425, Calculus I,
    which satisfies the QR requirement for the Discovery Program
MATH 426, Calculus II
MATH 445, Mathematics and Applications with MATLAB,
or CS 410, Introduction to Scientific Programming
MATH 527, Differential Equations with Linear Algebra
MATH 528, Multidimensional Calculus
MATH 531, Mathematical Proof
MATH 539, Introduction to Statistical Analysis
MATH 545, Introduction to Linear Algebra
    or MATH 645, Linear Algebra for Applications
MATH 624, Analysis of Secondary School Mathematics
MATH 700, Introduction to Mathematics Education
MATH 709, Teaching of Mathematics, 7-12
MATH 760, Geometry
MATH 761, Abstract Algebra
MATH 790, Historical Foundations of Mathematics
MATH 797**, Senior Seminar,
or MATH 799**, Senior Thesis

** This course satisfies the capstone experience requirement for the Discovery Program.
Other Required Courses
EDUC 500, Exploring Teaching
EDUC 700, Educational Structure and Change
EDUC 701, Human Development and Learning: Educational Psychology
EDUC 705, Alternative Perspectives on the Nature of Education

Note: EDUC 751B is a requirement for certification that may be taken as an undergraduate.

Minoring in Mathematics

The Department of Mathematics and Statistics offers three minor programs: mathematics, applied mathematics, and statistics.

These programs, which are open to all students enrolled at the University, require a minimum of five MATH courses as detailed below. Students whose major program requires more than two courses required by the minor program must substitute additional courses from the list of elective courses to meet the five-course minimum.

Mathematics Minor
Required (3): MATH 528*, MATH 531, and either MATH 761 or MATH 767
Electives (2): Two courses chosen from: MATH 657, 658, 761, 762, 765, 767, 768, 769, 770, 772, 776, 783, 784, 788
* This requirement can be satisfied by MATH 526, Linearity II.

Applied Mathematics Minor
Required (4): MATH 528*, 645*, 745 and 753
Elective (1): One course chosen from: MATH 647, 746, 747, or 755
* These requirements can be satisfied by MATH 525-526, Linearity I-II.

Statistics Minor
Required (2): MATH 539 (or 644) and MATH 645
Electives (3): Three courses chosen from: MATH 736, 737, 739, 740, 741, 743, 744, 755, 756

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Mechanical Engineering (ME)
» http://www.unh.edu/mechanical-engineering/

» Click to view course offerings
Chairperson: Brad Lee Kinsey  
Professor: Kenneth C. Baldwin, Barbaros Celikkol, John Hughes Clarke, Diane L. Foster, Barry K. Fussell, Todd S. Gross, Joseph C. Klewicki, James E. Krzanowski, M. Robinson Swift, Igor I. Tsukrov  
Associate Professor: Gregory P. Chini, Yannis Korkolis, John Philip McHugh, May-Win L. Thein, Christopher M. White, Martin M. Wosnik  
Assistant Professor: Marko Knezevic, Yaning Li, Thomas Weber

The Mechanical Engineering Program at UNH is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

Mission
In support of the University and college missions, the Department of Mechanical Engineering is dedicated to educating the highest quality engineering professionals and leaders. Graduates will be prepared to creatively solve engineering problems through the use of analysis, computation, and experimentation. Students completing the program should be well-informed citizens who have the ability to grow intellectually and are able to solve new, challenging problems with self-confidence. It is the department’s intent to maintain a general and flexible curriculum that prepares students for both industrial practice and graduate education.

Educational Objectives
The objective of the UNH Mechanical Engineering Program is to produce graduates who are ethical professionals and good citizens. As they progress in the first several years following graduation, they are expected to:

1. Use their engineering education and communication skills for success in:
   a) Technical careers in industry, academia, government, or other organizations;
   b) Graduate school in engineering or physical sciences;
   c) Nontechnical careers or education in areas such as law, medicine, business, public policy, secondary education, service industries, etc.;
   d) Careers involving management or entrepreneurship.

2. Exercise lifelong learning to:
   a) Pursue professional development opportunities in their disciplines;
b) Develop new knowledge and skills;

c) Pursue new areas of expertise or careers.

3. Use their engineering background to:

a) Solve technical problems for societal benefit;

b) Develop new knowledge and products that will promote sustainable economic and environmental developments to improve the quality of life;

c) Promote the practice of engineering.

Mechanical engineering is a challenging profession and has two major emphases. The first is the general area of mechanical design, which involves all types of mechanical motion and the forces and energy that drive it. The other emphasis deals with energy generation and conversion and is grounded in the principles of the thermal and fluid sciences. Other subject areas, which support both emphases and are frequently part of designs and products, are the materials sciences, manufacturing, and control systems. All of these areas are included in the education and training of mechanical engineers. Ocean engineering is another focus area in our department which emphasizes solving engineering problems associated with the sustainable utilization of ocean resources and the scientific exploration and study of the ocean environment. Mechanical engineering requires significant study in mathematics, engineering computing, and basic sciences such as chemistry and physics, as well as basic engineering courses, before reaching the more specialized courses. Additional information can be found at the mechanical engineering website, http://ceps.unh.edu/mechanical-engineering/

The Program

The program begins with courses in physics, mathematics, chemistry, and computer-aided design. The department has a four-course mechanics sequence, a four-course thermal/fluid sciences sequence, and a two-course systems and controls sequence. Modern experimental methods are taught in a two-course sequence starting in the junior year. The two-semester senior design project requires students to utilize the skills they have learned in their courses and function in an engineering team. The five technical electives required in the program give the students the opportunity to focus on advanced technical areas of their choice.

With their advisers’ assistance, students should plan a program based on the following distribution of courses that totals not less than 128 credits. Note: mechanical engineering graduates typically exceed this requirement depending on what elective courses they select in the curriculum. The outline that follows is typical only in format. Within the constraints of satisfying all the requirements and having all the necessary prerequisites, schedules may vary
because of scheduling needs or student preference. Some mechanical engineering elective courses may not be offered every year.

Of the five technical elective courses, at least three of these courses must be taken in mechanical or ocean engineering, and these must be at least three credits and at the 600 or 700 level. At most, two may be selected from other 600- or 700-level courses in the College of Engineering and Physical Sciences (CEPS), which can include CS 410, ESCI 501, ECE 543, or a course approved by the department. Courses that cover nearly identical material to core mechanical and ocean engineering courses, but in another CEPS department, will not be accepted as technical electives, e.g., CHE 601, CHE 602, CHE 604, CIE 622, and CIE 642.

With departmental approval, the two technical electives outside of mechanical/ocean engineering can be used for studying a focused area/minor, with the restrictions that only one course can be at the 400 or 500 level and the focused area/minor must be in a bachelor degree program.

Students must satisfy the University’s Discovery Program requirements. The following features are unique to students in the mechanical engineering program:

- As is the case across the University, all students are required to take an Inquiry course or an Inquiry Attributes course during their first two years. This can be satisfied with ME 441. Students who are exempt from ME 441 due to prior engineering design and computer-aided design (CAD) experience must select an Inquiry 444 course or a course with an Inquiry Attribute.
- The Discovery Environment, Technology, and Society category requirement is met upon receiving a B.S. degree in mechanical engineering.
- The Discovery Social Science category must be satisfied with either ECON 402 or EREC 411.
- The Discovery senior capstone experience is satisfied with either ME 755 and 756 or TECH 797.

In order to graduate with a mechanical engineering B.S. degree, students must have at least a 2.0 grade-point average in all engineering and science courses, including required technical electives, normally taken as department requirements after the start of the junior year.

Predictor courses: To enter the sophomore year, students must achieve a greater than (but not equal to) 2.00 GPA in PHYS 407 and MATH 426 with no grade below a C. To enter the junior year, students must achieve a minimum GPA of 2.00 in ME 525, ME 526, and ME 503 with only one C- grade allowed and no grades below C-. Students are allowed two repeats of these courses to achieve the predictor rule requirements. This can be a single class repeated twice or two classes repeated once. Students are removed from the program if they obtain a
semester GPA <1.5 three times. Students may petition to be reinstated after one year out of the program.

Transfer in Policy for UNH Students into the Department of Mechanical Engineering:

**CEPS Students:** To transfer into the freshman or sophomore year, students must earn a combined GPA greater than (but not equal to) 2.00 in PHYS 407 and MATH 426 with no grade below a C in these two courses.

If students are enrolled in ME 525 (or CIE 525), ME 526 (or CIE 526), or ME 503, they must earn a combined GPA of 2.00 with no grade below a C- in two of these courses to transfer in and advance to the junior year. Note: A combined GPA greater than (but not equal to) 2.00 in PHYS 407 and MATH 426 with no grade below a C is also required.

**Non-CEPS Students:** To transfer into the Department of Mechanical Engineering from another college at UNH, students have to satisfy the CEPS college transfer policy as well as the Department of Mechanical Engineering Transfer policies listed above according to status.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH</td>
<td>425</td>
<td>Calculus I</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>*CHEM</td>
<td>405</td>
<td>General Chemistry</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>**ME</td>
<td>441</td>
<td>Eng. Design and Solid Modeling</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Discovery Program Elective</td>
<td></td>
<td></td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>MATH</td>
<td>426</td>
<td>Calculus II</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>PHYS</td>
<td>407</td>
<td>General Physics I</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Discovery Program Elective</td>
<td></td>
<td></td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>English</td>
<td>401</td>
<td></td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

*CHEM 403 and CHEM 404, General Chemistry, may be substituted for CHEM 405.

**ME 441 satisfies the Discovery Inquiry requirement.

**With permission, ME 477 may be substituted for ME 441 if student has had appropriate
engineering design and CAD experience. An alternative Discovery Program Inquiry course or Inquiry Attribute course is required since student is not taking ME 441.

PHYS 407 or CHEM 405 satisfies the Discovery Physical Science (with lab) category.

MATH 425 satisfies the Discovery Foundation Quantitative Reasoning category.

ENGL 401 satisfies the Discovery Foundation Writing Skills category.

Sophomore Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
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<tbody>
<tr>
<td>Discovery Program Elective</td>
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</tr>
<tr>
<td><strong>MATH 528</strong></td>
<td>528</td>
<td>Multidimensional Calculus</td>
<td>4</td>
<td>-</td>
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<tr>
<td>PHYS 408</td>
<td></td>
<td>General Physics II</td>
<td>4</td>
<td>-</td>
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<tr>
<td>ME 525</td>
<td></td>
<td>Statics</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>IAM 550</td>
<td></td>
<td>Intro to Engineering Computing</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>MATH 527</strong></td>
<td>527</td>
<td>Differential Equations</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>ME 503</td>
<td></td>
<td>Thermodynamics</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>ME 526</td>
<td></td>
<td>Mechanics of Materials</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>ME 561</td>
<td></td>
<td>Introduction to Materials Science</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>19</td>
<td>14</td>
</tr>
</tbody>
</table>

****MATH 525 and 526, Linearity, may be substituted for MATH 527 and 528, and a technical elective course typically completed in the senior year of the program.

Junior Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery Program Elective</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ECE 537</td>
<td></td>
<td>Introduction to Electrical Engineering</td>
<td>4</td>
<td>-</td>
</tr>
</tbody>
</table>
ME  608  Fluid Dynamics  3  -  
ME  627  Dynamics  3  -  
ME  705  Thermal System Analysis and Design  4  
ME  603  Heat Transfer  -  3  
ME  643  Machine Design  3  
ME  646  Experimental Measurement & Data Analysis  -  4  
ME  670  Systems Modeling, Simulation, & Control  -  4  
Total  18  14  

**Senior Year**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery Program Elective</td>
<td></td>
<td></td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>****ME</td>
<td>755</td>
<td>Senior Design Project I</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>ME</td>
<td>747</td>
<td>Experimental Measurement &amp; Modeling</td>
<td>4</td>
<td>-</td>
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<tr>
<td>Technical Elective</td>
<td></td>
<td></td>
<td>3-4</td>
<td>-</td>
</tr>
<tr>
<td>Technical Elective</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Discovery Program Elective</td>
<td></td>
<td></td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>****ME</td>
<td>756</td>
<td>Senior Design Project II</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Technical Elective</td>
<td></td>
<td></td>
<td>-</td>
<td>3-4</td>
</tr>
<tr>
<td>Technical Elective</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Technical Elective</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>16-18</td>
<td>15-18</td>
</tr>
</tbody>
</table>

****TECH 797, Undergraduate Ocean Research Project, may be substituted for ME 755 and ME 756. These courses satisfy the Discovery Senior Capstone Experience category.

**Mechanical Engineering Minor**

The minor, administered by the Department of Mechanical Engineering, is open to all students.
of the University and offers a broad introduction to mechanical engineering.

Students must complete a minimum of six courses as follows: ME 441, ME 525, ME 526, ME 627, ME 503, and ME 608. Electrical and computer engineering majors should take the following courses: ME 477, ME 523, ME 526, ME 503, ME 608, and ME 561 (along with ECE 401, which is a required ECE course). Physics majors should take the following courses: ME 477, ME 525, ME 526, ME 608, and chose one of the following courses, ME 643, ME 670, or ME 705 (along with PHYS 508 and PHYS 616, which are required Physics courses). Interested students should contact the mechanical engineering chair, Professor Brad Kinsey, (603) 862-1811 and file an intent to minor form. During the last semester, students must complete a completion of minor form for it to appear on their transcript.

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Ocean Engineering (OE)

http://marine.unh.edu/oe

» Click to view course offerings

Program Coordinator: Diane L. Foster
Professor: Kenneth C. Baldwin, Barbaros Celikkol, M. Robinson Swift, Igor I. Tsukrov
Associate Professor: May-Win L. Thein, Martin M. Wosnik
Assistant Professor: Thomas Weber

Ocean Engineering (OE)

http://ceps.unh.edu/mechanical-engineering/ocean-engineering-bs

Mission

The department strives to prepare students for productive careers in industry or government as well as to provide a foundation for graduate studies. The program emphasizes ocean
engineering fundamentals while offering interdisciplinary opportunities for focused study in civil, electrical, environmental, or mechanical engineering, as well as marine sciences.

**Program Educational Objectives**

The ocean engineering program seeks to provide an environment that enables students to pursue their goals in an innovative, rigorous, and challenging program with a diversity of offerings. The program has the following major educational objectives with the expectation that alumni will have successful careers in the many diverse areas of the ocean engineering profession. Within a few years of obtaining a bachelor’s degree in ocean engineering, we expect our graduates to have the following attributes:

**Depth.** To be effective in applying ocean engineering principles in engineering practice or for advanced study in ocean engineering.

**Breadth.** To have a productive career in the many diverse fields of ocean engineering such as coastal engineering, ocean acoustics, offshore structures, and marine renewable energy, or in the pursuit of graduate education in disciplines that include marine science, engineering, medicine, law, or business.

**Professionalism.** To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

**The Program:**

Ocean engineering is a field of study that seeks to solve engineering problems associated with the ocean, including those problems associated with the sustainable utilization of ocean resources and the scientific exploration and study of the ocean environment. Ocean engineering is an interdisciplinary field with roots in mechanical, electrical, civil, and environmental engineering, with strong ties to physical, chemical, biological, and geological oceanography. Students of ocean engineering are best served when they are formally trained inside a framework that fuses the expertise of these often-disparate fields.

The BSOE curriculum provides students with a solid engineering core and prepares students for professional engineering careers or for graduate study. The BSOE starts with foundational classes in math, physics, chemistry, and engineering computing, along with introductions to ocean engineering through seminars and oceanography coursework. Students develop their engineering acumen through coursework and laboratory studies that are focused on analysis, experimentation, and design. Students proceed to increasingly advanced coursework in ocean instrumentation, waves and tides, the design of ocean structures, coastal engineering, ocean measurements, and ocean acoustics. Opportunities exist for at least four technical electives, which help students gain further competence in an area of their choice. Students finish their curriculum with a two-semester senior capstone design project. Elective courses in the arts,
humanities, and the social sciences are included to provide a well-rounded education. Students work with an adviser to plan a program that is based on the courses shown in the ocean engineering course outline below that totals not less than 128 credits. The outline is considered a guideline and may be modified to suit student needs and desires within the constraints of meeting minimum credit hours, course pre-requisites, and non-major elective course requirements. Some ocean engineering elective courses may not be offered every year.

The ocean engineering program curriculum requires four technical electives that are CEPS 600-level or higher courses that have been approved by the OE undergraduate curriculum committee. Sequences have been identified that will provide students more in-depth opportunities in one of the ocean engineering sub-areas.

Students must satisfy the University's Discovery Program requirements. The following features are unique to students in the ocean engineering program:

- As is the case across the University, all students are required to take an Inquiry course or an Inquiry Attribute course during their first two years. This is satisfied with ESCI 501.
- The Discovery Environment, Technology, and Society category requirement is met upon receiving a B.S. degree in ocean engineering.
- The Discovery Social Science category must be satisfied with either ECON 402 or EREC 411.
- The Discovery senior capstone experience is satisfied with TECH 797.

In order to graduate with an ocean engineering B.S. degree, students must have at least a 2.0 grade-point average in all engineering and science courses, including required technical electives, normally taken as department requirements after the start of the junior year.

Predictor courses: To enter the sophomore year, students must achieve a greater than (but not equal to) 2.00 GPA in PHYS 407 and MATH 426 with no grade below a C. To enter the junior year, students must achieve a minimum GPA of 2.00 in ME 525, ME 526, and ME 503 with only one C- grade allowed and no grades below C-.

Transfer in Policy for UNH Students into the Department of Mechanical Engineering:

**CEPS Students:** To transfer into the freshman or sophomore year, students must earn a combined GPA greater than (but not equal to) 2.00 in PHYS 407 and MATH 426 with no grade below a C in these two courses.
If students are enrolled in ME 525 (or CIE 525), ME 526 (or CIE 526), or ME 503, they must earn a combined GPA of 2.00 with no grade below a C- in two of these courses to transfer in and advance to the junior year. Note: a combined GPA greater than (but not equal to) 2.00 in PHYS 407 and MATH 426 with no grade below a C is also required.

**Non-CEPS Students:** To transfer into the Department of Mechanical Engineering from another college at UNH, students have to satisfy the CEPS college transfer policy as well as the Department of Mechanical Engineering transfer policies listed above according to status.

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### Freshman Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>CHEM</em></td>
<td>405</td>
<td>General Chemistry</td>
<td>4</td>
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<tr>
<td>MATH</td>
<td>425</td>
<td>Calculus I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ME</td>
<td>477</td>
<td>Introduction to Solid Modeling</td>
<td>1</td>
<td></td>
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<tr>
<td>OE</td>
<td>400</td>
<td>OE Seminar I</td>
<td>1</td>
<td></td>
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<tr>
<td>Disc. Prog. Elective</td>
<td></td>
<td>Discovery Program Elective</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGL</td>
<td>401</td>
<td>First-Year Writing</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH</td>
<td>426</td>
<td>Calculus II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>OE</td>
<td>401</td>
<td>OE Seminar II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PHYS</td>
<td>407</td>
<td>Physics I</td>
<td>4</td>
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<tr>
<td>Disc. Prog. Elective</td>
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<td>Discovery Program Elective</td>
<td>4</td>
<td></td>
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</table>

*Chem 403 and CHEM 404, General Chemistry I and II, may be substituted for CHEM 405.

PHYS 407 or CHEM 405 satisfies the Discovery Physical Science (with lab) category.

Math 425 satisfies the Discovery Foundation Quantitative Reasoning category.

ENGL 401 satisfies the Discovery Foundation Writing Skills category.
## Sophomore Year

<table>
<thead>
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<td>ESCI</td>
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<td>Intro. to Oceanography</td>
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<tr>
<td>IAM</td>
<td>550</td>
<td>Intro. to Engineering Computing</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>MATH</strong></td>
<td>528</td>
<td>Multi-Dimensional Calculus</td>
<td>4</td>
<td></td>
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<tr>
<td>ME</td>
<td>525</td>
<td>Statics</td>
<td>3</td>
<td></td>
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<tr>
<td>PHYS</td>
<td>408</td>
<td>Physics II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>MATH</strong></td>
<td>527</td>
<td>Differential Equations</td>
<td>4</td>
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<tr>
<td>ME</td>
<td>503</td>
<td>Thermodynamics</td>
<td>3</td>
<td></td>
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<tr>
<td>ME</td>
<td>526</td>
<td>Mechanics of Materials</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>OE</td>
<td>690</td>
<td>Introduction to Ocean Engineering</td>
<td>4</td>
<td></td>
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</tbody>
</table>

**Math 525 and 526, Linearity, may be substituted for Math 527 and Math 528, and a technical elective course.**

ESCI 501 satisfies the Discovery Inquiry requirement.

## Junior Year

<table>
<thead>
<tr>
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<th>Spring</th>
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<tr>
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<td></td>
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<tr>
<td>ME</td>
<td>608</td>
<td>Fluid Dynamics</td>
<td>3</td>
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<td>ME</td>
<td>627</td>
<td>Dynamics</td>
<td>3</td>
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<td>OE</td>
<td>754</td>
<td>Ocean Waves and Tides</td>
<td>4</td>
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<td>Disc. Prog. Elective</td>
<td></td>
<td>Discovery Program Elective</td>
<td>4</td>
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<tr>
<td>OE</td>
<td>610</td>
<td>Ocean Instrumentation Lab</td>
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</table>
### Ocean Engineering Minor

The ocean engineering minor allows undergraduate engineering students to acquire a nucleus of knowledge about engineering pertaining to the ocean and the coastal zone.

To meet the University minor requirement, students must satisfactorily complete a minimum of five courses from the following list: ESCI 501, Introduction to Oceanography; OE 690, Introduction to Ocean Engineering; ESCI 752, Chemical Oceanography; ESCI 758, Introductory Physical Oceanography; ESCI 759, Geological Oceanography; OE 710, Ocean...
Measurements Lab; OE 744, Corrosion; OE 754, Ocean Waves and Tides; OE 756, Principles of Naval Architecture and Model Testing; OE 757, Coastal Engineering and Processes; OE 765, Underwater Acoustics; OE 771, Geodesy and Positioning for Ocean Mapping; OE 795, Special Topics in Ocean Engineering; ENE 747, Introduction to Marine Pollution and Control; and TECH 797, Undergraduate Ocean Research Program. Students typically take ESCI 501, TECH 797, and OE 690 plus two additional engineering courses from the above list to complete the minor.

Students wishing to take the ocean engineering minor should indicate their interest to the ocean engineering minor adviser, Kenneth C. Baldwin, (603) 862-1898 or Kenneth.Baldwin@unh.edu no later than the beginning of the junior year and file an intent to minor form. During the final semester, students must complete a completion of minor form for it to appear on their transcript.

Physics (PHYS)

Chairperson: Mark L. McConnell
Associate Professor: James Connell, Kai Germaschewski, Marc R. Lessard, Dawn C. Meredith, Nathan A. Schwadron, Karl Silfer
Research Associate Professor: Peter Forbes Bloser, Harald A. Kucharek, Clifford Lopate
Assistant Professor: David Mattingly, Patricia H. Solvignon
Research Assistant Professor: Ju-Chin Huang, Noé Lugaz

Physics is concerned with the properties of matter and the laws that describe its behavior. As a fundamental science, its discoveries and laws are basic to understanding in nearly all areas of science and technology. Advances in such diverse fields as medical instrumentation, solid state electronics, and space research have relied heavily on the application of basic physical laws
Students interested in the study of physics at the University of New Hampshire will find a strong interaction between research and academic programs. Undergraduates frequently participate in research studies ranging from nuclear scattering experiments at major particle accelerators to astrophysical studies of the solar system using space probes. These experiences have proven beneficial to engineering and physics students alike. The department is located in DeMeritt Hall (completed in 2008) and Morse Hall. Both buildings are equipped with state-of-the-art research facilities and laboratories. DeMeritt Hall also houses the physics library, classrooms, and a number of open and comfortable meeting areas, which provide an inviting atmosphere for study, interaction, and collaboration.

The suggested programs that follow are indicative of the flexibility available to students, whether they are preparing for graduate work in physics or astronomy, industrial opportunities, governmental research, secondary-level teaching, or a general education that might utilize the fundamental knowledge of physics.

Several undergraduate degree programs are offered through the department of physics. The B.S. degree is designed for students who wish to work as professional physicists or engineers; the interdisciplinary options in chemical physics, materials science, and astronomy allow students to combine physics with other disciplines. The B.A. degree is designed for students who want a strong background in physics but also want a broad liberal arts education. A minor in physics allows a student to combine an interest in physics with another major.

Physics-related degrees are also offered in other departments. For those students with strong interests in both math and physics, the Department of Mathematics offers a B.S. interdisciplinary option in physics.

Interested students are encouraged to contact the department for further information. More detailed information is also on the physics department web page at www.physics.unh.edu.

**Minor in Physics**

The minor in physics consists of five courses in physics. All students must take PHYS 407, 408, and 505. Two other four-credit physics courses must be chosen in consultation with the student’s physics minor adviser.

**Physics Major, Bachelor of Arts**

This program provides an opportunity for a broad and liberal education, which in some cases may be sufficient for graduate work. This program can also be excellent preparation for middle
and high school physics teachers, pre-med and pre-law students, and those wishing to pursue a technical career in industry. Because there are fewer required courses than for a B.S., you have time to pursue other academic interests. A judicious choice of electives may also prepare students for interdisciplinary programs that require proficiency in a specialized area of physics.

Requirements

1. Satisfy the University Discovery Program requirements. Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

2. Satisfy bachelor of arts degree requirements.

3. PHYS 400, 407-408, 505, 506, 508, 605, 615, 616, 701, 703, 705. Note that MATH 425, 426, and MATH 525, 526 or MATH 527, 528 are prerequisites for some of the courses.

4. A capstone experience is required of all physics majors during their senior year. The Physics Department encourages students to write a senior thesis (PHYS 799) for their capstone experience. Other options include independent study research projects (PHYS795 or INCO 590) or a special project as part of senior lab (PHYS 705). All capstone experiences must be approved by the undergraduate committee during the student's penultimate semester.

In the following table, “electives” include Discovery courses, writing-intensive courses, language courses required for the B.A., and free-choice electives.

Suggested Curriculum for B.A. in Physics

First Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
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<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>PHYS</td>
<td>400</td>
<td>Freshman Seminar</td>
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<tr>
<td>PHYS</td>
<td>407, 408</td>
<td>General Physics I and II</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MATH</td>
<td>425, 426</td>
<td>Calculus I and II (QR)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>ENGL</td>
<td>401</td>
<td>First-Year Writing</td>
<td>-</td>
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<td>Elective</td>
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Sophomore Year

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<tr>
<td>PHYS</td>
<td>505-506</td>
<td>General Physics III and Lab</td>
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Undergraduate Course Catalog

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<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>PHYS</td>
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<td>Classical Mechanics and Mathematical Physics I</td>
<td>-</td>
<td>4</td>
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<tr>
<td>MATH</td>
<td>525</td>
<td>Linearity I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or MATH</td>
<td>527</td>
<td>Differential Equations</td>
<td>6 or 4</td>
<td>-</td>
</tr>
<tr>
<td>MATH</td>
<td>526</td>
<td>Linearity II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or MATH</td>
<td>528</td>
<td>Multidimensional Calculus</td>
<td>-</td>
<td>6 or 4</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>8</td>
<td>8</td>
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<tr>
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**Junior Year**

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<tr>
<td>PHYS</td>
<td>616</td>
<td>Classical Mechanics and Mathematical Physics II</td>
<td>4</td>
<td>-</td>
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<tr>
<td>PHYS</td>
<td>701</td>
<td>Introduction to Quantum Mechanics I</td>
<td>4</td>
<td>-</td>
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<tr>
<td>PHYS</td>
<td>703</td>
<td>Electricity and Magnetism</td>
<td>-</td>
<td>4</td>
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<tr>
<td>PHYS</td>
<td>605</td>
<td>Experimental Physics I</td>
<td>-</td>
<td>5</td>
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<tr>
<td>Electives</td>
<td></td>
<td></td>
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**Senior Year**

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<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>PHYS</td>
<td>705</td>
<td>Experimental Physics II</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>PHYS</td>
<td>508</td>
<td>Thermodynamics and Statistical Physics</td>
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<td>-</td>
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<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>8</td>
<td>16</td>
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<tr>
<td>Total</td>
<td></td>
<td></td>
<td>16</td>
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</tr>
</tbody>
</table>

**Bachelor of Science in Physics**

The bachelor of science degree in physics prepares students for professional work as physicists, and is the first step toward graduate work in physics. It is also excellent preparation for graduate programs in medicine, law, or engineering, as well as for technical jobs in industry. The required courses are those typically necessary for admission to graduate study in physics or astronomy. The interdisciplinary options require fewer physics courses combined with a concentration in another area (chemistry or materials science). The astronomy option emphasizes courses that help prepare a student for advanced studies in astronomy.
Requirements

1. Satisfy the University Discovery requirements. Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

2. Satisfy University bachelor of science requirements.

3. Minimum physics requirements: PHYS 400, 407, 408, 505, 506, 508, 605, 615-616, 701, 702, 703, 704, 705; two electives selected from 708, 710, 712, 718, 720, 764, MATH 747, MATH 753, and MATH 754.

4. Chemistry: CHEM 403 or 405

5. Mathematics: MATH 425-426, and 525-526. Instead of 525-526, students may take three courses: 528, 527, and either 545 or 645. (The Department generally recommends 645 over 545 for physics majors, but the best option, when possible, is 525-526.)

6. Computer Programming: CS 410 or IAM 550

7. By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

8. A capstone experience is required of all physics majors during their senior year. The Physics Department encourages students to write a senior thesis (PHYS 799) for their capstone experience. Other options include independent study research projects (PHYS 795 or INCO 590) or a special project as part of senior lab (PHYS 705). All capstone experiences must be approved by the undergraduate committee during the student’s penultimate semester.

Physics Electives

In the following table, “electives” include Discovery courses, writing-intensive courses, physics electives, and free-choice electives. Note that physics electives can only be taken in the junior or senior year because of prerequisites, and are in general offered every other year.

Suggested Curriculum for B.S. in Physics

First Year

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>CS</td>
<td>410</td>
<td>Intro to Scientific Programming</td>
<td>4</td>
<td></td>
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<tr>
<td>or IAM</td>
<td>550</td>
<td>Intro to Engineering Computing</td>
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<tr>
<td>PHYS</td>
<td>400</td>
<td>Freshman Seminar</td>
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### Undergraduate Course Catalog

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<th>Spring</th>
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<tbody>
<tr>
<td>PHYS 407, 408</td>
<td>PHYS</td>
<td>General Physics I and II</td>
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<td>MATH 425, 426</td>
<td>MATH</td>
<td>Calculus I and II (QR)</td>
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<td>4</td>
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<td>CHEM 403</td>
<td>CHEM</td>
<td>General Chemistry (PS)</td>
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<tr>
<td>or CHEM 405</td>
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<td>Chem. Principles for Engineers (PS)</td>
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<td>ENGL 401</td>
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<td>First-Year Writing (WS)</td>
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### Sophomore Year

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<tbody>
<tr>
<td>PHYS 505-506</td>
<td>PHYS</td>
<td>General Physics III and Lab</td>
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<td>PHYS 508</td>
<td>PHYS</td>
<td>Thermodynamics and Statistical Mechanics</td>
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<tr>
<td>PHYS 615</td>
<td>PHYS</td>
<td>Classical Mechanics and Mathematical Physics I</td>
<td>-</td>
<td>4</td>
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<td>PHYS 605</td>
<td>PHYS</td>
<td>Experimental Physics I</td>
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<td>MATH 525</td>
<td>MATH</td>
<td>Linearity I</td>
<td>-</td>
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<tr>
<td>or MATH 528</td>
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<td>Multidimensional Calculus</td>
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<td>MATH 526</td>
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<td>or MATH 527, 645</td>
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<td>Differential Equations, Linear Algebra</td>
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### Junior Year

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<tr>
<td>PHYS 616</td>
<td>PHYS</td>
<td>Classical Mechanics and Mathematical Physics II</td>
<td>4</td>
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<tr>
<td>PHYS 701</td>
<td>PHYS</td>
<td>Introduction to Quantum Mechanics I</td>
<td>4</td>
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<td>PHYS 702</td>
<td>PHYS</td>
<td>Introduction to Quantum Mechanics II</td>
<td>-</td>
<td>4</td>
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<tr>
<td>PHYS 703</td>
<td>PHYS</td>
<td>Electricity and Magnetism I</td>
<td>-</td>
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<td>Electives</td>
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<tr>
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Senior Year

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<th>Abbreviation</th>
<th>Course Number</th>
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<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>PHYS</td>
<td>704</td>
<td>Electricity and Magnetism II</td>
<td>4</td>
<td>-</td>
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<tr>
<td>PHYS</td>
<td>705</td>
<td>Experimental Physics II</td>
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Physics Electives

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<tr>
<td>PHYS</td>
<td>708</td>
<td>Optics</td>
<td>4 /even yrs</td>
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<tr>
<td>PHYS</td>
<td>710</td>
<td>Astrophysics</td>
<td>4 /odd yrs</td>
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<tr>
<td>PHYS</td>
<td>712</td>
<td>Physics of the Ionosphere</td>
<td>4 /even yrs</td>
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<td>PHYS</td>
<td>718</td>
<td>Condensed Matter Physics</td>
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<tr>
<td>PHYS</td>
<td>720</td>
<td>Nuclear &amp; Particle Physics</td>
<td>4 /even yrs</td>
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<tr>
<td>PHYS</td>
<td>764</td>
<td>General Relativity</td>
<td>4 /even yrs</td>
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<tr>
<td>MATH</td>
<td>747</td>
<td>Nonlinear Dynamics &amp; Chaos</td>
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<td>MATH</td>
<td>753</td>
<td>Numerical Methods I</td>
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<td>MATH</td>
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<td>Numerical Methods II</td>
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Chemical Physics Option, Bachelor of Science in Physics

1. Satisfy the University Discovery requirements. Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

2. Satisfy University bachelor of science requirements.

3. Physics requirements: PHYS 400, 407-408, 505-506, 508, 605, 615, 616, 701, 702, 703, 705


5. Mathematics: MATH 425-426, and 525-526. Instead of 525-526, students may take three courses: 528, 527, and either 545 or 645. (The Department generally recommends 645 over 545 for physics majors, but the best option, when possible, is 525-526.)
6. Computer Programming: CS 410 or IAM 550
7. Electives in Option: Two courses selected from CHEM 547/9, MATH 646, PHYS 718, PHYS 795, PHYS 799
8. By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

Materials Science Option, Bachelor of Science in Physics

This option combines courses from the Physics and other departments to provide training in physics and materials science, an area that has proven industrial demand. In addition to the core courses in classical and modern physics, the students will take six courses in which they will study materials synthesis and properties and get hands-on training in materials characterization techniques, such as diffraction, electron microscopy, scanning probe microscopy, and photoelectron spectroscopy. Two semesters of thesis work in a research lab complement the training in the classroom. Students completing this program will have a wide variety of career opportunities to pursue, for example, in microelectronics, advanced materials synthesis and design, and thin film engineering. Alternatively, they are qualified for postgraduate programs in condensed matter physics or materials science.

Requirements

1. Satisfy the University Discovery requirements. Note that no physics course can satisfy these requirements for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.
2. Satisfy University bachelor of science requirements.
3. Physics requirements: PHYS 400, 407-408, 505-506, 508, 605, 615-616, 701, 703, 705, 795 (4 credit hours), 799 (4 credit hours)
4. Mechanical Engineering: ME 561, 730, 760
5. Mathematics: MATH 425-426 and 525-526. Instead of 525-526, students may take three courses: 528, 527, and either 545 or 645. (The Department generally recommends 645 over 545 for physics majors, but the best option, when possible, is 525-526.)
6. Computer Programming: CS 410 or IAM 550
7. Electives in Option: three courses selected from MATH 646, ME 731, 761, 762, 763, 795, PHYS 718
8. Chemistry: 403 or 405
9. By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to
Astronomy Option, Bachelor of Science in Physics

Requirements

1. Satisfy the University Discovery requirements. Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.
2. Satisfy University bachelor of science requirements.
3. Physics requirements: PHYS 400, 406, 407-408, 505, 506, 508, 605, 615-616, 701, 702, 703, 704, 705, 710, 795 (4 credit hours), 799 (4 credit hours)
4. Chemistry: CHEM 403 or CHEM 405
5. Mathematics: MATH 425-426, and 525-526. Instead of 525-526, students may take three courses: 528, 527, and either 545 or 645. (The Department generally recommends 645 over 545 for Physics majors, but the best option, when possible, is 525-526.)
6. Computer Programming: CS 410 or IAM 550
7. Electives in Option: choose one course from PHYS 708, PHYS 712, PHYS 720, PHYS 764
8. By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

Bachelor of Science in Engineering Physics

The bachelor of science degree in engineering physics (BSEP) provides training for individuals who either seek employment in an engineering discipline that requires a deeper knowledge of physical principles or who intend to pursue a graduate degree in engineering. A BSEP degree differs from a traditional engineering degree in that the curriculum includes more of a focus on fundamental physics. At the same time, the UNH program is flexible in the sense that each student designs his or her program (with appropriate advising) within certain constraints, which include a core component and an electives component. The goal is to balance physics courses with appropriate selections from various engineering disciplines to prepare the student for his or her longer term goals, keeping a balance between depth and breadth that is appropriate for
these goals.

Requirements

1. Satisfy the requirements of the Discovery Program.
2. Satisfy the Writing Requirements. This requirement includes four courses. A list of approved writing-intensive courses appears on the web.
3. Satisfy the Bachelor of Science Requirements: a minimum of 128 credits at the 400-799 level and at a GPA of at least 2.00.
4. Minimum Engineering Physics requirements:
   a. A minimum of six 3- or 4-credit physics courses (with at least one of these courses being at the 700 level), a minimum of six 3- or 4-credit engineering courses and two other electives, chosen from physics, engineering or math programs. The course selection must include a total of at least eight courses at the combined 600 and 700 levels.
   b. CHEM 403 or CHEM 405. (Note: to take CHEM 405, a student must have taken chemistry in high school.)
   c. Required math courses include Math 425, 426 (Calc 1, 2) and 527/528 (Diff Eq and Multi-D). Math 525/526 (Linearity I, II) may replace MATH 527/528.
   d. A computer programming course, such as CS 410 or IAM 550 or equivalent.
   e. A capstone experience is required of all BSEP students during their senior year. ABET accreditation requires that the capstone experience be a design experience. If a project involves research, it must also lead to a design effort.
5. A student must have a minimum grade of C in each 400- or 500-level course in items 4a through 4d and an overall grade-point average of 2.33 in these courses in order to continue in the BSEP program.

» Click to view course offerings

^ back to top

Technology (TECH)▼
» Click to view course offerings

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Introduction

The College of Health and Human Services, established in 1968, was created in response to the growing need for programs in higher education that prepare young men and women for health-related careers. The College offers undergraduate instruction leading to the bachelor of science degree in athletic training, communication sciences and disorders, human development and family studies, health management and policy, kinesiology (with options in exercise science, outdoor education, health & physical education, and sport studies), nursing, occupational therapy, recreation management and policy (with options in program & event management and therapeutic recreation), and social work. Each program enables students to acquire the basic knowledge and skills needed to practice in their chosen professions and to obtain a broad cultural background in the humanities and social sciences.

Undeclared Major

A limited number of well-qualified first-year students who have expressed an interest in a health-related career but who are undecided about a specific major may enter the College of Health and Human Services as undeclared students. Undeclared students should explore possible majors by selecting courses from those listed below. Degree candidates must satisfy all of the University and Discovery Program requirements in addition to satisfying the requirements of their major. Students will also be required to complete a senior capstone course/experience within their major.

Exploration Courses

All HHS undeclared students are advised by a professional academic counselor. Upon declaration of a specific major, each student is assigned to a faculty adviser within the major department.

COMM 520, Survey of Communication Disorders
HDFS 525, Human Development
HMP 401, U.S. Health Care Systems
HMP 403, Introduction to Public Health
Kin 406, Introduction to Athletic Training
KIN 500, Historical and Contemporary Issues in Physical Education
KIN 540, Top Rope Rock Climbing
KIN 551, Adventure Programming: Backcountry-based Experiences
KIN 585, Emergency First Responder
OT 510, Exploring Occupational Therapy and Occupation
RMP 490, Recreation and Leisure in Society
SW 424, Introduction to Social Work
BMS 507-508, Human Anatomy and Physiology
PSYC 401, Introduction to Psychology

Degree Requirements

Candidates for the B.S. degree must satisfy all University requirements for graduation, earn at least 128 credits, successfully complete the courses required in one of the curricula described in this section, and achieve the required minimum grade-point average in the chosen curriculum. Generally, courses are to be completed in the sequence in which they are arranged. Degree candidates must satisfy all of the University and Discovery Program requirements in addition to satisfying the requirements of an individual major program, which includes a senior capstone course/experience.

Minors: See University Academic Requirements; also see Degrees and Major Programs of Study.
Dual-degree programs: See University Academic Requirements.
Student-designed majors: See Special University Programs.
Second majors: See University Academic Requirements.

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College of Health and Human Services

Introduction

Degrees
- Bachelor of Science

Other Programs

Programs of Study

Bachelor of Science

Athletic Training
Communication Sciences and Disorders
Health Management and Policy
Human Development and Family Studies
  - Child Advocacy and Family Policy
  - Young Child/Nursery-Kindergarten
  - Family Support/Family Life Education
  - Individual and Family Development
International Affairs (dual major)
Kinesiology
  - Exercise Science
  - Health & Physical Education
  - Outdoor Education
  - Sport Studies
Nursing
Occupational Therapy
Recreation Management and Policy
  - Program & Event Management
  - Therapeutic Recreation
Social Work
Disabilities Minor

About the Program

The purpose of the interdisciplinary disability minor is to prepare undergraduate students to apply their unique disciplinary skills to work with and support individuals with disabilities and their families to become fully engaged members of their communities, and to improve their quality of life. The minor also helps to prepare students to work in an interdisciplinary service delivery environment. A secondary purpose is to create a core group of interdisciplinary faculty to work collaboratively with students on issues related to disability. The 20-credit hours curriculum consists of five to eight courses including a writing-intensive course from the student’s major. The minor offers students a unique opportunity to explore disability from several vantage points, including an overview of the disability experience, societal barriers individuals face, service delivery systems, disciplinary perspectives, current research, and relevant legislation.

Required Course: One of the following courses is required from the student’s major or any other disability-related intensive course outside of the major with permission.

- EDUC 444, The Right to Be Disabled
- EDUC 750, Introduction to Exceptionality
- OT 444, Living and Doing with Technology
- OT 610, Occupation, Identity and Disability
- RMP 444, Perspectives on Disability

Four to seven elective courses totaling 16 credits are required from the following:

COMM 536, Introduction to Deaf Studies
COMM 575, Fundamentals of Hearing and Hearing Loss
EDUC 556, Transition to Work: Mentoring Adolescents with Disabilities (2 credits)
EDUC 750, Introduction to Exceptionality
EDUC 754, Contemporary Issues in Developmental Disabilities
EDUC 760, Introduction to Young Children with Disabilities
HHS 740, Collaborative Services for Children with Special Health Care Needs
INTR 438, A Sociocultural Perspective
KIN 781, Inclusion in Physical Education
NUTR 740, Nutrition for Children with Special Needs (2 credits)
OT 444, Living and Doing with Technology
OT 610, Occupation, Identity, and Disability
OT 685, Psychosocial Disorders and Everyday Life
OT 722, Introduction to Assistive Technology
OT 724, Assistive Technology and Physical Disabilities
OT 726, Assistive Technology and Sensory, Cognitive, and Communication Impairments
RMP 444, Perspectives on Disability
RMP 501, Recreation Services for Individuals with Disabilities
SW 712, Social Work and Developmental Disabilities
SW, OT, EDUC, KIN, NUTR, RMP Independent Study with a disability focus (2-4 credits)*

*Independent Study (2-4 credits). The purpose of the independent study is to explore a topic that provides a detailed focus on an important issue related to individuals with disabilities. A student may also choose to engage in a small-scale research project to investigate an issue that affects individuals with disabilities. Each project will be negotiated with the student's departmental faculty adviser and the coordinator of the minor program.

Please note: Additional elective courses may be added in the future as deemed appropriate and approved by disabilities studies coordinator.

Also note: Students must achieve C- or better and a 2.00 grade-point average in courses that the minor department approves. Courses taken on a pass/fail basis may not be used for a minor. No more than 8 credits used to satisfy major requirements may be used for a minor. There is no limit on the number of overlapping credits allowed between minors. Students should declare the intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean to have the minor shown on the academic record.

Gerontology Minor

The gerontology interdisciplinary minor provides students with the opportunity to examine and evaluate the aging process as it affects the individual and society within the United States. Through a multidisciplinary course selection, students develop an understanding of aging from a variety of perspectives with a focus on how people age physically, cognitively, emotionally, and socially. Students are encouraged to analyze the historical and philosophical foundation
from which policies, programs, and professional activities affecting the aged are developed, implemented, and evaluated. The purpose of this minor is to prepare students as they enter their career fields on the effects that the growing elderly population will have in every component of modern life.

Students wishing to minor in gerontology are required to take a minimum of 20 credits (five courses) from an approved list; two of which must be GERO 500, I'm Old, So What! An Introduction to Gerontology, and KIN 607, The Biology of Aging.

GERO 795, Independent Study, is not a required course but is used by students and faculty as an option for creating an individual experience relating to aging. A faculty member must approve and oversee (mentor) the student’s work in GERO 795. Additionally, the GMM coordinator must also approve of the proposal and retain a copy. A copy of the proposal and the final copy will be kept in the student’s major academic folder.

Other courses available to students are courses within the various University colleges containing a 50 percent focus on aging in the United States and approved by the GMM coordinator with reviews by the Gerontology Minor Advisory Board.

Students who wish to discuss or find out more about the minor may make an appointment with the GMM Coordinator, College of Health and Human Services, Department of Social Work.

**Required**
GERO 500, I'm Old, So What! Introduction to Gerontology. Fall semester only
KIN 607, Biology of Aging. Fall and spring semesters

Some of the accepted courses are:
NURS 535, Death and Dying
OT 501, Developmental Tasks of Adulthood
PSYC 582, Adult Development and Aging
PSYC 741, Cognitive Aging
SW 625, Social Welfare Policy Analysis in the Global Context
SW 701, Women and Aging

An updated list of University-wide approved courses may be picked up in the Gerontology Minor Coordinator's office, College of Health & Human Services, Department of Social Work, Pettee Hall.
Athletic trainers are health care professionals who collaborate with physicians. The services provided by athletic trainers are comprised of prevention, emergency care, clinical diagnosis, therapeutic intervention, and rehabilitation of injuries and medical conditions. The athletic training major has been accredited by the Commission on Accreditation of Athletic Training Education (CAATE) since 1991 and prepares professionals qualified to attend to the athlete, the fitness-conscious jogger, the skilled professional athlete, or anyone engaged in physical activity.

Students must earn a grade of C (2.0) or better in all KIN-required courses and BMS 507-508.

Students gain clinical experience within the UNH Department of Athletics, UNH Campus Recreation, and at off-campus clinical sites. Successful completion of the entire program, including supervised clinical experience, qualifies students to take the Board of Certification (BOC) certification exam. Students who wish to pursue both BOC certification and public school teacher certification should also see the Department of Kinesiology Physical Education Option. This double course of study will require between five and six years.

Students are admitted to the UNH athletic training major with conditional status. Specific competitive criteria must be met during the student's first year before he or she may apply for full-time status in the major, which is awarded only to students demonstrating exemplary
performance in classes and directed observation. Detailed criteria may be found at https://chhs.unh.edu/kin_at/earning-full-time-status. Additionally, major technical standards establish the qualities considered necessary for students to achieve the knowledge, skills, and competencies associated with the program. Candidates for full-time status will be required to verify they understand and meet these technical standards or that they can meet them, with reasonable accommodation. Interested students should consult with program coordinator, Dan Sedory, regarding entry criteria and the technical standards.

Students in athletic training complete KIN 718, Career Preparation in Athletic Training, as the capstone course for the major. This course is designed to provide students with a means to integrate and augment concepts, skills, and knowledge gained in all previously completed major course requirements. Prerequisites include KIN 665, sections A-D.

Courses

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<th>Title</th>
<th>Credits</th>
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<tr>
<td>KIN</td>
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<td>Concepts of Athletic Training</td>
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<tr>
<td>KIN</td>
<td>507</td>
<td>Concepts of Athletic Training Lab</td>
<td>1</td>
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<tr>
<td>KIN</td>
<td>585</td>
<td>Emergency First Responder</td>
<td>4</td>
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<tr>
<td>KIN</td>
<td>620</td>
<td>Physiology of Exercise</td>
<td>4</td>
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<td>KIN</td>
<td>652</td>
<td>Clinical Kinesiology</td>
<td>4</td>
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<tr>
<td>KIN</td>
<td>653A</td>
<td>Musculoskeletal Assessment</td>
<td>2</td>
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<td>KIN</td>
<td>658</td>
<td>Evaluation &amp; Care of Athletic Training Injury I</td>
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<td>KIN</td>
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<td>Evaluation/Care of Athletic Training Injury I Lab</td>
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<tr>
<td>KIN</td>
<td>659</td>
<td>Evaluation &amp; Care of Athletic Training Injury II</td>
<td>4</td>
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<tr>
<td>KIN</td>
<td>659L</td>
<td>Evaluation/Care of Athletic Training Injury II Lab</td>
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<tr>
<td>KIN</td>
<td>660</td>
<td>Therapeutic Exercise in Athletic Training</td>
<td>4</td>
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<td>KIN</td>
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<td>Therapeutic Exercise Lab</td>
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<td>KIN</td>
<td>662</td>
<td>Therapeutic Modalities in Athletic Training</td>
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<td>KIN</td>
<td>663</td>
<td>Therapeutic Modalities Lab</td>
<td>1</td>
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<tr>
<td>KIN</td>
<td>665</td>
<td>Laboratory Practicum in Athletic Training</td>
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<tr>
<td>KIN</td>
<td>665A</td>
<td>Level I</td>
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<td>KIN</td>
<td>665B</td>
<td>Level II</td>
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<tr>
<td>NUTR</td>
<td>400</td>
<td>Nutrition in Health and Well Being</td>
<td>4</td>
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<tr>
<td>PSYC</td>
<td>401</td>
<td>Introduction to Psychology</td>
<td>4</td>
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<tr>
<td>Statistics Course</td>
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<td></td>
<td>4</td>
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<tr>
<td>BMS</td>
<td>507-508</td>
<td>Human Anatomy and Physiology</td>
<td>8</td>
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</tbody>
</table>

» Click to view course offerings

Communication Sciences and Disorders (COMM)

» http://www.chhs.unh.edu/csd/index

» Click to view course offerings

Associate Professor: Steven P. Bornstein
Clinical Associate Professor: Jeanne H. O'Sullivan, Amy S. Plante, Rae M. Sonnenmeier
Clinical Assistant Professor: Sheryl Gottwald, Mary Jane Sullivan
Lecturer: Donna Schefer

Communication Sciences and Disorders (CSD) is devoted to helping people overcome disabilities of speech, language, and hearing. The study of Communication Sciences and Disorders may begin in the freshman or sophomore year. Students learn about speech, language, and hearing disorders in the classroom and are involved in clinical observation in
the on-campus Speech-Language-Hearing Center and can participate in research projects. Students are encouraged to take elective courses in linguistics, human development, learning theory, early childhood, health administration, special education, and various aspects of rehabilitation.

As this is a pre-professional degree, students generally pursue graduate studies in speech-language pathology or audiology at colleges or universities offering graduate programs leading to a master's or doctoral degree and to subsequent certification by the American Speech-Language-Hearing Association (ASHA). Certified clinicians find employment opportunities in hospitals, schools, community speech and hearing clinics, and private practice. Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of the Communication Sciences and Disorders major.

**Required Courses**

COMM 520, Survey of Communication Disorders
COMM 521, Anatomy and Physiology of the Speech and Hearing Mechanism
COMM 522, The Acquisition of Language
COMM 524, Clinical Phonetics
COMM 630, Organic Pathologies
COMM 631, Articulation and Language Disorders in Children
COMM 635, Senior Capstone: Professional Issues in Speech-Language Pathology
COMM 704, Basic Audiology
COMM 705, Introduction to Auditory Perception and Aural Rehabilitation
COMM 723, Clinical Observation
COMM 777, Speech and Hearing Science
KIN 706, Neurology

Other elective courses are available. All students must also complete 25 hours of clinical observation.

In addition, students must complete one of the following courses to meet ASHA certification requirements: CHEM 409 or PHYS 409.

Transfer applications are accepted in October and May. Please contact (603) 862-0144 for more information.

**Minor in Deaf and Hard of Hearing Studies**

The minor in deaf and hard of hearing studies is intended to provide students with courses leading to specialized knowledge related to the fields of deafness and hearing loss. It is of interest to students who intend to engage in teaching, counseling, rehabilitation, social work, and other professions in which contact with individuals who are deaf or hard of hearing may be
There may be some interest as well on the part of students majoring in TESOL and linguistics due to the bilingual aspect of the field. Finally, it may be an option for those students who wish to move on to graduate study in the fields of deaf education, rehabilitation counseling, speech-language pathology, and audiology. Minor coordinator: Mary Jane Sullivan.

Communication sciences and disorders majors may not use a course required of their major to fulfill both major and minor requirements.

Students in the deaf and hard of hearing studies minor must earn a grade of C- or better in each course in order to receive credit for the course in the minor.

» Click to view course offerings

Health and Human Services (HHS)

» Click to view course offerings

Health Management and Policy (HMP)

» http://www.chhs.unh.edu/hmp/index

» Click to view course offerings

Professor: Rosemary M. Caron, Charles Drum, Lee F. Seidel
Associate Professor: Semra A. Aytur, Marc D. Hiller, James B. Lewis, Robert J. McGrath
Assistant Professor: Mark Bonica
Research Assistant Professor: David J. Laflamme
Clinical Assistant Professor: Prashant Mittal
Lecturer: Ann-Marie Matteucci

Undergraduates majoring in the health management and policy program are prepared to embark upon management careers in a wide range of health care delivery and financing organizations, public health, and health policy. Graduates work in many settings, including health care delivery systems, hospitals, nursing homes, health maintenance and other managed care organizations, public health departments, community-based and home-health agencies, mental health facilities, regulatory bodies, consulting companies, and insurance companies.

The academic program is interdisciplinary, with undergraduates taking courses in many academic units of the University. Students gain a broad view of health and health care while
developing analytical skills in health care management and policy. The department uses a computer laboratory that is integrated throughout the curriculum.

The department's undergraduate program maintains full certification by the Association of University Programs in Health Administration (AUPHA). Students have the opportunity to become student members in the American College of Healthcare Executives (ACHE), the Health Care Financial Management Association (HFMA), and the American Public Health Association all of which are represented by student chapters at the University. There also is an organization for students interested in public health issues. The department curriculum is approved under the New England Regional Student Program.

**Academic Program**

Competencies are achieved through three components of the curriculum: University Discovery program requirements, HMP collateral courses, and HMP courses, which include a field practicum and a capstone course. Students work closely with their assigned faculty advisers to develop a plan of study to achieve completion of each of these components. Upper-division HMP courses are sequenced in a two-year progression as described in departmental handouts to all majors. Students are expected to follow this sequence; any exceptions are made by petition. Late transfers may have to plan for an extra year. All HMP students are required to take a core of introductory courses generally completed before their junior year in the major.

**HMP Introductory Core Courses - Required of All Majors**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
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<tr>
<td>HMP</td>
<td>401</td>
<td>U.S. Health Care Systems</td>
<td>4</td>
<td>X</td>
<td>X</td>
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<td>HMP</td>
<td>501</td>
<td>Epidemiology and Community Medicine</td>
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<td>HMP</td>
<td>403</td>
<td>Introduction to Public Health</td>
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<td>MATH</td>
<td>420</td>
<td>Finite Math</td>
<td>4</td>
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<tr>
<td>Statistics</td>
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<td>Any UNH statistics course satisfies the requirement</td>
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<td>X</td>
<td>X</td>
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For HMP majors only: HMP 401 will not meet the social sciences requirement.
Required Courses - Health Management and Policy

<table>
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<th>Abbreviation</th>
<th>Course Number</th>
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<th>Summer</th>
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<tbody>
<tr>
<td>HMP</td>
<td>511</td>
<td>Introduction to Health Information Systems</td>
<td>4</td>
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<td>HMP</td>
<td>621</td>
<td>Pre-Practicum</td>
<td>2</td>
<td>X</td>
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<tr>
<td>HMP</td>
<td>622</td>
<td>Field Practicum, summer session between junior/senior year</td>
<td>3</td>
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<tr>
<td>HMP</td>
<td>624</td>
<td>Post Practicum</td>
<td>2</td>
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<td>HMP</td>
<td>642</td>
<td>Health Economics</td>
<td>4</td>
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<tr>
<td>HMP</td>
<td>711</td>
<td>Health Care Research</td>
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<td>HMP</td>
<td>712</td>
<td>Health Analytics</td>
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<td>HMP</td>
<td>721</td>
<td>Managing Health Care Organizations I</td>
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<tr>
<td>HMP</td>
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<td>Health Planning</td>
<td>4</td>
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<tr>
<td>HMP</td>
<td>735</td>
<td>Social Marketing</td>
<td>4</td>
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<tr>
<td>HMP</td>
<td>740</td>
<td>Health Care Financial Management I</td>
<td>4</td>
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<tr>
<td>HMP</td>
<td>742</td>
<td>Strategic Management for Health Care Organizations</td>
<td>4</td>
<td>X</td>
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<tr>
<td>HMP</td>
<td>744E</td>
<td>Health Ethics</td>
<td>2</td>
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<tr>
<td>HMP</td>
<td>744L</td>
<td>Health Law</td>
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<td>HMP</td>
<td>746</td>
<td>Health Policy</td>
<td>4</td>
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HMP Elective Courses

Student must select any two of the following electives:

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<tr>
<td>HMP</td>
<td>722</td>
<td>Management of Health Care Organizations II</td>
<td>4</td>
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<td>HMP</td>
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<tr>
<td>HMP</td>
<td>715</td>
<td>Environmental Health</td>
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<td>HMP</td>
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<td>Behavioral Health</td>
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</table>

**Field Practicum:**

A full-time practicum (or administrative internship) that integrates class work with a supervised field experience constitutes an essential part of the academic program and is required of all majors. It allows students to explore an area of special interest in depth. Courses comprising this component of the major include HMP 621, Pre Practicum Seminar; HMP 622A, HMP 622B, HMP 622C, Field Practicum; and HMP 624, Post Practicum Seminar. The field experience is divided into three concurrent components: HMP 622A, Field Practicum Organizational Analysis; HMP 622B, Field Practicum Management Skills Development; and HMP 622C, Field Practicum Project Analysis. Field practicum sites are selected by faculty with student involvement and are concentrated in central and Northern New England. Given sufficient timing of student requests, efforts will be made to arrange practica at distant sites based on special needs.

HMP field practica occur during the summer between the junior and senior year within the curriculum. They begin in late May and end in late August and require a full-time commitment of a minimum of 400 hours.

Students must retain a cumulative GPA of 2.75 or higher at the end of their junior year to be granted permission to enroll in the required summer internship (e.g., HMP 622 A, B, C). This ten-week internship may not be paid, involves a minimum of 400 hours, and requires registering for a 3-credit summer course. Financial aid is not applicable to summer courses.

**Academic Requirements:**

HMP majors must obtain a minimum of a C- in all HMP core courses and all HMP required collateral courses. Majors must have an overall grade-point average of 2.75 by the end of the semester preceding their practicum. Students not maintaining an overall grade-point average of 2.75 are re-evaluated by the faculty and may be counseled into another major at the University.

The faculty reviews student performances during the semester before the practicum to determine each student’s readiness. Students who do not successfully complete prerequisite courses may not be permitted to advance through subsequent courses in the major.
Applications for Major:

Students interested in additional information or in applying for admission to the health management and policy major should contact the department’s sophomore class adviser. Efforts should be made to complete this process during the freshman year or early in the sophomore year to ensure sufficient time to complete all of the required collateral courses as well as those in the major in a timely manner. Admitted UNH students can apply to the major at any time, and admission decisions are made at the end of the semester in which the student applies. Admitted students must have a minimum cumulative GPA of 3.00.

Honors in Major:

The department offers an honors-in-major program. To qualify, students must meet the department’s requirement of having an overall 3.4 grade-point average at UNH and a 3.4 grade-point average for required HMP courses taken by the end of the fall semester of junior year. Honors-in-major students take a total of three honors courses during the last half of junior year and senior year and complete an honors project. Students work with a faculty member in the department in the development of the honors project. Students should contact the department’s junior class adviser for further information.

Academic Minors:

HMP offers two academic minors: a minor in health management and one in public health. Health management and policy majors are not eligible for minors in HMP.

Academic Minor in Health Management:

The department offers an integrated minor in health management designed for students in any major. Students seeking to minor in health management must meet with the department’s the sophomore class adviser before commencing the minor. The health management minor includes the following courses:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMP</td>
<td>401</td>
<td>U.S. Health Care Systems</td>
<td>4</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HMP</td>
<td>501</td>
<td>Epidemiology and</td>
<td>4</td>
<td>X</td>
<td>X</td>
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</table>
Community Medicine

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMP 735</td>
<td>Social Marketing</td>
<td>4</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMP 721</td>
<td>Managing Health Care Organizations I</td>
<td>4</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMP 740</td>
<td>Financial Management of Health Care Organizations I</td>
<td>4</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Student may take HMP 740, Financial Management of Health Care Organizations I, during the fall semester or HMP 710, Financial Management for Clinicians, during the spring semester.

Academic Minor in Public Health:

The department offers a minor in public health. Public health deals with the health of populations and focuses on health promotion and disease prevention as well as access to the medical system. The minor introduces students to many of the foundation areas of public health and provides basic exposure to key concepts and skills in the five core disciplines of public health, as articulated by the Council on Education for Public Health. The minor is open to any baccalaureate student at UNH. The public health minor includes the following courses:

### Academic Minor in Public Health

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMP</td>
<td>403</td>
<td>Introduction to Public Health</td>
<td>4</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMP</td>
<td>501</td>
<td>Epidemiology and Community Medicine</td>
<td>4</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMP</td>
<td>569</td>
<td>Human Behavior and the Public Health</td>
<td>4</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HMP</td>
<td>505</td>
<td>History of Public Health</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMP</td>
<td>715</td>
<td>Environmental Health</td>
<td>4</td>
<td></td>
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</tr>
</tbody>
</table>

Students may take HMP 735, Social Marketing, or HMP 715, Environmental Health.

» [Click to view course offerings](#)

^ [back to top](#)
Chairperson: Kerry Kazura  
Professor: Corinna Jenkins Tucker  
Associate Professor: Barbara R. Frankel, Kerry Kazura, Erin Hiley Sharp  
Assistant Professor: Tyler Jamison, Cory Morton, Kimberly Turner Nesbitt, Jill Trumbell  
Clinical Associate Professor: Mark Moses  
Clinical Assistant Professor: Lisa Ranfos

The department’s mission is to support the well-being of individuals and families through research, teaching, and service. Programs emphasize both theoretical and practical knowledge about development across the lifespan, family dynamics, the social and economic conditions that support or impede families, teacher and parent education, and prevention and intervention programs that aid individuals and families. The department is committed to acknowledging and supporting diversity, to providing an educational environment that stresses excellence and innovation, and to developing exemplary programs to serve students, helping professionals, and the larger community.

The department offers three areas of study for undergraduate majors: child development, family support, and lifespan development. Candidates for degree requirements in any of the department options must satisfy all University Discovery Program requirements in addition to satisfying specific program requirements.

The department offers two types of optional year-long internships, which students can apply for during their junior year. The child development concentration offers students a preschool-third grade teacher preparation (P-3) internship. The family support and lifespan concentration offers the family internship, which is required for Certified Family Life Educators (CFLE).

**Human Development and Family Studies Major Requirements**

Core courses required of each human development and family studies concentrations are:

1. HDFS 525, Human Development  
2. HDFS 545, Intimate Relationships and Families  
3. A minimum of 36 human development and family studies credits, with 8 or more credits at the 700 level required.  
4. A senior capstone experience; each human development and family studies concentration has a capstone experience incorporated into the program.  
5. Twenty credits of supporting coursework, selected in consultation with the adviser.
Supporting courses must be 500 level or above, and supporting coursework must include at least 12 credits in courses outside the department.

6. An undergraduate statistics course

Candidates for a degree must satisfy all of the University Discovery requirements in addition to satisfying the requirements of their human development and family studies concentration.

**Family Support/Provisional CFLE Concentration**

This concentration is intended for students interested in working with children, adolescents, adults, and families. Students in the family support concentration develop knowledge and skills to prepare them to provide individual and family support, direct services, and family life education and programs.

**Family Internship**

In the family internship (HDFS 782), students will apply knowledge gained from their academic studies in a supervised environment. The internship involves a commitment of sixteen hours per week for two semesters, plus a 2-credit seminar (HDFS 792), which meets every other week for a full academic year. Some internship sites may require additional applications or a criminal background check before placement is finalized. Arrangements for criminal background checks are the responsibility of the student and the requesting organization, not the Department of Human Development and Family Studies. Students apply for the internship during the spring semester of their junior year. Internship applicants must have completed 20 credits of departmental coursework prior to their senior year. Internship courses (782/792) count toward the 20 credits required in supporting courses.

**Certified Family Life Educator**

Students in the family support concentration who are accepted to the family internship are encouraged to apply for provisional status as a Certified Family Life Educator (CFLE). Family life educators work in a variety of settings including social services, health services, child care, family support, youth programs, parent education, junior and senior high schools, and universities and colleges. The CFLE certification provides an individual with expertise in a broad range of issues that constitute family life education and increases their professional credibility by validating their education and experience. The National Council on Family Relations (NCFR) has approved the Department of Human Development and Family Studies' family support program as meeting the standards and criteria required for CFLE certification. Students may apply to NCFR for provisional CFLE designation upon completion of required coursework. (See courses marked with an asterisk* in the table below.) Upon meeting additional requirements listed on the NCFR website, students can apply for full certification.
after graduation.

Requirements for the Family Support Concentration

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS</td>
<td>525</td>
<td>Human Development*</td>
</tr>
<tr>
<td>HDFS</td>
<td>545</td>
<td>Intimate Relationships and Families*</td>
</tr>
<tr>
<td>HDFS</td>
<td>641</td>
<td>Parenting Across the Lifespan*</td>
</tr>
<tr>
<td>HDFS</td>
<td>746</td>
<td>Human Sexuality*</td>
</tr>
<tr>
<td>HDFS</td>
<td>757</td>
<td>Race, Class, Gender and Families* (capstone)</td>
</tr>
<tr>
<td>HDFS</td>
<td>760</td>
<td>Family Programs and Policies*</td>
</tr>
<tr>
<td>HDFS</td>
<td>794 -OR- 776</td>
<td>Families and the Law* - OR - Children, Adolescents and the Law</td>
</tr>
<tr>
<td>Statistics course</td>
<td>PSYC 402 -OR- SOC 502 -OR- HHS 540</td>
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</tbody>
</table>

* Required for provisional CFLE certification.

One Course from Each Group. Total of Two Courses.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>HDFS 623</td>
<td>Developmental Perspectives on Infancy and Early Childhood</td>
</tr>
<tr>
<td>2.</td>
<td>HDFS 624</td>
<td>Developmental Perspectives on Adolescence and Early Adulthood</td>
</tr>
<tr>
<td></td>
<td>HDFS 625</td>
<td>Adult Development and Aging</td>
</tr>
<tr>
<td>2.</td>
<td>HDFS 553</td>
<td>Personal and Family Finance for Family Life Professionals</td>
</tr>
<tr>
<td>2.</td>
<td>HDFS 586</td>
<td>Families at Risk</td>
</tr>
</tbody>
</table>

Supporting Courses - Family Support

Supporting courses are intended to provide an individualized component of the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. Therefore, supporting courses may be any course that meets all the following criteria:
1. 500-level or above
2. Relates to the study of individuals or families
3. Contributes to the student’s goals and/or academic interests
4. Approved by an HDFS adviser

Courses that meet these criteria are often found in disciplines such as psychology, sociology, social work, women’s studies, education, and communication sciences and disorders. Eight HDFS credits may also be used as supporting courses as long they are not required for the student’s concentration.

Lifespan Development Concentration

This concentration is intended for students with a broad interest in working with families. The lifespan development concentration provides knowledge about specific life stages of individuals within the context of family systems with a focus on system dynamics, diverse family systems, gender, and cultural differences. This plan of study is designed particularly for those expecting to attend graduate school and those who desire a general background in lifespan development and family dynamics.

Requirements for the Lifespan Development Concentration

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>HDFS</td>
<td>525</td>
<td>Human Development</td>
</tr>
<tr>
<td>HDFS</td>
<td>545</td>
<td>Intimate Relationships and Families</td>
</tr>
<tr>
<td>HDFS</td>
<td>623</td>
<td>Developmental Perspectives on Infancy and Early Childhood</td>
</tr>
<tr>
<td>HDFS</td>
<td>624</td>
<td>Developmental Perspectives on Adolescence and Early Adulthood</td>
</tr>
<tr>
<td>HDFS</td>
<td>625</td>
<td>Adult Development and Aging</td>
</tr>
<tr>
<td>HDFS</td>
<td>641</td>
<td>Parenting Across the Lifespan</td>
</tr>
<tr>
<td>HDFS</td>
<td>746</td>
<td>Human Sexuality</td>
</tr>
<tr>
<td>HDFS</td>
<td>757</td>
<td>Race, Class, Gender, and Families (Capstone)</td>
</tr>
<tr>
<td>HDFS</td>
<td>794 -OR- 776</td>
<td>Families and the Law* - OR - Children, Adolescents and the Law</td>
</tr>
<tr>
<td>HDFS</td>
<td></td>
<td>Families and the Law* - OR - Children, Adolescents and the Law</td>
</tr>
<tr>
<td>One Statistics class</td>
<td></td>
<td>PSYC 402 -OR- SOC 502 -OR- HHS 540</td>
</tr>
</tbody>
</table>

Supporting Courses - Lifespan Development

Supporting courses are intended to provide an individualized component of the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. Therefore, supporting courses may be any course that meets all the following criteria:

1. 500-level or above
2. Relates to the study of individuals or families
3. Contributes to the student’s goals and/or academic interests
4. Approved by an HDFS adviser

Courses that meet these criteria are often found in disciplines such as psychology, sociology, social work, women’s studies, education, and communication sciences and disorders. Eight HDFS credits may also be used as supporting courses as long they are not required for the student’s concentration.

Child Development Concentration

This concentration is intended for students who have a broad interest in working with children ranging in age from birth to age eight. The child development concentration has four major foci: child development, teaching methodology and curriculum development, developmentally appropriate learning environments for young children, and home-school-community relations.

Requirements for the Child Development Concentration

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS</td>
<td>525</td>
<td>Human Development</td>
</tr>
<tr>
<td>HDFS</td>
<td>545</td>
<td>Intimate Relationships and Families</td>
</tr>
<tr>
<td>HDFS</td>
<td>623</td>
<td>Developmental Perspectives on Infancy and Early Childhood</td>
</tr>
<tr>
<td>HDFS</td>
<td>635</td>
<td>Teaching and Learning in Early Childhood Settings</td>
</tr>
<tr>
<td>HDFS</td>
<td>709</td>
<td>Advanced Child Development Internship</td>
</tr>
<tr>
<td>HDFS</td>
<td>734</td>
<td>Curriculum for Young Children</td>
</tr>
<tr>
<td>HDFS</td>
<td>743</td>
<td>Families, Schools, and Community</td>
</tr>
<tr>
<td>HDFS</td>
<td>771</td>
<td>Observation and Assessment of Young Children</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
<tr>
<td>One additional HDFS Course</td>
<td>500 or above</td>
<td></td>
</tr>
<tr>
<td>One Statistics class</td>
<td>PSYC 402 -OR- SOC 502 -OR- HHS 540</td>
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</table>

**Supporting Courses - Child Development**

Supporting courses are intended to provide an individualized component of the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. Therefore, supporting courses may be any course that meets all the following criteria:

1. 500-level or above
2. Relates to the study of individuals or families
3. Contributes to the student’s goals and/or academic interests
4. Approved by an HDFS adviser

Courses that meet these criteria are often found in disciplines such as psychology, sociology, social work, women’s studies, education, and communication sciences and disorders. Eight HDFS credits may also be used as supporting courses as long they are not required for the student’s concentration.

**Child Development: Preschool - Third Grade Teacher Preparation Program**

The Early Childhood Education P-3 Teacher Preparation (P-3) program prepares students for a career in teaching young children. Course work for this program is designed to maximize in-classroom mentorship and to provide a broad range of exposure across the preschool to 3rd-grade levels. This competitive program within the child development specialization in the Human Development and Family Studies Department is approved by the New Hampshire State Board of Education.

Requirements and instructions for the application process for this program are detailed below. Students who wish to be considered for the P-3 Program must indicate their interest at the time of application to the major so that an appropriate plan of study can be arranged.

**Application Requirements**

Juniors in the child development concentration who have maintained a **minimum** overall GPA
of 2.8, and a departmental GPA of 3.0 are eligible to apply. Please note that this is a competitive program with limited enrollment. Those accepted into the program must maintain this level of achievement throughout the program. Students must be prepared to have their own transportation for off-campus placements as needed.

Applications are available through the department website [http://chhs.unh.edu/hdfs/undergraduate-forms](http://chhs.unh.edu/hdfs/undergraduate-forms) and are due by February 15 of each year. Completed applications will be reviewed by the child development faculty. Admission decisions will be made by mid-March. Provisional admission may be given to those who have not yet taken and passed the Praxis Core Academic Skills for Educators test (or who have not received approval from the New Hampshire Department of Education for a Praxis Core Waiver Request) at the time of application in mid-February. Final admission will be given pending the submission of a passing Praxis core test score (or approved waiver) by the last day of final exams at the end of the junior year.

**A Note about Obtaining State Teacher Certification**


Although students may graduate from UNH with a bachelor’s degree in human development and family studies, without the required set of passing test scores, and having completed the P-3 coursework along with all student teaching requirements, they will not be eligible to apply for the New Hampshire State P-3 Teaching Certificate. This is a state of New Hampshire requirement; not a condition for graduation from UNH. Information on the Praxis tests is available on [www.ets.org/praxis](http://www.ets.org/praxis). In order to fulfill a teaching contract with a public school district, a prospective teacher must be certified by the state in which he/she is to be employed.

In addition to the Praxis core, all P-3 teacher program candidates are expected to take the Praxis II for Education of Young Children (5024) and the New Hampshire Foundations of Reading test prior to graduation.

**P-3 Internship Course Descriptions**

P-3 Internship Course HDFS 785 is a fall semester seminar-based course intended to prepare students, as teacher candidates, for the student teaching experience in the spring semester. This course emphasizes students’ continued development as learners, researchers, and collaborators. Discussions and projects focus on the ways in which these three roles are developed within the classroom and school community. Students meet as a cohort in weekly/bi-weekly seminars on campus.

Students should expect to spend a **minimum of five hours per week** in their assigned
classroom (60+ hours) and become first aid/CPR certified. Other expectations for this course include, but not limited to, preparing a résumé, observing at other sites, attending professional conferences, starting a professional portfolio to document their achievement of professional teaching standards, completing additional assignments and readings.

HDFS 786 and 788 provide the student teaching experience in the spring semester of the senior year. Students should expect to spend a **minimum of twenty-five hours per week** (a minimum of 325+ hours total) in their assigned classrooms, gradually assuming increasing teaching responsibilities, culminating in the assumption of two to three lead-teaching weeks. Additional hours outside of actual classroom/program operation hours are expected for meeting and planning with cooperating teachers, preparing for teaching, and attending parent conferences and other school functions, as well as attending professional conferences. Seminars provide continued opportunity for reflection on students’ development as teacher candidates, reflecting on classroom practices, identifying teaching strengths and weaknesses, and planning their first professional appointment as teachers of young learners. Students should be prepared to meet weekly after school hours, and to complete and present their professional portfolio to faculty and related professionals in the field.

### Requirements for Child Development Concentration P-3 Program

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS</td>
<td>525</td>
<td>Human Development</td>
</tr>
<tr>
<td>HDFS</td>
<td>545</td>
<td>Intimate Relationships and Families</td>
</tr>
<tr>
<td>HDFS</td>
<td>623</td>
<td>Developmental Perspectives on Infancy and Early Childhood</td>
</tr>
<tr>
<td>HDFS</td>
<td>635</td>
<td>Teaching and Learning in Early Childhood Settings (56 classroom hours)</td>
</tr>
<tr>
<td>HDFS</td>
<td>709</td>
<td>Child Development Internship at CSDC (140 classroom hours)</td>
</tr>
<tr>
<td>HDFS</td>
<td>734</td>
<td>Curriculum for Young Children</td>
</tr>
<tr>
<td>HDFS</td>
<td>743</td>
<td>Families, Schools, and Community</td>
</tr>
<tr>
<td>HDFS</td>
<td>771</td>
<td>Observation and Assessment of Young Children</td>
</tr>
<tr>
<td>HDFS</td>
<td>785</td>
<td>Seminar for Student Teachers - Fall Semester</td>
</tr>
<tr>
<td>HDFS</td>
<td>786</td>
<td>Seminar for Student Teachers - Spring Semester</td>
</tr>
<tr>
<td>HDFS</td>
<td>788</td>
<td>Student Teaching of Young Children - Spring Semester</td>
</tr>
<tr>
<td>One Statistics class</td>
<td>PSYC 402 -OR- SOC 502 -OR- HHS 540</td>
<td></td>
</tr>
</tbody>
</table>
### Additional Requirements for the P-3 Program

<table>
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<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>500</td>
<td>Exploring Teaching (with placement in 1st, 2nd, or 3rd grade)</td>
</tr>
<tr>
<td>EDUC</td>
<td>741</td>
<td>Exploring Mathematics with Young Children (OR MATH 601)</td>
</tr>
<tr>
<td>EDUC</td>
<td>706</td>
<td>Introduction to Reading in the Elementary School (with practicum in 1st, 2nd, or 3rd grade)</td>
</tr>
<tr>
<td>EDUC</td>
<td>760</td>
<td>Introduction to Children with Special Needs</td>
</tr>
<tr>
<td>EDUC</td>
<td>703M</td>
<td>Teaching Elementary School Social Studies (with focus on 1st, 2nd, or 3rd grade)</td>
</tr>
<tr>
<td>EDUC</td>
<td>703F</td>
<td>Teaching Elementary School Science (with focus on 1st, 2nd, or 3rd grade)</td>
</tr>
<tr>
<td>MATH</td>
<td>601</td>
<td>Exploring Math for Teachers (OR EDUC 741)</td>
</tr>
</tbody>
</table>

* These courses are subject to change to meet state certification requirements in subsequent years.

### Human Development and Family Studies Minors

#### 1. General - Human Development and Family Studies

The department offers a minor in human development and family studies to interested students in related majors. Minor requirements include HDFS 525, Human Development; HDFS 545, Intimate Relationships and Families; and three additional courses chosen in consultation with a departmental adviser.

Individual course grades must be C or above, and the overall grade-point average for the 20 human development and family studies credits must be at least 2.0.

#### 2. Adolescent and Youth Development

The interdisciplinary minor in adolescent and youth development is offered by the Department of Human Development and Family Studies and the Department of Recreation Management and Policy. The minor is designed to provide students with an opportunity to develop knowledge and skills regarding adolescence and youth development.
Required courses offer a foundation in theory, research, and practice for all minors. Students select three additional courses from a wide array of more specialized offerings from collaborating departments. To assist students in developing a cohesive plan of study for their minor, a simple application process is required. Only students who have completed the required coursework will be identified as having achieved a minor in adolescent and youth development.

**HDFS Majors Minoring in Adolescence & Youth Dev, Req Courses**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS</td>
<td>624</td>
<td>Developmental Perspectives on Adolescence and Early Adulthood</td>
</tr>
<tr>
<td>RMP</td>
<td>668</td>
<td>Youth Culture and Programs</td>
</tr>
</tbody>
</table>

**HDFS Major Minoring in Adol & Youth Dev, Choose 3 electives**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>507</td>
<td>Mentoring Adolescents</td>
</tr>
<tr>
<td>EDUC</td>
<td>710C</td>
<td>Youth Organizations</td>
</tr>
<tr>
<td>EDUC</td>
<td>717</td>
<td>Growing Up Male in America</td>
</tr>
<tr>
<td>EDUC</td>
<td>735</td>
<td>Young Adult Literature</td>
</tr>
<tr>
<td>EDUC</td>
<td>797</td>
<td>Seminar in Early Adolescent Development</td>
</tr>
<tr>
<td>HDFS</td>
<td>797</td>
<td>Special Topics in Family Studies - Approved Sections Only</td>
</tr>
<tr>
<td>JUST</td>
<td>701</td>
<td>Special Topics - Approved Sections Only</td>
</tr>
<tr>
<td>KIN</td>
<td>565</td>
<td>Principles of Coaching</td>
</tr>
<tr>
<td>PSYC</td>
<td>791</td>
<td>Adolescent Psychology</td>
</tr>
<tr>
<td>RMP</td>
<td>558</td>
<td>Program Supervision and Leadership</td>
</tr>
<tr>
<td>RMP</td>
<td>560</td>
<td>Recreational Sport Management</td>
</tr>
<tr>
<td>RMP</td>
<td>563</td>
<td>Practicum**</td>
</tr>
<tr>
<td>RMP</td>
<td>707</td>
<td>Practicum**</td>
</tr>
<tr>
<td>RMP</td>
<td>730</td>
<td>Camp Administration and Leadership</td>
</tr>
<tr>
<td>RMP</td>
<td>760</td>
<td>Community Sports Organizations: Administration &amp; Development</td>
</tr>
<tr>
<td>SOC</td>
<td>525</td>
<td>Juvenile Crime and Delinquency</td>
</tr>
<tr>
<td>SOC</td>
<td>773</td>
<td>Sociology of Childhood</td>
</tr>
<tr>
<td>SW</td>
<td>705</td>
<td>Adolescent Risk and Resiliency</td>
</tr>
</tbody>
</table>
* Some courses may require prerequisites or permission.

** Only one practicum may be applied toward the minor.

3. Child Life

The interdisciplinary child life minor is offered by the Department of Human Development and Family Studies and the therapeutic recreation option of the Department of Recreation Management and Policy. Upon completion of course requirements for the minor, students are able to sit for the Child Life Specialist exam.

HDFS Majors Minoring in Child Life - Required Courses:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMP</td>
<td>502</td>
<td>Foundations of Therapeutic Recreation</td>
</tr>
<tr>
<td>HDFS</td>
<td>525</td>
<td>Human Development</td>
</tr>
<tr>
<td>HDFS</td>
<td>565</td>
<td>Introduction to Child Life*</td>
</tr>
<tr>
<td>HDFS</td>
<td>710</td>
<td>Internship under the Supervision of a Certified Child Life Specialist</td>
</tr>
</tbody>
</table>

* Offered every other spring.

HDFS Majors Minoring in Child Life - Choose Two Electives:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMP</td>
<td>501</td>
<td>Leisure Services for Individuals with Disabilities</td>
</tr>
<tr>
<td>RMP</td>
<td>503</td>
<td>Therapeutic Recreation: Rehabilitation and Interventions</td>
</tr>
<tr>
<td>RMP</td>
<td>504</td>
<td>Therapeutic Recreation: Mental Health</td>
</tr>
<tr>
<td>RMP</td>
<td>603</td>
<td>Assessment and Treatment Planning in TP with RMP 602 Clinical Treatment Lab 1</td>
</tr>
<tr>
<td>RMP</td>
<td>604</td>
<td>Therapeutic Communication and Facilitation Techniques in TR with RMP 605 Clinical Treatment Lab II</td>
</tr>
</tbody>
</table>

» Click to view course offerings

^ back to top
International Affairs (dual major)

For program description, see Special University Programs.

^ back to top

Kinesiology (KIN)

» http://www.chhs.unh.edu/kin/index

» Click to view course offerings

Chairperson: Erik E. Swartz
Professor: Ronald V. Croce, Michael A. Gass, Erik E. Swartz, Steven C. Wright
Associate Professor: Heather Barber, Brent J. Bell, Karen E. Collins, Summer Cook, Michelle A. Grenier, Dain LaRoche, John P. Miller, Timothy J. Quinn, Jayson O. Seaman
Assistant Professor: Kiernan O. Gordon
Clinical Associate Professor: Laurie Gullion, Daniel R. Sedory
Clinical Assistant Professor: Tara Flippo, Pam McPhee, Melissa Rodgers, Ben Towne
Instructor: Karen N. Henny
Senior Lecturer: Thomas W. Ashwell
Lecturer: Nathan Fitch

The mission of the Department of Kinesiology is to generate, transmit, and apply knowledge about the role of physical activity (including exercise, movement, outdoor adventure experiences, and sport) in the advancement of health in society. The department has several teaching, research, and service functions that support this mission, including the preparation of professionals in the one major and four options described below. While programs vary in emphasis, each curriculum offers students fundamental knowledge in the following areas: the biological, psychological, and sociocultural foundations and consequences of physical activity; the pedagogical and rehabilitative aspects of physical activity; and the management and marketing of delivery systems in the field. Each program makes extensive use of field experiences and internships that blend theory with practice.

The department offers five areas of study for majors: athletic training, exercise science, outdoor education, sport studies, and health and physical education. Candidates for degree requirements in any of the department majors or options must satisfy all University Discovery Program requirements in addition to satisfying specific program requirements.

Athletic Training Major
For further information, please see Athletic Training.

Exercise Science Option

This curriculum prepares individuals for career opportunities in health and fitness promotion and education programs in hospitals, sports medicine centers, wellness clinics, universities, and rehabilitation facilities. Students are also prepared for advanced degree programs in the health professions, basic biology fields, medicine, or other health-related fields. Students must earn a grade of C (2.0) or better in every required course. Successful completion of early and prerequisite courses is required before advancing to sequenced and higher-level coursework. All required courses must be completed before enrolling in KIN 650A, Internship in Exercise Science. Interested students should consult with the option coordinator, Timothy J. Quinn.

Students in exercise science complete the series of KIN 736, Fitness and Graded Exercise Testing; KIN 737, Exercise Prescription & Leadership in Healthy & Special Populations; and KIN 650A, Internship in Exercise Science; as capstone courses for the major. These courses give students practical experience in evaluating health and fitness and prescribing exercise to a wide range of clients. Specifically, students assess a number of disease risk factors, including blood pressure, blood chemistry, and body composition measures, and perform maximal graded exercise tests complete with electrocardiogram monitoring, as well as measure strength and flexibility. Students ultimately develop individualized exercise prescriptions for their clients and work with them one-on-one to improve their health and fitness. The internship experience is an off-campus, 10-week, 40-hours per week, full-time experience and can only be taken after ALL University and departmental courses are completed. Typically, this is taken during the summer after the student’s senior spring academic term.

University Required Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUTR</td>
<td>400</td>
<td>Nutrition in Health and Well Being</td>
<td>4</td>
</tr>
<tr>
<td>PSYC</td>
<td>401</td>
<td>Introduction to Psychology</td>
<td>4</td>
</tr>
<tr>
<td>BMS</td>
<td>507-508</td>
<td>Human Anatomy and Physiology</td>
<td>8</td>
</tr>
<tr>
<td>One course chosen from</td>
<td>SOC 502, PSYC 402, or HHS 540</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CHEM</td>
<td>403-404</td>
<td>General Chemistry</td>
<td>8</td>
</tr>
</tbody>
</table>
Required Courses - Exercise Science

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>585</td>
<td>Emergency First Responder</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>620</td>
<td>Physiology of Exercise</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>621</td>
<td>Exercise Laboratory Techniques</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>650A</td>
<td>Exercise Science Internship</td>
<td>8</td>
</tr>
<tr>
<td>KIN</td>
<td>652</td>
<td>Clinical Kinesiology</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>653A</td>
<td>Musculoskeletal Assessment</td>
<td>2</td>
</tr>
<tr>
<td>KIN</td>
<td>704</td>
<td>Electrocardiography</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>705</td>
<td>Topics in Applied Physiology</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>720</td>
<td>Science &amp; Practice of Strength Training</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>724</td>
<td>Exerc Metab: Acute/Chronic Adapt</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>736</td>
<td>Fitness and Graded Exercise Testing</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>737</td>
<td>Ex Rx/L'ship Health &amp; Spec Pop</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>794</td>
<td>Cardiopulmonary Pathologies</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>795</td>
<td>Practicum in Cardiac Rehabilitation</td>
<td>2</td>
</tr>
</tbody>
</table>

Outdoor Education Option

The outdoor education option is an accredited, award-winning, internationally recognized program preparing individuals for careers in outdoor education, adventure programming, wilderness therapy, and other educational/organizational settings. In addition to providing rich course content, this interdisciplinary program gives ample opportunity for practical application and field experience in the New Hampshire seacoast and White Mountains areas. Students must earn a grade of C (2.0) or better in every major course. In addition, they must complete 100 days of documented leadership experience prior to beginning a required internship. Interested students should contact the undergraduate coordinator, Laurie Gullion, by e-mail at lgullion@unh.edu.

Students in outdoor education complete KIN 650B, Internship in Outdoor Education, as the capstone course for the option. This course integrates the knowledge and skills learned in all previous option courses and experiences into practical applications students will use as they prepare to enter the profession. Students complete their internships at regional and national organizations upon completion of all other courses and prerequisites.

University Required Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

ENGL 501, 502, or 503  Intro to Prose, Technical, or Persuasive Writing  4

Other: Core of courses (16 credits) emphasizing the particular area or population in outdoor education of interest to student, e.g., business, education, psychology, social work—selected with assistance of an adviser.

Elective Courses (must successfully complete at least one)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>542</td>
<td>Sea Kayaking</td>
<td>2</td>
</tr>
<tr>
<td>KIN</td>
<td>545</td>
<td>High Angle Rescue</td>
<td>2</td>
</tr>
<tr>
<td>KIN</td>
<td>546</td>
<td>Whitewater Canoeing</td>
<td>3</td>
</tr>
<tr>
<td>KIN</td>
<td>547</td>
<td>Lead Rock Climbing</td>
<td>3</td>
</tr>
<tr>
<td>KIN</td>
<td>549</td>
<td>Wilderness Navigation</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>693C</td>
<td>Teaching Assistantship</td>
<td>2</td>
</tr>
<tr>
<td>KIN</td>
<td>782</td>
<td>Therapeutic Applications of Adventure Programming</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>798</td>
<td>Special Topics</td>
<td>Var.</td>
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</tbody>
</table>

Required Courses - Outdoor Education

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>540</td>
<td>Top Rope Rock Climbing</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>541</td>
<td>Management of Challenge Courses</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>543</td>
<td>Winter Adventure Programming</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIN</td>
<td>548</td>
<td>Winter Expedition Programming</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>550</td>
<td>Outdoor Education Philosophy and Methods</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>551</td>
<td>Adventure Programming: Backcountry-Based Experiences</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>552</td>
<td>Adventure Programming: Water-Based Experiences</td>
<td>3</td>
</tr>
<tr>
<td>KIN</td>
<td>682</td>
<td>Outdoor Leadership</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>686</td>
<td>Wilderness Emergency Medical Care</td>
<td>4</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>KIN</th>
<th>687</th>
<th>Leadership Practicum</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>KIN</td>
<td>786</td>
<td>Organization/Administration of Outdoor Education</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>787</td>
<td>Theory of Adventure Education</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>650B</td>
<td>Internship*</td>
<td>(2-4) Cr/F</td>
</tr>
</tbody>
</table>

*Note: Proof of 100 days of leadership experience is required prior to taking this course.

Health and Physical Education Option

The health and physical education (HPE) option provides the foundation for public school teacher certification in health and physical education through either the Kinesiology department’s four-year certification program (BS), or the UNH Education department’s fifth-year program (MAT). Successful undergraduates become certified to teach kindergarten through grade 12 (K-12) health and physical education in the state of New Hampshire. This type of licensure is transferable to all other states in the U.S. The health and physical education option integrates best practices with the theoretical and process knowledge necessary for teaching K-12 HPE. Extensive supervised practicum experiences with a focus on meeting the needs of all student populations provides an excellent foundation for preparing high-quality teachers with necessary skills for 21st century learning.

Internal UNH undergraduate transfer candidates must have a minimum GPA of 2.67 before admission to the option. EDUC/KIN 694, Supervised Teaching in Health and Physical Education (student teaching), is the culminating capstone experience for the undergraduate program (B.S.) with certification in health and physical education. Undergraduates also have the option of completing a concentration in adapted physical education through additional coursework designed to enhance teaching strategies and the programmatic needs of students with disabilities.

The coursework for students choosing the four-year or five-year path to teaching certification is exactly the same up until the final semester of the undergraduate program. If students choose the four-year option, they will engage in a 20-week student teaching, culminating experience. If students choose the five-year option, they will delay student teaching until they do a full-year internship (student teaching) as part of their graduate program.

If accepted to early admission for the fifth-year master’s degree program (required GPA of 3.2 or greater), students are eligible for dual credit at the undergraduate/graduate levels for up to 12 credit hours. For questions about this program, contact the option coordinator, Michelle Grenier, at (603) 862-1835, or e-mail Michelle.Grenier@unh.edu.
### Required Education Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>700/800</td>
<td>Educational Structure and Change</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>705/805</td>
<td>Alternative Perspectives/Nature of Education</td>
<td>4</td>
</tr>
<tr>
<td>KIN/EDUC</td>
<td>694</td>
<td>Supervised Student Teaching</td>
<td>8</td>
</tr>
<tr>
<td>EDUC</td>
<td>900/901</td>
<td>Internship and Seminar in Teaching</td>
<td>12</td>
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</tbody>
</table>

### Required Courses - Health and Physical Education

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>500</td>
<td>Introduction to Health &amp; Physical Education</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>501</td>
<td>First Aid: Responding to Emergencies</td>
<td>2</td>
</tr>
<tr>
<td>KIN</td>
<td>570</td>
<td>Elementary Physical Education Practicum</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>600</td>
<td>Movement and Gymnastics Exploration</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>601</td>
<td>Lifetime Sports</td>
<td>3</td>
</tr>
<tr>
<td>KIN</td>
<td>603</td>
<td>Team Sports</td>
<td>3</td>
</tr>
<tr>
<td>KIN</td>
<td>610</td>
<td>Elementary Physical Education Pedagogy</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>620</td>
<td>Physiology of Exercise</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>648</td>
<td>Current Issues in Health</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>653B</td>
<td>Biomechanical Analysis of Movement</td>
<td>2</td>
</tr>
<tr>
<td>KIN</td>
<td>655</td>
<td>Middle School/Secondary Physical Education</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>666</td>
<td>Middle/Secondary Physical Education Practicum</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>675</td>
<td>Motor Development and Learning</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>676</td>
<td>Adventure Activities</td>
<td>3</td>
</tr>
<tr>
<td>KIN</td>
<td>702</td>
<td>Health Content &amp; Risk Behaviors</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>712</td>
<td>Health Education Practicum</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>781</td>
<td>Inclusion in Physical Education</td>
<td>4</td>
</tr>
<tr>
<td>*NUTR</td>
<td>400</td>
<td>Nutrition, Health &amp; Well Being</td>
<td>4</td>
</tr>
<tr>
<td>*HDFS</td>
<td>746</td>
<td>Human Sexuality</td>
<td>4</td>
</tr>
</tbody>
</table>

*Additional required courses for health certification.*
Sport Studies Option

Sport studies is an interdisciplinary option in the Department of Kinesiology that provides a foundation for a variety of career paths in school and college athletics, including coaching, administration, marketing, and sports information. The major also prepares students for further graduate study in areas such as sport psychology. Sport studies students are encouraged to pursue a second major or minor in a complimentary discipline, such as business, journalism, or psychology.

Majors take a core of foundation courses (e.g., The Sport Industry) as well as electives in applied areas such as sport marketing, athletic administration, and sport psychology. Majors must earn a grade of B- or better in KIN 565 and KIN 580, and a grade of C or better in each required University and KIN course. All majors must complete 20 credits of prior-approved coursework in supporting areas such as business, psychology, or education. In addition, an internship experience or independent study is required. An internship experience is strongly recommended since it is often critical to career development. Interested students should consult with the option coordinator, Karen Collins.

### University Required Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC</td>
<td>401</td>
<td>Introduction to Psychology</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>One approved statistics course</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

### Cognate Requirement (outside of Department of Kinesiology). Students must complete a minimum of 20 credits of coursework in other departments. Each course must be approved in advance by the faculty adviser.

### Required Courses - Sport Studies

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>560</td>
<td>Sport Psychology</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>562</td>
<td>Sports Media Relations</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>565</td>
<td>Principles of Coaching</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>580</td>
<td>The Sport Industry</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>741</td>
<td>Social Issues in Contemporary Sports</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>761</td>
<td>Senior Seminar in Sport Studies*</td>
<td>4</td>
</tr>
</tbody>
</table>
*Majors must complete a minimum of 150 hours of industry experience before they can take KIN 761. Students must be enrolled as a sport studies major for one full semester before taking KIN 761, Senior Seminar. See adviser for details.

**Electives.** Sixteen credits of approved KIN electives to include KIN 650 or KIN 696.

Internal transfers to sport studies must have a 2.5 GPA as well as a minimum grade of C in PSYC 401, Statistics (PSYC, SOC, DS) and a minimum grade of B- in both KIN 565 and KIN 580.

**Minors in Kinesiology**

**Kinesiology Minor**
The Department of Kinesiology offers an interdisciplinary curriculum for nonmajors, which is designed to provide students with the basic knowledge of movement and sport sciences. The minor consists of courses offered by several options within the department. A list of minor requirements and available classes is available at the Kinesiology Department Office, Room 107, New Hampshire Hall.

**Coaching Minor**
The Department of Kinesiology: sport studies option offers a coaching minor. The coaching minor is an interdisciplinary curriculum designed to provide students interested in coaching at the youth, high school, or college levels with basic knowledge and skills necessary for competence in coaching. The minor consists of courses offered by several options within the Department of Kinesiology and recreation management and policy. The coursework lays a theoretical and practical framework for students interested in coaching.

**Description of Curriculum and Requirements of Coaching Minor**
Admission to the minor is based on successful completion of KIN 565, Principles of Coaching (grade of C or better), and a minimum GPA of 2.0.

**Interdisciplinary Health Minor**
The central focus of the interdisciplinary minor is to prepare future educators for employment in schools, community health centers, and/or corporate settings.

**Applied Human Anatomy & Physiology Minor**
The minor is designed to provide students with an opportunity to develop knowledge and skills necessary for pursuing degrees in medicine and allied health.

**Description of Curriculum and Requirements for Applied Human Anatomy & Physiology**
Minor

Admission to the applied human anatomy & physiology minor is based on successful completion of BMS 507 & 508 or ANC 511 & 512 (or equivalent accepted by minor adviser) with a grade of C or better and a minimum GPA of 2.75.

Coaching Minor Required Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>565</td>
<td>Principles of Coaching</td>
</tr>
<tr>
<td>KIN</td>
<td>505</td>
<td>Prevention and Care of Athletic Injuries</td>
</tr>
<tr>
<td>KIN</td>
<td>521, 522, 523, 525, 528, 529</td>
<td>Sport-Specific Coaching Theory Course (minimum of two) (each course is 2 credits)</td>
</tr>
<tr>
<td>KIN</td>
<td>650D</td>
<td>Internship in Coaching (one 4-credit internship or two 2-credit internships)</td>
</tr>
</tbody>
</table>

Coaching Minor Select at Least One of the Following:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>527</td>
<td>Scientific Foundations of Health and Fitness</td>
</tr>
<tr>
<td>KIN</td>
<td>560</td>
<td>Sport Psychology</td>
</tr>
<tr>
<td>RMP</td>
<td>560</td>
<td>Recreational Sport Management</td>
</tr>
<tr>
<td>KIN</td>
<td>562</td>
<td>Sport Media Relations</td>
</tr>
<tr>
<td>KIN</td>
<td>675</td>
<td>Motor Development and Learning</td>
</tr>
<tr>
<td>KIN</td>
<td>740</td>
<td>Athletic Administration</td>
</tr>
<tr>
<td>KIN</td>
<td>765</td>
<td>Advanced Topics In Coaching</td>
</tr>
<tr>
<td>KIN</td>
<td>780</td>
<td>Psychological Factors in Sport and Exercise</td>
</tr>
<tr>
<td>RMP</td>
<td>760</td>
<td>Community Sport Organizations: Administration and Development</td>
</tr>
</tbody>
</table>

Students will not be permitted to enroll in KIN 650D, Internship, until they have completed KIN 565, Principles of Coaching; KIN 505, Prevention and Care of Athletic Injuries, and at least one theory of coaching class.

To graduate with a coaching minor, individuals must earn a grade of C- or better in all courses associated with the minor (not including KIN 565, which will require a C or better).

Individuals will not be permitted to count coaching minor classes toward their major regardless of the major/degree program.
### Interdisciplinary Health Minor Requirements

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUTR</td>
<td>400</td>
<td>NUTR 400: Nutrition in Health &amp; Well Being (4 cr) (offered fall/spring/summer)</td>
</tr>
<tr>
<td>KIN</td>
<td>648</td>
<td>Contemporary Issues in Health (4 cr) (fall)</td>
</tr>
<tr>
<td>KIN</td>
<td>702/802</td>
<td>Health Content and Youth Risk Behaviors (4 cr) (spring)</td>
</tr>
<tr>
<td>or NUTR</td>
<td>610</td>
<td>Nutrition Education and Counseling (fall)</td>
</tr>
<tr>
<td>KIN</td>
<td>712/812</td>
<td>Health Education Practicum (4 cr) (fall)</td>
</tr>
<tr>
<td>FS</td>
<td>746</td>
<td>Human Sexuality (4 cr) (spring/summer/J-term)</td>
</tr>
</tbody>
</table>

### Applied Human Anatomy & Physiology Minor Required Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>620</td>
<td>Physiology of Exercise (4-cr)</td>
</tr>
<tr>
<td>KIN</td>
<td>652</td>
<td>Clinical Kinesiology (4-cr)</td>
</tr>
<tr>
<td>KIN</td>
<td>653A</td>
<td>Musculoskeletal Assessment Lab (2-cr)</td>
</tr>
<tr>
<td>KIN</td>
<td>706</td>
<td>Neurology (4-cr)</td>
</tr>
<tr>
<td>KIN</td>
<td>707</td>
<td>Neurology Lab (2-cr)</td>
</tr>
</tbody>
</table>

Select at least one of the following:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN</td>
<td>505</td>
<td>Activity, Injuries and Disease (4-cr)</td>
</tr>
<tr>
<td>KIN</td>
<td>527</td>
<td>Scientific Foundations of Health &amp; Fitness (4-cr)</td>
</tr>
<tr>
<td>KIN</td>
<td>607</td>
<td>Biology of Aging (4-cr)</td>
</tr>
</tbody>
</table>

» Click to view course offerings

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### Nursing (NURS)

» [http://www.chhs.unh.edu/nursing](http://www.chhs.unh.edu/nursing)

» Click to view course offerings

*Chairperson:* Gene E. Harkless  
*Professor:* Susan J. Fetzer
Associate Professor: Pamela P. DiNapoli, Gene E. Harkless, Joanne G. Samuels
Assistant Professor: Joyce Dolphin Cappiello, Rosemary Ann Taylor, Carolyn L. Tobin
Clinical Associate Professor: Donna Marie Pelletier, Dayle Boynton Sharp
Clinical Assistant Professor: Angela M. Braswell, Elizabeth J. Evans, Kimberly Gibbons, Debra A. Gottel, Eileen Hollis, Pamela Kallmerten, Michele Loos, Kerry Nolte, Patricia Puccilli, Deborah L. Simonton
Lecturer: Karen S. Niland

The undergraduate nursing program is nationally accredited by the Commission on Collegiate Nursing Education, One Dupont Circle NW, Suite 530, Washington, D.C. 20036-1120. The nursing department reflects the mission and goals of the university and focuses on the uniqueness of each individual. The mission of the Department of Nursing is to enhance the health of individuals, families, groups, and communities. The philosophy expresses the beliefs of the faculty regarding person, environment, health, nursing, and education. The curricular goal is to guide nursing students in developing knowledge and skills essential to the present and future practice of nursing. Graduates are prepared to provide care to individuals and groups, help people identify and meet their health care needs, be effective colleagues on the health care team and shape the future of health care.

The curricula are divided into biological, social sciences, and humanities as a foundation for courses in the major, and nursing courses, which emphasize relationship-based care, reflective thinking, clinical decision making, and the application of evidence-based guidelines to develop quality and safe clinical skills. Clinical experiences are offered in area health facilities, community health agencies, and a state-of-the-art simulation laboratory. The senior year culminates in a capstone practicum, NURS 721C, Integrating Professional Nursing Practice Clinical, in which students apply curricular concepts in a precepted clinical experience. Candidates for the nursing degree must satisfy all of the University Discovery Program requirements in addition to satisfying major requirements.

The nursing program faculty believe learning is a creative process wherein students are active participants in their education, growth, and development as professional nurses. Faculty members are facilitators and mentors to students within a supportive, scholarly environment.

Honors-in-major courses are offered to interested nursing students who have achieved a minimum grade-point average of 3.75 in NURS courses and cumulative GPA of 3.4 at the end of the sophomore year in nursing. In addition to NURS 641H, Translating Research for Practice (4 cr.), students must successfully complete 8 additional credits of honors coursework drawn from the following courses: NURS 612H, Care of the Adult with Acute Illness 2 (4 cr.); NURS 627WH, Clinical Judgment in Nursing (4 cr.); and NURS 705, Contemporary Leadership.
within Health Care Systems (4 cr.), for a total of 12 credits of honors coursework.

Honors-in-major students must successfully complete NURS 794, Special Topics: Honors Seminar (1 cr.), spring semester junior year; NURS 797, Honors Thesis (1 cr.), fall semester senior year; and NURS 797, Honors Thesis (4 cr.), spring semester senior year. These self-directed learning experiences, related to the student's interests, are designed to help students acquire advanced knowledge and skills to undertake inquiry or scholarly projects. Students must submit a project description to a faculty adviser at the beginning of the senior year. Students present the results of this study at the Nursing Inquiry Day.

A grade of C or better in high school chemistry is required as well as biology or physics. The following prerequisite courses must be completed successfully prior to enrollment in NURS 500: ENGL 401, BMS 507-508, and PSYC 401. BMS 501 must be taken prior to or concurrent with NURS 500. A course in statistics must be completed prior to, or taken concurrent with, NURS 641.

Prerequisite courses require grades of C or better and only one prerequisite course may be repeated one time in order to progress. Most of the prerequisite courses also meet Discovery requirements. Major courses require a minimum grade of C. Nursing courses may not be repeated. A cumulative grade-point average of 2.5 must be maintained throughout the program.

Students are responsible for their own transportation to clinical agencies, uniforms, professional equipment, health insurance coverage, yearly criminal background checks, drug and alcohol screening, fingerprinting, yearly health assessment, and select immunizations and titers. Students must maintain certification in cardiopulmonary resuscitation at the Healthcare provider level. All clinical documents must be received by July 1st before the sophomore year, except flu vaccine, which is due by October 15th, and remain up to date until graduation. Clinical documents cannot expire during the academic year; documents that must be submitted yearly must be dated between May 1 and June 30. Students will be assessed a late fee if clinical documents are not received by the due date. Students will be dropped from nursing courses if documentation is not received by the first day of class. Additional costs associated with the program include, but are not limited to, simulation laboratory fees, fees associated with program requirements, and attendance at professional meetings.

<table>
<thead>
<tr>
<th>Freshman Year - Fall Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviation</td>
</tr>
</tbody>
</table>

### Freshman Year - Spring Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS</td>
<td>508</td>
<td>Human Anatomy &amp; Physiology</td>
<td>4</td>
</tr>
<tr>
<td>PSYC</td>
<td>401</td>
<td>Introduction to Psychology</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discovery/Inquiry</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours for Semester</td>
<td>16</td>
</tr>
</tbody>
</table>

1. PSYC 401 satisfies Discovery Social Science category (SS).
2. Two additional WI courses required beyond ENGL 401 and NURS 627W (see spring junior year).

### Sophomore Year - Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS</td>
<td>501</td>
<td>Microbes in Human Disease</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>500</td>
<td>Introduction to Professional Nursing</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>504</td>
<td>Diseases and Drugs 1</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>516</td>
<td>Health Assessment and Nursing Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>516C</td>
<td>Health Assessment and Nursing Fundamentals Clinical</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>516.L</td>
<td>Health Assessment and Nursing Fundamentals Lab</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours for Semester</td>
<td>16</td>
</tr>
</tbody>
</table>

### Sophomore Year - Spring Semester

1. BMS 507 satisfies Discovery Biological Science category (BS) and Discovery Lab (DLAB).
2. ENGL 401 satisfies Discovery Writing Skills category (WS).
3. One of the Discovery courses should be Inquiry by end of first year.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>*</td>
<td></td>
<td>Statistics</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>505</td>
<td>Diseases and Drugs 2</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>506</td>
<td>Human Development, Interaction and Learning Across the Lifespan</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>517C</td>
<td>Clinical Integration</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>517C.L</td>
<td>Clinical Integration Lab</td>
<td>0</td>
</tr>
<tr>
<td>NURS</td>
<td>601</td>
<td>Function and Well-being of Older Adults</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours for Semester</td>
<td>16</td>
</tr>
</tbody>
</table>

* HHS 540, PSYC 402, SOC 502, MATH 439 satisfy Discovery Quantitative Reasoning category (QR).

**Junior Year - Fall Semester**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS</td>
<td>611</td>
<td>Care of the Adult with Acute Illness 1</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>611C</td>
<td>Care of the Adult with Acute Illness 1 Clinical</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>611.L</td>
<td>Care of the Adult with Acute Illness 1 Lab</td>
<td>0</td>
</tr>
<tr>
<td>NURS</td>
<td>616</td>
<td>Living with Mental Illness</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>616C</td>
<td>Living with Mental Illness Clinical</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>641</td>
<td>Translating Research for Practice</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discovery/Elective</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours for Semester</td>
<td>18</td>
</tr>
</tbody>
</table>

NURS 616 may be taken fall or spring semester.

**Junior Year - Spring Semester**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS</td>
<td>612</td>
<td>Care of the Adult with Acute Illness 2</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>612C</td>
<td>Care of the Adult with Acute Illness 2 Clinical</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>612.L</td>
<td>Care of the Adult with Acute Illness 2 Lab</td>
<td>0</td>
</tr>
<tr>
<td>NURS</td>
<td>621</td>
<td>Maternal and Newborn Nursing</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>621C</td>
<td>Maternal and Newborn Nursing Clinical</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>621.L</td>
<td>Maternal and Newborn Nursing Lab</td>
<td>0</td>
</tr>
</tbody>
</table>
NURS  627W  Clinical Judgment in Nursing  4
    Discovery/Elective  4
    Total Credit Hours for Semester  18

1. NURS 621 may be taken fall or spring semester.
2. NURS 627W satisfies Writing Intensive (WI) in major/WI at 600-level or above.

### Senior Year - Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS</td>
<td>702</td>
<td>Child Health Nursing</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>702C</td>
<td>Child Health in the Community Clinical</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>704</td>
<td>Public Health Nursing</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>704P</td>
<td>Public Health Nursing Project</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>711</td>
<td>Clinical Judgment in Complex Illness</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>711.L</td>
<td>Clinical Judgment in Complex Illness Lab</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Discovery/Elective</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours for Semester</td>
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<td>16</td>
</tr>
</tbody>
</table>

### Senior Year - Spring Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS</td>
<td>705</td>
<td>Contemporary Leadership within Health Care Systems</td>
<td>4</td>
</tr>
<tr>
<td>NURS</td>
<td>721</td>
<td>Integrating Professional Nursing Practice</td>
<td>2</td>
</tr>
<tr>
<td>NURS</td>
<td>721C</td>
<td>Integrating Professional Nursing Practice Clinical</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours for Semester</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

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Occupational Therapy (OT)

» http://www.chhs.unh.edu/ot/index
Chairperson: Kerryellen Vroman
Associate Professor: Sajay Arthanat, Lou Ann Griswold, Shelley E. Mulligan, Barbara Prudhomme White
Assistant Professor: Vidyalakshmi Sundar
Clinical Associate Professor: Elizabeth A. Stewart, Therese Willkomm
Clinical Assistant Professor: Paul Bonzani, Alexa Trolley-Hanson, John Wilcox

Occupational therapy enables individuals of all ages to engage in everyday activities across the life span in the areas of work, self-care, home management, and leisure. The main goal of occupational therapy is to support people as they gain or regain skills and abilities to participate effectively within their natural context. This process often involves adapting tasks or an environment to optimize a person’s ability to fulfill his/her social roles and engage in those activities that are meaningful and support health and wellbeing. A program of studies in occupational therapy includes a foundation in the liberal arts; biological, behavioral, and health sciences; and discipline-specific studies in occupational science and occupational therapy.

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE). The Council may be contacted c/o Accreditation Department, American Occupational Therapy Association (AOTA), 4720 Montgomery Lane, Bethesda, MD 20824-3449, (301) 652-2682, website: www.acoteonline.org. Graduates from an accredited program are eligible to sit for the certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. (NBCOT). After successful completion of this exam, the individual will be a registered occupational therapist (OTR). Most states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT certification examination.

Combined Bachelor of Science/Master of Science Program
The University of New Hampshire Department of Occupational Therapy offers a combined bachelor’s degree/master’s degree program. Students must complete both a bachelor’s of science and the professional master’s degree in occupational therapy to be eligible to take the National Board Certification of Occupational Therapists examination, which is required to practice as an occupational therapist. Students may enter as first-year students or transfer within UNH into the B.S./M.S. program at the end of the sophomore year, space permitting in the program. Students interested in transferring into this program should contact the Department of Occupational Therapy for information about transfer requirements and application deadlines. This information is also available on the department website www.chhs.unh.edu/ot.
**Preprofessional Curriculum**

Students begin the B.S./M.S. curriculum with three years of preprofessional courses, which include courses in biological and social sciences as well as occupational therapy. In addition to meeting the University Discovery Program requirements, students take the following core courses during their first three years:

- ENGL 401, First-Year Writing
- PSYC 401, Introduction to Psychology
- BMS 507 and 508, Human Anatomy and Physiology
- OT 500, The Behavior and Development of Children
- OT 501, Development Tasks of Adulthood
- OT 510, Exploring Occupational Therapy and Occupation
- OT 610, Occupation, Identity, and Disability
- KIN 706 Neurology and KIN 707, Neurology Lab
- Statistics (such as HHS 540, PSYC 402, or SOC 402)

**Additional requirements** (Details on satisfying these requirements are provided by the student's academic adviser and are outlined in the OT Department Policy and Procedure Manual. All students receive a copy of the manual in their first year, and it is also available on the OT student organization site online.)

- An experiential learning/occupation-based learning course for 3-4 credits (This is a course that requires cognitive learning that is translated into a motor skill. Many courses can meet this requirement);
- A health/social policy course (This is a course that address social and health policy, such as HMP 401 or SW 525);
- Any university minor or a self-designed concentration area for a total of 20 credits;
- Minimum 4-hour OT shadow/observation experiences in three different practice settings (forms and introduction letter for these observations are available on the occupational therapy student organization online.

Volunteer or work experience in a health and human service organization is recommended, although not required.

**Professional Curriculum**

Students in the B.S./M.S. curriculum with a GPA of 3.0 or higher transition into the professional program during their undergraduate education. They complete the following courses:

- OT 741, Human Occupation
- OT 710, Occupational Therapy Practice and Professional Roles
- OT 751, Mind Body Systems Neurologically-Based Function and Dysfunction
- OT 752, Human Movement and Environmental Effects on Everyday Occupations (co-requisite
lab OT 752L)
OT 792, Level I Fieldwork (January-term)
OT 760, Occupational Therapy Psychosocial Evaluation and Intervention (co-requisite lab, OT 760L)
OT 785, Research Methods and Application to Practice
OT 745, Administration and Management for Occupational Therapy Practice

One of the following two courses:

OT 771, Enabling Participation in Community Groups (co-requisite lab, OT 771L) or
OT 730, Assistive Technology for Enhancing Occupational Performance (co-requisite lab, OT 730L)

The Discovery Program capstone requirement is satisfied through the completion of coursework for OT 741, Human Occupation. This course also fulfills the writing intensive in major course.

At the end of the senior year, students are awarded a bachelor of science degree in occupational science. Students then apply to the Graduate School as advanced-standing students in the professional master’s program. An overall minimum grade point of 3.0 is required for admission to the master’s degree program, and students must attain a minimum grade of B- in all OT classes, and meet professional behavior expectations. Students must have no more than 8 credits of B- coursework in OT senior-level courses. Please refer to the Graduate Catalog for additional information about the master’s program and the final 1.5 years (three semesters) of the professional occupational therapy curriculum including fieldwork requirements.

Students entering as first-year undergraduate students have 5.5 academic years (11 semesters) to complete the professional curriculum, including level II fieldwork. They then will be eligible to sit for the certification examination administered by the National Board of Certification of Occupational Therapists (NBCOT). A felony conviction may affect a graduate’s ability to complete fieldwork, sit for the NBCOT certification examination, and/or obtain state licensure.

Students are responsible for transportation to off-campus practicum and fieldwork locations.

Curriculum review and revision is undertaken annually. The department works closely with students during academic advising sessions and shares information about any policy and requirement changes during registration periods as well as throughout the academic year. Students also are expected to take an active role in verifying expectations and should check with their department advisers each September for updated policies and requirements.
Program requirements and policies for retention in the major are in the *OT Department Policy and Procedure Manual*, which is available online.

» **Click to view course offerings**

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**Recreation Management and Policy (RMP)**

» **http://www.chhs.unh.edu/rmp/index**

» **Click to view course offerings**

**Chairperson:** Robert J. Barcelona  
**Associate Professor:** Robert J. Barcelona, Patricia J. Craig, Allison Wilder  
**Assistant Professor:** Jessie Bennett, Nate Trauntvein  
**Affiliate Assistant Professor:** James Hilton, Cari A. Moorhead  
**Clinical Assistant Professor:** Jennifer Frye, Jill Gravink  
**Clinical Instructor:** Matthew Frye, Crystal Skahan, Cathy Thompson  
**Lecturer:** Sean McLaughlin

As the fabric of life in contemporary society grows in complexity, people are increasingly turning to leisure and recreation services to find meaning, renewal, and enrichment. Recreation services can improve public health and wellness, promote sustainable environments, develop a sense of community, and enhance the quality of life of all citizens. Recreation professionals work in diverse settings, including human services, health care, natural recreation resource areas such as parks, and commercial recreation businesses. Population and economic projections suggest that recreation service industries will continue to expand and thereby continue to provide numerous professional career opportunities.

The Department of Recreation Management and Policy maintains two national accreditations. Our core is nationally accredited by the Council on Accreditation of Parks, Recreation, Tourism, and Related Professions (COAPRT). Further, our therapeutic recreation option is accredited by the Committee on Accreditation of Recreational Therapy Education (CARTE). CARTE is an approved accreditation program under the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The department’s curriculum supports a broad-based education and an opportunity to acquire specialized professional knowledge and skills. Graduates are employed in a broad range of settings, such as community recreation agencies, resorts, conference centers, youth services agencies, hospitals, rehabilitation centers, and long-term care facilities.
**Curriculum Structure**

Students entering the major may choose either an option in program and event management, which includes the professional core and required courses related to program and event management, or the therapeutic recreation option, which includes the professional core and required courses in therapeutic recreation. Candidates for a degree in recreation management and policy must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major option.

**Study Abroad Opportunities**

The University of New Hampshire approved study abroad program list is available on the Center for International Education website: [http://www.unh.edu/cie/studyabroad/programs_approved.html](http://www.unh.edu/cie/studyabroad/programs_approved.html). This site includes a wide variety of destinations, coursework, and activities to meet the diverse needs of UNH students. Students who wish to attend a program not included in the approved list must complete a UNH One-time Study Abroad Approval Petition. Interested students in the major should consult with their recreation management and policy academic adviser about sites, timing, and coursework that may be most compatible with degree requirements.

**Core Requirements**

All majors must complete a core curriculum of seven courses.

**Core Curriculum**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMP</td>
<td>490*</td>
<td>Recreation and Leisure in Society</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>501</td>
<td>Recreation Services for Individuals with Disabilities</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>557</td>
<td>Program and Event Design</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>563</td>
<td>Recreation Management and Policy Practicum</td>
<td>2</td>
</tr>
<tr>
<td>RMP</td>
<td>654</td>
<td>Professional Development and Ethics</td>
<td>2</td>
</tr>
<tr>
<td>RMP</td>
<td>664</td>
<td>Professional Internship</td>
<td>14-16</td>
</tr>
<tr>
<td>RMP</td>
<td>724</td>
<td>Grantsmanship, Evaluation, and Research</td>
<td>4</td>
</tr>
</tbody>
</table>

*RMP majors cannot count RMP 490 toward the University Social Sciences requirement.
Professional Internship

A supervised internship (RMP 664) is required of all majors and serves as their major capstone requirement. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for a 14-16 credit full-time internship that ranges from 14 to 16 weeks and is under the supervision of a qualified professional. Specific requirements are identified in the Internship Manual available from the Department of Recreation Management and Policy.

Program and Event Management Option

This option prepares students for managerial positions in commercial, public, and nonprofit organizations that provide recreation and leisure services. Curriculum design emphasizes the effective and efficient planning, delivery, and evaluation of leisure-based programs, services, and enterprises. Applied experience is a component of most courses, in addition to a required practicum and the 14-16–week full-time internship under professional supervision. Depending upon the RMP electives and the career support emphasis or minor chosen, students may expect to find employment in a broad range of settings. Recent graduates have found employment in the areas of conference and event planning, municipal park and recreation services, recreational sports, commercial and entrepreneurial recreation businesses, youth-serving agencies, resorts, camps, and natural resource management positions in state and federal agencies.

In addition to the required core courses, students who pursue the program and event management option must complete the following departmental requirements:

Program and Event Management Course Requirements

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMP</td>
<td>559</td>
<td>Program and Event Marketing</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>661</td>
<td>Recreation and Event Leadership</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>663</td>
<td>Recreation and Event Services Management</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>772</td>
<td>Law and Public Policy in Recreation Services</td>
<td>4</td>
</tr>
<tr>
<td>PSYC</td>
<td>402</td>
<td>Statistics in Psychology or other statistics course</td>
<td>4</td>
</tr>
</tbody>
</table>

Three RMP course electives selected from a rotating list of specialized RMP course offerings are required. Examples of elective course topics include: recreational sport management, youth culture and programs, festival and event management, camp administration and leadership,
recreation resource management, youth development, and entrepreneurial and commercial recreation. RMP courses taken to fulfill the elective course requirement may not also be used to fulfill the emphasis area requirement unless prior approval from the student’s academic adviser is obtained in unique circumstances.

Program administration students must complete a minor or emphasis area of 18–20 credits to support their specific career goals.

**Therapeutic Recreation Option**

Therapeutic recreation utilizes recreation to assist people with disabilities or illnesses to develop and use their leisure in ways that enhance health, independence, and well-being. Therapeutic recreation recognizes the importance of quality of life and uses activities to remediate or rehabilitate functional abilities. Therapeutic recreation services are provided in a variety of settings, including hospitals, long-term care facilities, residential treatment facilities, schools, home health care, community recreation, correctional facilities, rehabilitation centers, camp and outdoor education centers, and adult day programs. Observation and applied experience is a component of several courses. Students complete a 14-16-week full-time clinical internship under the supervision of a certified therapeutic recreation specialist (CTRS).

The Bureau of Labor Statistics occupational outlook reports the “employment of recreational therapists is projected to grow 13 percent from 2012 to 2022, about as fast as the average for all occupations. As the large baby-boom generation ages, they will need recreational therapists to help treat age-related injuries and illnesses, such as strokes. Recreational therapists will also be needed to help patients manage chronic conditions such as diabetes and obesity (Bureau of Labor Statistics). A CNN Money report identifies recreation therapy among the top ten "best jobs for saving the world." In particular, they note the profession's high benefit to society and high personal job satisfaction (CNN Money Magazine). On the job front, interested readers may also wish to review an article on Recreational Therapy published on Monster.com at [http://www.monster.com/healthcare/a/recreational-therapists-help-patients-play-to-win-0615](http://www.monster.com/healthcare/a/recreational-therapists-help-patients-play-to-win-0615) (2015).

Upon successful completion of this option, students are prepared to meet sitting requirements for the National Council for Therapeutic Recreation Certification Examination. Students/graduates who pass the NCTRC exam and attain the CTRS® are eligible to seek licensure to practice in the state of New Hampshire.

Students may be required to submit to a criminal background check.

In addition to required core courses, students who choose this option must meet the following
departmental requirements:

### Therapeutic Recreation Course Requirements

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMP</td>
<td>500</td>
<td>Therapeutic Recreation Methods in Physical Rehabilitation Settings</td>
<td>1</td>
</tr>
<tr>
<td>RMP</td>
<td>502</td>
<td>Foundations of Therapeutic Recreation</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>503</td>
<td>Therapeutic Recreation Rehabilitation Principles and Interventions</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>504</td>
<td>Therapeutic Recreation Mental Health Principles and Interventions</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>612</td>
<td>Therapeutic Communication and Facilitation Techniques in Therapeutic Recreation</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>613</td>
<td>Interventions and Documentation in Therapeutic Recreation</td>
<td>3</td>
</tr>
<tr>
<td>RMP</td>
<td>614</td>
<td>Assessment and Treatment Planning in Therapeutic Recreation</td>
<td>4</td>
</tr>
<tr>
<td>RMP</td>
<td>615</td>
<td>Clinical Lab in Therapeutic Recreation</td>
<td>2</td>
</tr>
<tr>
<td>RMP</td>
<td>705</td>
<td>Management and Policy in Therapeutic Recreation</td>
<td>4</td>
</tr>
</tbody>
</table>

### Required Support Courses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC</td>
<td>402</td>
<td>Statistics or equivalent</td>
<td>4</td>
</tr>
<tr>
<td>PSYC</td>
<td>401</td>
<td>Introduction to Psychology</td>
<td>4</td>
</tr>
<tr>
<td>PSYC</td>
<td>561</td>
<td>Abnormal Behavior</td>
<td>4</td>
</tr>
<tr>
<td>FS</td>
<td>525</td>
<td>Human Development</td>
<td>4</td>
</tr>
<tr>
<td>BMS</td>
<td>507-508</td>
<td>Human Anatomy and Physiology</td>
<td>8</td>
</tr>
<tr>
<td>KIN</td>
<td>652</td>
<td>Clinical Kinesiology</td>
<td>4</td>
</tr>
<tr>
<td>KIN</td>
<td>653A</td>
<td>Musculoskeletal Assessment</td>
<td>2</td>
</tr>
</tbody>
</table>

### Criteria for Admission and Retention

**Recreation Management and Policy Admission:**

The recreation management and policy major has two options, **Therapeutic Recreation** and **Program and Event Management**. Internal transfer students should obtain major and option materials from the Department of Recreation Management and Policy. Informational materials are available online (TR Option, PEM Option) or may be picked up in the RMP office in room
108 of Hewitt Hall. After reading over the materials students should apply online.

**Application Deadlines**

**Program and Event Management:** This option prepares students for supervisory or middle management positions and emphasizes planning, leadership, and administrative concepts in settings such as youth sport organizations, recreation resource management, business and entrepreneurial recreation, municipal recreation, campus recreation, residential communities, festivals and events planning, employee services recreation, recreational sports agencies, youth service agencies, and resorts. You must have a minimum cumulative grade-point average of 2.0 to apply. Admission decisions are made after the student completes the online application process and has a meeting with the PEM option coordinator. If you have questions about the program and event management option, please contact Dr. Nate Trauntvein.

*PEM transfer applications are accepted throughout the year and decisions are made on a rolling admission basis.*

**Therapeutic Recreation:** Internal transfer applications are accepted online throughout the year and admissions decisions are made once each spring, after the application deadline of March 15th of the current academic year.

The therapeutic recreation option prepares students for work primarily in clinical, allied health facilities such as hospitals, rehabilitation centers, mental health programs, and extended care facilities as well as inclusive community recreation programs.

**Admission decisions** are based upon the content of the online application as well as a personal interview with the TR option coordinator. You must have a minimum cumulative grade point average of 2.75 to be considered for admission into the major and it is highly recommended that students have completed or are enrolled BMS 507 or BMS 508 at the time of application. If you have questions about the therapeutic recreation option, please contact Dr. Allison Wilder.

Students must apply by 5:00 p.m., March 15th of the current academic year. Admission applications received beyond this deadline will be considered for the following admission cycle.

To apply to the recreation management and policy, therapeutic recreation option, please complete the online transfer application form (**http://chhs.unh.edu/rmp-apply-online**).

We ask that you to go through a short informational meeting with the TR option coordinator in order to better understand the RMP curriculum and the TR/RT profession prior to acceptance in the major. We want you to know what you’re getting into and to be prepared to be an active and satisfied participant in the RMP major. It is strongly recommended that you attend an informational session prior to submitting your application. These informational sessions take
place throughout the academic year and may take the form of either group or individual meetings. To find out the schedule of meetings, please contact Dr. Allison Wilder.

You will be notified by e-letter of the faculty’s decision regarding your admission.

**Recreation Management and Policy Retention:**
Students within the major are required to maintain a minimum 2.5 grade-point average every semester to retain good academic standing within the major. In addition, student majors must obtain a grade of C (2.0) or better in RMP courses and a grade of C- (1.67) or better in all other courses specifically required by the department.

**Child Life Minor**
The Department of Human Development and Family Studies (HDFS) and the Department of Recreation Management and Policy (RMP) offer an interdisciplinary minor in child life for students majoring in HDFS and RMP *only*. Students admitted to the minor in child life are required to take three core courses, which include RMP 502, HDFS 525, and HDFS/RMP 565. In addition, RMP majors must select two courses from an elective list, including HDFS 623, HDFS 635, HDFS 641, HDFS 734, HDFS 772, HDFS 797, and RMP 593. In addition, HDFS majors must select two courses from an elective list including RMP 501, RMP 503 (4-credit course) with RMP 500 (1-credit course), RMP 504, RMP 612 (4-credit course) with RMP 613 (3-credit course/lab), and RMP 614 (4-credit course) with RMP 615 (2-credit lab) and HDFS 697. Lastly, students from RMP and HDFS must participate in a 480-hour internship under the supervision of a CCLS. (RMP majors take RMP 593F and HDFS majors take HDFS 707A.) RMP students interested in the child life minor should contact Dr. Patti Craig and HDFS students interested in the child life minor should contact Dr. Kerry Kazura.

**Adolescent and Youth Development Minor**
This interdisciplinary minor is offered by the Department of Recreation Management and Policy and the Department of Human Development and Family Studies. All students must complete two required courses: RMP 668 and HDFS 624. Students then select three additional courses from an interdisciplinary list of courses approved for the minor. RMP majors may use only RMP 668 to meet both major and minor requirements. Additional information and the application for the minor may be obtained from the sponsoring department offices or at [adolescent and youth development minor](http://www.chhs.unh.edu/sw/index).

**Social Work (SW)**

» [http://www.chhs.unh.edu/sw/index](http://www.chhs.unh.edu/sw/index)
Click to view course offerings

Chairperson: Patrick Shannon, Patrick Shannon
Associate Professor: Mary Banach, Linda Rene Bergeron, Cynthia Anne Broussard, Vernon Brooks Carter, Jerry D. Marx, Anita Tucker, Melissa Wells
Research Associate Professor: Joan B Beasley
Assistant Professor: BoRin Kim
Clinical Associate Professor: Susan A. Lord
Clinical Assistant Professor: Gretchen Bean, Martha A. Byam, Trish Haneman Cox, Kim Kelsey, Brian Miller, Lee P. Rush
Lecturer: John Dejoie, William Lusenhop

The Department of Social Work's undergraduate program offers both a major and a minor in social work. It is a specialized degree that prepares graduates for generalist social work practice with a solid foundation in the liberal arts and in the knowledge, skills, and value base of social work. Through the mastery of core competencies, social work graduates apply their education working with individuals, families, groups, organizations, and communities. In addition, the program prepares qualified students to pursue graduate education in schools of social work and related fields.

The baccalaureate program at the University of New Hampshire is accredited by the Council on Social Work Education (CSWE) and must meet rigorous academic standards to retain this accreditation. Social work majors pursue a program that encompasses the professional social work competencies of professional identity, critical thinking, knowledge of diversity and human rights, social and economic justice, social welfare policy and services, social work practice with all client system sizes, human behavior in the social environment, research, and ethics.

To connect the theoretical and conceptual content of the classroom with the practice world, students must complete 40 hours of volunteer service in an approved agency/program setting by the end of the semester prior to applying to the field. Twenty of the forty hours must be in the same agency/program. The remaining hours may be across multiple sites/programs. This experience may be paid or volunteer and must be pre-approved by the student's faculty adviser. The service hours must be completed post high school and by the end of the semester prior to field application. In addition, students complete a 450-hour internship over two semesters during the senior year. This is the senior capstone experience. The field placement in the final year of the baccalaureate program is arranged between the student and the field education coordinator. Evaluation of this senior field placement is one tool that measures student achievement of program competencies. Students are required to pay a liability insurance fee for their off-campus field education experience. In compliance with CSWE
accreditation standards, the B.S. in social work program does not grant social work course credit for life or work experience.

Social work majors earn a B.S. degree in social work. Graduates are eligible for practice in a variety of social work settings throughout the United States. In addition, qualified graduates are eligible to apply for advanced standing in M.S.W. programs that offer advanced standing. Depending upon the program, this can mean earning the M.S.W. in one calendar year versus two academic years.

**Academic Program**

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of the social work major. Social work majors are required to take SW 424, 525, 550, 551, 601, 622, 623, 625, and the **senior capstone course sequence** (640, 640A, 641, 641A). Students must maintain a 2.0 and earn a C or better in the 12 social work major courses. In addition, students are expected to successfully complete four additional courses as part of a liberal arts foundation for the major. Students choose one course from an approved list of courses in two different categories: anthropology/sociology and zoology and then must choose two additional courses from an approved list of diversity courses. These four courses may also satisfy University Discovery requirements. Students wishing to minor in social work are required to take SW 424, SW 525, and any three other courses offered by the department, excluding SW 640, 641. Students interested in either a major or minor in social work should consult with the undergraduate program coordinator, Martha Byam, Pettee Hall, Room 231, (603) 862-1077.
Introduction

It is the purpose of the College of Liberal Arts, as a center of learning and scholarship, to help students achieve an understanding of the heritage of civilization and to educate them in the tradition of the past and realities of the present so they may recognize and act upon their obligations to the future.

The college seeks to meet the educational needs of each student through the development of interests and skills, which, combined with the individual’s potential, make possible a richer, more useful life.

Combined Programs of Study

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

- **Minors**: See University Academic Requirements, Liberal Arts Interdisciplinary Programs, and University Interdisciplinary Minors.
- **Interdisciplinary majors**: See Liberal Arts Interdisciplinary Programs.
- **Second majors**: See University Academic Requirements.
- **Dual-degree programs**: See University Academic Requirements.
- **Student-designed majors**: See Special University Programs.
- **Other combined programs and interdisciplinary opportunities**: See Special University Programs.

Proficiency in a Foreign Language
Please see the explanation of this University requirement under *Degree Requirements: Bachelor of Arts*.

Within the College of Liberal Arts, only those students majoring in linguistics, psychology, theatre and dance, or women's studies may use American Sign Language (ASL) to fulfill their foreign language proficiency requirement. English teaching majors who plan to pursue deaf studies may petition the English department to use ASL to fulfill their foreign language proficiency requirement.

**College of Liberal Arts Center for Study Abroad**

[cola.unh.edu/study-abroad](http://cola.unh.edu/study-abroad)

The College of Liberal Arts offers a number of managed study abroad programs that are administered by college faculty and the College of Liberal Arts Center for Study Abroad. These programs provide opportunities for liberal arts students as well as students in other colleges to experience and learn about different cultures and, in non-English-speaking countries, to increase proficiency in a foreign language.

Because the college administers these programs, registration, finances, and other logistics are streamlined and simple. Students pay UNH tuition and a single program fee, which covers housing, excursions, and, in some cases, board. Most UNH student fees are waived with the exception of the technology fee, a study abroad administration fee, and an international travel insurance fee. Students are guaranteed a full semester of credits (16) for the semester-long programs, and students are eligible for federal financial aid for the semester-long programs.

Please see the list of eligibility requirements under *Study Abroad Programs*.

The College of Liberal Arts Center for Study Abroad is located in 116 Murkland Hall. To learn more about any of the following programs, visit the Center or contact Jim Parsons, College of Liberal Arts study abroad coordinator, [cola.studyabroad@unh.edu](mailto:cola.studyabroad@unh.edu) or [james.parsons@unh.edu](mailto:james.parsons@unh.edu), (603) 862-3962.

**Semester Programs**

**Chengdu, China:** Spring semester study of Chinese language and culture at Chengdu University.
Faculty Director: Yige Wang, [yige.wang@unh.edu](mailto:yige.wang@unh.edu), (603) 862-3565, 104 Huddleston Hall.

**London, England:** Fall and/or spring courses in British studies, the arts, humanities, social sciences, business, and a wide range of other subjects at Regent's University, London.
Faculty Director: Douglas Lanier, [douglas.lanier@unh.edu](mailto:douglas.lanier@unh.edu), (603) 862-3796, 12A Hamilton Smith Hall.
**Dijon, France:** Academic year, spring, or summer study of French language and other liberal arts courses (in French) at the Université de Bourgogne, Dijon.
Faculty Director: Claire Malarte-Feldman, claire.malarte-feldman@unh.edu, 210E Murkland Hall.

**Legon, Ghana:** Spring-term program in a wide range of courses at the University of Ghana, one of West Africa’s most prestigious universities.
Faculty Director: Burt Feintuch, burt.feintuch@unh.edu, (603) 862-4356, 23 Huddleston Hall.

**Budapest, Hungary:** Fall-term program with justice studies emphasis at Corvinus University.
Faculty Director: Charles Putnam, charles.putnam@unh.edu, (603) 862-7041, 208 Huddleston Hall.

**Budapest, Hungary:** Spring-term program focusing on the humanities, and modern Hungarian and Central European history and culture at Corvinus University.
Faculty Director: Stephen Trzaskoma, s.trzaskoma@unh.edu, (603) 862-3648, 306 Murkland Hall.

**Ascoli Piceno, Italy:** Summer, semester, or full-year study in the humanities, social sciences, and Italian language and culture at the UNH-in-Italy campus.
Faculty Director: Amy Boylan, amy.boylan@unh.edu, (603) 862-3551, 317 Murkland Hall.

**Granada, Spain:** Spring semester Spanish language immersion program with courses focusing on Spanish language and other disciplines at the Centro de Lenguas Modernas of the University of Granada.
Faculty Director: Lina Lee, llee@unh.edu, (603) 862-3123, 210H Murkland Hall.

**Summer Programs**

**Ascoli Piceno, Italy:** Various five- to six-week program options focusing on art, music, Italian language, and nutrition.
Faculty Director: Amy Boylan, amy.boylan@unh.edu, (603) 862-3551, 317 Murkland Hall.

**Belize:** Four-week summer Archaeological Field School in Belize.
Faculty Director: Eleanor Harrison-Buck, belize.fieldschool@unh.edu, (603) 862-4742, 311 Huddleston Hall.

**Chengdu, China:** Three-week summer program in Chinese language study at both the beginner and advanced levels at Chengdu University.
Faculty Director: Yige Wang, yige.wang@unh.edu, (603) 862-3565, 104 Huddleston Hall.

**Costa Rica:** Six-week summer program in Spanish language and culture at the Institute of San Joaquin de Flores.
Faculty Director: Lina Lee, llee@unh.edu, (603) 862-3123, 210H Murkland Hall.

**Cambridge, England:** Six-week summer program offering courses in history, literature, and humanities at Gonville and Caius College, Cambridge University.
Faculty Director: Dennis Britton, dennis.britton@unh.edu, (603) 862-1206, 122 Hamilton Smith Hall.

**Berlin, Germany:** Five-week summer immersion program in German language and culture at the BSI Private Language School in central Berlin.
Faculty Director: Mary Rhiel, mary.rhiel@unh.edu, (603) 862-0063, Murkland Hall.

**Russia:** Four-week summer program in Russian language, culture, mythology and propaganda in Moscow, St. Petersburg, and on the Trans-Siberian Railway.
Faculty Director: Arna Bronstein, arna.bronstein@unh.edu, (603) 862-3445, 304 Murkland Hall.

**January Term and Short-Term Programs**

**Belize:** Three-week January term course in archaeological survey and mapping in Belize.
Faculty Director: Eleanor Harrison-Buck, belize.fieldschool@unh.edu, (603) 862-4742, 311 Huddleston Hall.

**London, England:** January term course, the London Experience, a ten-day experience of the theatre of London with insights into its politics, society, and culture as reflected in the arts.
Faculty Director: David Kaye, london.experience@unh.edu, (603) 862-0667, M313 Paul Creative Arts Center.

**London, England:** Three-week January term course on travel writing with two weeks in London.
Faculty Director: Susan Hertz, susan.hertz@unh.edu, 108 Hamilton Smith Hall.

**Rome, Italy:** January term course on ancient Roman architecture and society at the Intercollegiate Center for Classical Studies in Rome.
Faculty Director: R. Scott Smith, scott.smith@unh.edu, (603) 862-2388, 301 Murkland Hall.

**Research Centers and Institutes**

**Center for New England Culture**
 cola.unh.edu/center-new-england-culture

A unit of the Center for the Humanities, the Center for New England Culture promotes understanding of the region's diverse culture and rich history, and it fosters an appreciation of
the value of regional culture in contemporary American life. The center is directed by David H. Watters, professor of English.

**Center for the Humanities**

cola.unh.edu/center-humanities

The Center for the Humanities fosters excellence in the humanities, broadly conceived, at the University of New Hampshire. Center resources and programs support faculty research, encourage reflection and inquiry across the University community and beyond, create interdisciplinary initiatives in many forms, and undertake special projects to raise the visibility of the humanities. To accomplish this, the center endeavors to support the highest quality work by UNH humanities faculty, to build productive collaboration among faculty, to create singular projects that advance its goals, and to be a center of innovation, planning, and inspiration for the humanities at the University of New Hampshire. By pursuing its goals, the center supports the University’s research mission in particular, as well as its academic plan.

The center is the sponsor of the Saul O. Sidore Memorial Lectures, the James H. and Claire Short Hayes Chair in the Humanities, and the University of New Hampshire-University of Ghana study-abroad program. The Center for New England Culture is a unit of the humanities center. The Center for the Humanities is directed by Burt Feintuch, professor of folklore and English. Katie Umans is the center's assistant director.

**Crimes Against Children Research Center**

www.unh.edu/ccrc

The Crimes Against Children Research Center (CCRC) is concerned with all forms of crimes against children and adolescents, from birth through age 17, both within and outside the family, both known and unknown to law enforcement. These include criminal acts as defined by law, such as sexual assault, abduction, theft, robbery, and aggravated assault against children. But it also includes child abuse in all its forms—physical, sexual, emotional—and child neglect, as well as child-to-child violence, such as peer and sibling assaults and bullying. It also includes indirect victimization, where children witness or are affected by the crime victimization of a family member or friend.

The CCRC, created in 1998, grew out of and expands upon the work of the UNH Family Research Laboratory, which has been devoted to the study of family violence and related topics since 1975. Associated with the center is an internationally recognized group of experts who have published numerous books and articles concerning the incidence and impact of violence against children.

CCRC staff has contributed to many pioneering national crime studies, including National Incidence Study of Missing, Abducted, Runaway, and Thrownaway Children; National Family
Violence Survey; National Youth Victimization Prevention Survey; National Survey of Sexual Abuse in Day Care; Developmental Victimization Survey; Youth Internet Safety Surveys; and Multisite Evaluation of Children’s Advocacy Centers.

The CCRC is directed by David Finkelhor, who is also the co-director of the Family Research Laboratory and professor of sociology at the University of New Hampshire. Finkelhor has been researching criminal violence against children since 1978 and is the author and editor of 12 books and more than 100 articles on the subject.

**Family Research Laboratory**

cola.unh.edu/frl

Since 1975, the Family Research Laboratory (FRL) has devoted itself primarily to understanding family violence and the impact of violence in families. As public and professional interest in family violence has grown, so has the need for more reliable knowledge. The FRL seeks to fill that need through comprehensive literature reviews, new theories, and methodologically sound studies. Researchers at the FRL pioneered many of the techniques that have enabled social scientists to estimate directly the scope of family violence. These efforts have brought international recognition to the FRL.

The FRL is unusual among research centers in the field because it addresses all aspects of the family, violence, and abuse. Topics undertaken by the FRL include physical abuse of children, corporal punishment of children, sexual abuse of children, physical abuse of spouses, dating violence, abuse of the elderly, intra-family homicide, rape and marital rape, violence between siblings, peer victimization of children, pornography, and missing and abducted children. This variety of topics is a result of beliefs that have guided FRL research: that various forms of family problems are interrelated, that conflict is as basic to family life as are love and cooperation, and that much of the conflict and violence in the world outside the family can be traced to roots within the family. This holistic view of family violence has contributed both diversity and richness to the FRL’s work.

The FRL’s prominence in the field is in part a result of the large number, variety, and scope of its publications. In a span of 10 years, FRL staff members have published more than 45 books and more than 740 articles on family violence.

The FRL is housed in a suite of offices in the Horton Social Science Center and contains a library of 3,000 books. The FRL is co-directed by David Finkelhor, professor of sociology and director of the Crimes Against Children Research Center, and Murray A. Straus, professor emeritus of sociology.

**Justiceworks**

cola.unh.edu/justiceworks
Justiceworks is a research and development group in justice studies. Founded in 1999 as a collaborative consortium of academics and professionals, Justiceworks offers an array of balanced, non-partisan services addressing issues in crime, safety, security, and the administration of justice.

Justiceworks is co-directed by John T. Kirkpatrick, vice provost for student life, dean of students, and clinical professor of sociology; and Charles Putnam, clinical professor of justice studies.

Prevention Innovations Research Center
cola.unh.edu/prevention-innovations

Prevention Innovations Research Center: Ending Sexual and Relationship Violence and Stalking is a research center at the University of New Hampshire made up of researchers and practitioners who work collaboratively to develop and evaluate prevention strategies, evidence-based measures to document the problems of sexual and relationship violence and stalking, and comprehensive community tools to effectively address the causes of violence. The Prevention Innovations Research Center aims to assist postsecondary institutions and federal, state, and local researchers and practitioners to develop, evaluate, and implement model policies, procedures, and programs to end sexual and relationship violence and stalking. The center's faculty and staff are nationally and internationally recognized leaders in the prevention field who design and provide cutting-edge contributions to evidence-based practices in prevention and make significant contributions to scholarship, programming, and policy making in the field. Their research and prevention efforts emphasize the importance of using a community bystander focus while examining the continuum of violence.

The Susan Schechter Domestic and Sexual Violence Social Justice Laboratory (Schechter Lab) is an interdisciplinary research laboratory within the Prevention Innovations Research Center. Undergraduate and graduate students associated with the Schechter Lab earn academic credit for their role as research assistants and work with members of Prevention Innovations Research Center on their research, report writing, and publications. The Sharon B. Murphy Scholarship supports undergraduate and graduate student scholarship in the fields of domestic and sexual violence and stalking for work within the Schechter Lab. Also within the Research Center is the Campus Sexual and Relationship Violence Prevention Consortium. This annual membership program provides support, technical assistance, and training for a cohort of institutions of higher education from across the United States, building both capacity and knowledge across the cohort to improve the efforts of their individual campuses in prevention and response of sexual and relationship violence and stalking.

The Prevention Innovations Research Center members are UNH faculty members from diverse
disciplines and colleges across the UNH landscape, including the College of Liberal Arts, the College of Health and Human Services, and the Law School, who work with graduate and undergraduate students from across the University's colleges and law school. Practitioners are from local and state organizations. The goals of the Prevention Innovations Research Center are to 1) generate evidence-based knowledge aimed at preventing sexual abuse, relationship violence, and stalking; 2) promote creative and collaborative partnerships between practitioners and researchers; and 3) transform community norms and climates through the dissemination of commercialized products that result from the center's research.

The Survey Center
cola.unh.edu/survey-center

The UNH Survey Center is a full-scale, non-partisan academic survey research center, committed to providing university researchers, government and business leaders, and private organizations with reliable information about public attitudes concerning important policy matters. It is nationally known for its public opinion and political polling for CNN, Fox News, and WMUR-TV.

The UNH Survey Center has conducted survey research projects at the University of New Hampshire since 1986: state, regional, and national general population surveys based on probability sampling; surveys that target specific populations; surveys that utilize complex stratified sampling techniques; and panel studies. The Survey Center conducts telephone, mail, and web surveys, as well as focus groups and other qualitative research projects.

The UNH Survey Center is located in Huddleston Hall and features a 32-station Computer-Assisted Telephone Interviewing (CATI) system. The Survey Center is directed by Andrew E. Smith, who is also associate professor of practice in political science. Students interested in employment as interviewers can contact Martha Belanger at martha.belanger@unh.edu.

Related Research Center:
Carsey School of Public Policy
carsey.unh.edu

The Carsey School of Public Policy at the University of New Hampshire is a nationally acclaimed resource for research, leadership development, and engaged scholarship relevant to public policy. The school’s activities address the most pressing challenges of the twenty-first century, striving for innovative, responsive, and equitable solutions at all levels of government and in the for-profit and nonprofit sectors. Faculty and students throughout the College of Liberal Arts serve as staff, fellows, researchers, and assistants in the school.
Academic and Cultural Centers and Institutes

Confucius Institute at UNH
cola.unh.edu/confucius

The Confucius Institute at UNH (CI-UNH) is a partnership between the University of New Hampshire and Chengdu University in China that engages the life of the University with the larger community, both locally and globally. The institute offers a full curriculum in Chinese language and culture. It also provides opportunities for cultural learning and exchange for regional schools—primary through post-secondary. At a time when China is the third largest trading partner for New Hampshire, CI-UNH can provide unique opportunities for business and industry in the state. CI-UNH is co-directed by Yige Wang of the UNH Department of Languages, Literatures, and Cultures; and Jie Du, the director of international cooperation and exchange at Hanban in China.

ESL Institute
cola.unh.edu/esl-institute

The ESL Institute at the University of New Hampshire has been involved in teaching international students English since 1976. The Institute provides high-quality instruction in English as a second language (ESL) and orientation in U.S. culture to international students who are non-native speakers of English. ESL courses are offered at the elementary level, the intermediate level, and the advanced level. Students at these levels receive intensive English instruction for five hours per day, four days per week, in the areas of reading, writing, listening, and speaking, as well as pronunciation and contextualized grammar instruction. For students who have a TOEFL score of 60 or above (Internet-based) or 500 or above (paper-based, administered by the ESL Institute), the ESL Institute provides “bridge” courses where students can simultaneously enroll in one to two UNH academic classes while continuing to study English intensively from four to ten hours per week. At these “bridge” levels, students have the opportunity to “try out” academic courses in a supportive environment. In addition to its focus on ESL instruction for international students, the Institute aspires to serve as a resource for international education to the faculty, staff, and students of UNH. For more information: cola.unh.edu/esl-institute.

Museum of Art
cola.unh.edu/moa

The Museum of Art serves as the New Hampshire Seacoast’s premier public art museum and, for more than 50 years, has remained a vital resource for the visual arts, serving the University, local, and regional communities. Visitors and members gather to enjoy a wide variety of
changing exhibitions, as well as annual exhibitions featuring UNH studio faculty and student work. Exhibitions of outdoor sculpture by regional artists are shown regularly in the Mills Courtyard. Accompanying programs include gallery talks, lectures, concerts, family programs, and special events. The museum's summer Art Camp provides K-12 students with quality hands-on visual arts and instruction.

The museum's diverse permanent collection includes more than 1,800 works of art, from prehistoric to contemporary. The works are exhibited in the galleries and the Collection Study Area on a regular basis and are also used by faculty, students, and scholars for teaching, research, and interdisciplinary study.

Located in the Paul Creative Arts Center, the museum is open to students, faculty, museum members, and the general public free of charge. For more information, call (603) 862-3712 or visit cola.unh.edu/moa.
College of Liberal Arts

Introduction

Degrees
- Bachelor of Arts
- Bachelor of Fine Arts
- Bachelor of Music
- Bachelor of Science

Interdisciplinary Programs

Programs of Study

Undergraduate Course Catalog 2016-2017
College of Liberal Arts

http://cola.unh.edu

Bachelor of Arts

These programs primarily provide a broad liberal education along with a major in one of the fields listed on this page. Requirements for the bachelor of arts degree and information regarding these majors are presented under Degree Requirements and Programs of Study.

Anthropology

The Arts

- Art History Option
- Studio Art Option
- Studio Art/Art Education Option

Classics

- Classical Languages and Literatures Option
- Ancient Mediterranean Civilizations Option
- Latin and Latin Teaching Option

Communication

- Media Practices Option
- Business Applications Option

English

- English/Journalism
- English Literature
- English Teaching

French

- French Studies
- Geography
- German

History

- Humanities
- International Affairs Dual Major
- Italian Studies
Justice Studies Dual Major
Linguistics
Music
  Music Liberal Studies Option
  Music Composition Option
  Music Performance Study Option
Philosophy
Political Science
Psychology
Russian
Sociology
Spanish
Theatre
  Acting Option
  Dance Option
  Design and Theatre Technology Option
  Musical Theatre Option
  Secondary Theatre Education Option
  Youth Drama Option
Women’s Studies

Bachelor of Fine Arts

This curriculum provides training for students who plan to enter a professional graduate school. Requirements for the bachelor of fine arts degree are outlined under Programs of Study/Art and Art History.

Bachelor of Music

This curriculum provides professional training in performance, composition, music education, and music pre-teaching and allows students to develop their talent to a standard equivalent to the one achieved at conservatories of music. Requirements for the bachelor of music degree and information regarding the curriculum are presented in Programs of Study/Music.

Degrees include Music Education, Pre-Teaching, Performance, and Composition.
Bachelor of Science

This curriculum provides strong preparation for entry into graduate programs in neuroscience, behavior, pharmacology, and medicine. Requirements for the bachelor of science degree and information regarding this major are presented under Degree Requirements and Programs of Study/Neuroscience and Behavior.
Africana and African American Studies Minor

http://cola.unh.edu/interdisciplinary-studies/program/afam

The Africana and African American studies minor provides students with an interdisciplinary approach to central issues in African, African Diaspora, Caribbean, and African American history, literature, and culture. The minor permits students to concentrate in one of these areas or to combine courses from among the many offerings to create a distinctive program.

The Africana and African American studies minor encompasses the multidisciplinary and comparative study of African history and culture, and the study of the African Diaspora throughout the world, from Europe to Asia as well as to North and South America. The program recognizes the global and transnational dimensions of contemporary African Diasporic experiences in the United States, the Caribbean, and Latin American nations. It thus offers a wide variety of courses that are taught across several disciplines in the University. Students are strongly encouraged to select courses reflecting the breadth of offerings in the minor across the University of New Hampshire’s undergraduate curriculum.

The program presents strong offerings in Africana studies because an understanding of Africa is central to the study of the African Diaspora. The program also features many courses in African American Studies because many aspects of African American history and culture have been central to the development of the United States, highlighting both the nation's problems and its promise, and affecting virtually all areas of academic study through the years, from the humanities and social sciences to the physical sciences. Students are encouraged to take courses from a variety of departments and disciplines. The minor therefore is designed to serve the needs of all students, regardless of their ethnic or cultural background, complementing their work in their major fields of study while serving also as a focused corrective to traditionally marginalized approaches to Africana, African Diasporic, Caribbean, and African American experiences.

Africana and African American studies consists of five 4-credit courses, including one course from a list of introductory courses related to the student’s choice of concentration and four other
approved offerings. Students must take at least one course at the 600 or 700 level. The required introductory course provides students with a general understanding of the broad and diverse spectrum of Africana and African American subjects. Electives enable students to develop their understanding in more focused courses (listed below) in various fields of study. There is an opportunity to earn credits toward the minor through a study abroad experience in Ghana in West Africa. (Contact the Center for the Humanities for details.) There is also an independent study option under the AFAM 795 designation, which allows a student to work closely with a faculty member on a research project and/or internship relevant to any aspect of Africana and African American Studies. Students must earn a C- or better in each course, and maintain a 2.0 grade-point average in courses taken for the minor. Electives may include special topics courses as approved by the program, a senior seminar, internship, or study abroad credits.

Students interested in minoring in Africana and African American studies should contact Funso Afolayan, funso.afolayan@unh.edu, 408 Horton Hall, (603) 862-3026.

Introductory Courses (one of the following)
ANTH 500D, Peoples and Cultures of Sub-Saharan Africa
ENGL 517/AMST 502, Introduction to African American Literature and Culture
ENGL 609, Ethnicity in America: The African American Experience in the 20th Century
INCO 450, Introduction to Race, Culture, and Power
HIST 505 or 506, African American History
HIST 531, Introduction to Latin America and the Caribbean
HIST 587/588, History of Africa
HIST 444D, Slavery and Society in Pre-Colonial Africa

Elective Courses
Electives are approved for the minor and announced each semester on the Africana and African American studies website. Courses that are partly devoted to the concerns of Africana and African American studies may count for the minor, if the instructor will allow the student to focus a significant amount of coursework on this field of study. Approval by both the minor coordinator and the course instructor is required for such courses.

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

American Studies Minor

http://cola.unh.edu/interdisciplinary-studies/program/as

American studies is the interdisciplinary examination of American life and culture at regional, national, and international scales. It integrates perspectives from a wide variety of disciplines, including history, English, communications, political science, geography, sociology, and the arts.

At UNH, the American studies minor is an individualized program of study that allows each student to choose from a broad range of courses offered by several different departments that
best match their interests and needs. It is intended to encourage students with particular interests in the United States to develop those interests and learn more about the country from a variety of perspectives.

To earn a minor in American studies, students must complete five courses approved to satisfy minor requirements. At least one of those courses must concentrate on issues of race, gender, or ethnicity. No more than three courses may be at the 400 or 500 level, and no more than two courses may be taken in the same department. Students must earn a C-minus or better for a course to count toward minor requirements and must maintain a 2.0 grade point average in all courses taken for the minor.

Students desiring more information about the American studies minor should contact the program coordinator, Blake Gumprecht, Department of Geography, 102 Huddleston Hall, (603) 862-1930, blake.gumprecht@unh.edu.

Courses
A list of courses that can be used to satisfy minor requirements is posted on the program website in advance of the course registration period for each semester. The list of courses is different every semester and includes courses offered by multiple departments. Below is a partial list of approved courses taught in recent semesters (see the program website for complete lists):

AMST 444B, New Orleans: Place, Meaning, and Context
AMST 444E, Fly Fishing and the American Experience
AMST 401, Introduction to American Studies
AMST 604, Landscape and American Culture
ANTH 401, Peoples and Cultures of the World: North America
ANTH 697, American Roots Music
ARTS 693, American Art
CMN 505, Analysis of Popular Culture
CMN 607, Persuasion in American Politics
CMN 757, Public Address and the American Experience
EDUC 717, Growing up Male in America
ENGL 444G, Ethnic Literature in America
ENGL 515, Survey of American Literature
ENGL 517, Introduction to African American Literature and Culture
ENGL 738, Literature and Popular Culture of the Vietnam War
ENGL 739, American Indian Literature
GEOG 514, Geography of the United States and Canada
GEOG 515, The American City
GEOG 610, The Peopling of New England
HIST 405, History of Early America
HIST 406, History of the Modern United States
HIST 410, Building America: How Architecture Shaped the U.S.
HIST 506, African American History
HIST 600, The United States in World History
HIST 603, European Conquest of America
HIST 611, Civil War Era
HIST 613, American Ways of War
HIST 618 American Environmental History
HIST 622, History of American Thought
HIST 620, Foreign Relations of the United States
ITAL 444A, Italians Come to America
KIN 561, History of American Sport and Physical Culture
MUSI 405, Survey of Music in America
NR 701, Ecological Ethics and Values
POLT 402, American Politics and Government
POLT 403, United States in World Affairs
POLT 500, American Public Policy
POLT 508, Supreme Court and the Constitution
POLT 523, American Political Thought
PSYC 775, Madness in America
RMP 511, Issues of Wilderness and Nature in American Society
THDA 450, History of Musical Theatre in America
WS 405, Gender, Power and Privilege

Architectural Studies Minor

http://cola.unh.edu/interdisciplinary-studies/program/architectural-studies-minor

The minor in architectural studies provides students with an interdisciplinary introduction to the history, theory, and methods of architecture and its symbolism. The program allows students who are interested in this field to receive programmatic recognition of their work. It is designed to assist those who are contemplating enrollment at a school of architecture; are particularly interested in architectural history; want to supplement their technical majors (e.g., civil engineering) with strong academic minors; or plan to pursue careers in preservation, education, community service, and public relations.

Minor Requirements

*Five courses (18-20 credits), which consist of the following:*
ARTS 532, Introductory Drawing
ARTS 574, Introduction to Architectural History

One of the following:
ARTS 455, Architectural Design Studio
ARTS 525, Woodworking
ARTS 567, Introductory Sculpture
THDA 652, Scene Design (may be used in this category or as one of the two electives)

Two electives from the list below chosen in consultation with the minor coordinators:

Electives
ARTS 600C, Internship in Architecture
ARTS 625, Wood/Furniture Design Workshop
ARTS 654, 17th and 18th Century American Architecture
ARTS 655, Early Modern Architecture
ARTS 656, Contemporary Architecture
ARTS 678, Romanesque and Gothic Art
ARTS 796G, Independent Study in Architecture
CIE 444, Housing: Everyone Needs a Place to Live (3 credits)
CIE 780, Building Information Modeling (3 credits)
CIE 795, Independent Study (with approval) (1-4 credits)
CIE 796, Special Topic: Green Building Design (3 credits)
CIE 796, Special Topic: Residential Construction (3 credits)
CLAS 510, Building Rome (a J-term course)
TECH 564, Fundamentals of CAD (Computer Aided Design) (3 credits)

For more information, contact the minor coordinators: Trevor Verrot, trevor.verrot@unh.edu, art and art history, or Tat Fu, tat.fu@unh.edu, civil engineering.

Asian Studies Minor
http://cola.unh.edu/interdisciplinary-studies/program/asian-studies

To appreciate the Asian peoples—their languages, their history, their society, their political/economic systems—and the Asian experiences in the United States, the Asian studies minor is designed to be broadly inclusive. Students are strongly encouraged to enroll in Asian languages classes at UNH as well as explore Asian courses at other U.S. and Asian institutions.

To complete the minor in Asian Studies, students are required to take five courses (20
credits) or their equivalent, and no more than three can be counted from any one of the following disciplines:

Anthropology (ANTH)
Asian American or South Asian Literature (ENGL)
Geography (GEOG)
History (HIST)
Languages, Literatures, and Cultures (either CHIN or JPN)
Philosophy (PHIL)
Political Science (POLT)

For further information, please contact LU Yan, coordinator, Department of History, 412 Horton Social Science Center, e-mail yan.lu@unh.edu, or call (603) 862-1764/3025.

The following are a list of courses that count toward the minor. Please note additional courses may also count. Visit the program website for the most up-to-date information.

ANTH 500E, People and Cultures of South Asia
ANTH 501E, World Prehistory: Asia
ARTS 697, Arts of the Far East
CHIN 400, Conversational Chinese
CHIN 401/2, Elementary Chinese
CHIN 425, Introduction to Chinese Culture and Society
CHIN 503/4, Intermediate Chinese
CHIN 521, Chinese Literature in Translation
CHIN 632, Advanced Chinese II
CHIN 795/96, Independent Study in Chinese
CLAS 413/4, Elementary Sanskrit
ENGL 581, Introduction to Postcolonial Literatures in English
ENGL 616C, Asian American Film
ENGL 738, Topics in Asian American Studies
ENGL 750, Asian American Literature
ENGL 777, Postcolonial Novel
FS 444, We Don't All Play Violin
FS 773, International Perspectives on Children and Families
GEOG 530, Geography of China
HIST 425, Chinese Civilization
HIST 444G, Voices from Modern China
HIST 579, History of China in Modern Times
HIST 580, History of Japan in Modern Times
HIST 681, Modern China Topics
HIST 797, Colloquium: American Century in Asia
HIST 797, Colloquium: Chinese-Western Encounters
JPN 401/2, Elementary Japanese
JPN 425, Introduction to Japanese Culture and Civilization
JPN 503/4, Intermediate Japanese
JPN 631/2, Advanced Japanese
JPN 795/6, Independent Study in Japanese
PHIL 520, Introduction to Eastern Philosophy
POLT 403H: U.S. in World Affairs: Asia
POLT 545, People and Politics in Asia
POLT 546, Wealth and Politics in Asia
POLT 556, Politics in China
POLT 566, Foreign Policies in Asia and the Pacific
POLT 569, Chinese Foreign Policy
POLT 797, Seminar in Chinese Politics

Cinema Studies Minor

http://cola.unh.edu/interdisciplinary-studies/program/cinema-studies-minor

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

Cinema studies students are required to take five courses. Students must earn at least a C- in each course and maintain a 2.0 grade-point average in courses taken for the minor. “Double counting” of minor course credits with major course credits will be left to the discretion of existing major departments, with the exception that no more than eight credits, if approved, will “double count.” Courses in cinema studies should be taken in the following sequence: first, one
introductory course, ENGL 533 or CMN 550; followed by one history or theory of film course, LLC 540 or ENGL 618; followed by at least two of the more advanced and/or focused courses; and one of the elective courses.

Interested students should contact the cinema minor coordinator, Matt Konzett, Department of English, matt.konzett@unh.edu, (603) 862-0261.

**Introductory Course**
ENGL 533, Introduction to Film Studies

**History and Theory of Film (one required)**
LLC 540, History of Film
ENGL 618, Film Theory

**Advanced and/or Focused Courses (two required)**
CMN 650, Critical Perspectives on Film
ENGL 616 A, Studies in Film: Genre
ENGL 616 B, Studies in Film: Authorship
ENGL 616 C, Studies in Film: Culture and Ideology
ENGL 616 D, Studies in Film: Narrative and Style
ENGL 733, Special Studies in Film
GERM 523, Women and German Film
GERM 524, Special Topics in German Film
ITAL 525, Italian Cinema
LLC 440, Cultural Approaches to Film and Fascism
RUSS 426, Film and Communism
SOC 670, Sociology and Nonfiction Film

**Elective Courses (one required)**
Electives are drawn from an approved list of courses for the minor, which is compiled and announced every semester. Students also may choose from the advanced and/or focused courses. Elective courses have a significant cinema studies component and may have another disciplinary focus as well. Contributing departments and/or programs include: American studies, anthropology, arts, communication, English, French, geography, German, history, humanities, Italian, music, philosophy, political science, psychology, Russian, sociology, Spanish, theatre and dance, and women’s studies. Students should check with the cinema minor coordinator each semester for approval of the elective.

**Forensics Minor**
The forensic minor provides students with the opportunity to explore the different components of forensics through the interdisciplinary study of biology, psychology, sociology, and justice studies. This well-rounded curriculum will enable students to build upon their interests in justice studies by specializing in an area of increasing importance. Students must receive a grade of a C- or better for a course to count toward the minor requirements. Once students have decided to pursue the minor, they are required to meet with the coordinator, academic counselor, or appropriate affiliated faculty adviser at least once per semester for regular review and assessment of their program, learning outcomes, and progress toward the degree.

**Required Courses**

The forensic minor requires five courses (20 credits) drawn from a list of approved courses. The five courses include:

*Two introductory courses*

JUST 401, Introduction to Justice Studies  
BIOL 420, Introduction to Forensic Science

**AND**

*Three additional courses from the list below*

JUST 405, Technology, Crime & Society  
*JUST 591/PSYC 591, Forensic Psychology  
SOC 515, Introduction to Criminology  
SOC 535, Homicide

*If JUST 591 or PSYC 591 is not being offered, you may take PSYC 755, Psychology and Law, or PSYC 756, Psychology of Crime and Justice, in its place.*

*Two courses can double count toward your justice studies dual major. These courses are most commonly JUST 401, Introduction to Justice Studies, and SOC 515, Introduction to Criminology.*

**History and Philosophy of Science Minor**

What is science? When people ponder this question, they often are led to seek answers outside the sciences themselves. This interdisciplinary minor helps students address historical
and philosophical questions about science. The history of science asks: How did we come to hold the beliefs we do about the natural world? How were the great scientists of the past led to the discoveries for which they are remembered? Why did people in the past have very different ideas on issues like the motions of the heavens or the nature of the human body? It is a puzzling reality of world history that the human understanding of nature, society, and the mind has varied greatly with place and time. This intriguing variety also raises philosophical questions: What separates science from pseudoscience or religion? How can we decide whether scientific knowledge will have good or bad consequences for humanity? Can science ever reach the ultimate truth about the universe?

The minor in history and philosophy of science offers courses in such diverse departments as economics, history, mathematics, philosophy, and psychology. It presupposes no specialized scientific background and may be combined with any undergraduate major. Five 4-credit courses are required for the minor, with no more than three from any single department.

Students interested in taking the minor should contact the coordinator, Jan Golinski, Department of History, Horton Social Science Center, e-mail jan.golinski@unh.edu.

ECON 615, History of Economic Thought
ECON 698, Topics in Economics*
ECON 798, Economic Problems*
HIST 521, The Origins of Modern Science
HIST 522, Science in the Modern World
HIST 621, 622, History of American Thought
HIST 651, 652, European Intellectual History
HIST 654, Topics in History of Science
HUMA 651, Humanities and Science
MATH 419, Evolution of Mathematics
PHIL 424, Science, Technology, and Society
PHIL 435, Human Nature and Evolution
PHIL 447, Computer Power and Human Reason
PHIL 630, Philosophy of the Natural Sciences
PHIL 683, Technology: Philosophical and Ethical Issues
PHIL 725, Philosophy of the Social Sciences
PHIL 780, Special Topics in Philosophy*
PSYC 571, Pioneers of Psychology
PSYC 591, Special Topics in Psychology*
PSYC 770, History of Psychology
PSYC 771, Psychology in 20th-Century Thought and Society
*with approval

**Humanities Major and Minor**
[http://cola.unh.edu/chi/humanities-ba](http://cola.unh.edu/chi/humanities-ba)

Because the humanities program offers both a major and a minor, the program description and details are listed in the Programs of Study section of the catalog. See the humanities program.

**International Affairs Dual Major and Minor**
[http://www.unh.edu/cie/international-affairs-dual-major-minor](http://www.unh.edu/cie/international-affairs-dual-major-minor)

The international affairs program is administered by the UNH Center for International Education. For program description, see Special University Programs.

**Justice Studies Dual Major and Minor**
[http://cola.unh.edu/justice-studies](http://cola.unh.edu/justice-studies)

Because the justice studies program offers both a major and a minor, the program description and details are listed in the Programs of Study section of the catalog. See the justice studies program.

**Latin American Studies Minor**
[http://cola.unh.edu/interdisciplinary-studies/program/las](http://cola.unh.edu/interdisciplinary-studies/program/las)

Latin American studies is an interdisciplinary minor encompassing anthropology, communications, economics, geography, history, linguistics, political science, Spanish, and Portuguese. Knowledge of Latin America is especially valuable for students who plan to work in education, international organizations, government, social services, and business, or for graduate studies related to Latin America.

Students can complete the minor by selecting any five courses representing at least three disciplines. Latin American history (HIST 531 or 532) is required. A minimum of high-intermediate level proficiency in Spanish or Portuguese must be reached through coursework or other means (completion of Spanish 504 or Portuguese 504 at UNH, or equivalent courses or equivalency testing).

Enrollment in these five courses must follow the guidelines below to count for the minor:
• At least three courses must be taken in residence.
• All coursework required for the Latin American minor must be completed with a grade of C or better.
• Courses for the minor may not be taken pass/fail.

Academic study in Latin America is strongly recommended: Speak with faculty to help you find the study abroad program that best fits your interests. UNH and its affiliates offer several short- and long-term programs throughout Latin America.

To see the courses offered this semester that count toward the minor and to learn more about the minor, visit cola.unh.edu/interdisciplinary-studies/program/las.

For more information on the Latin American studies minor, contact Mary Malone, Latin American studies minor coordinator, Horton Social Science Center, (603) 862-1406, e-mail: mary.malone@unh.edu.

Linguistics Major and Minor/TESOL Minor▼
http://cola.unh.edu/linguistics

Because the linguistics program offers both a major and minors, the program description and details are listed in the Programs of Study section of the catalog. See the linguistics program.

Middle Eastern Studies Minor▼
http://cola.unh.edu/interdisciplinary-studies/program/mes

The minor in Middle Eastern studies introduces students to the many facets of Middle Eastern cultures and societies through the interdisciplinary study of languages, history, politics, geography, and anthropology. Minor coursework enables students' understanding of the Middle East as a dynamic region in a global and comparative context. This minor therefore encompasses not only the study of the region itself, but also the flows and circulation of migration, diasporas, refugees, ideas, literatures, social movements, war, and natural resources that make the region pivotal to world history and the global economy. In addition, participation in the minor prepares students for study abroad experiences, helps them acquire skills and qualifications for graduate study, and enhances employment opportunities.

Minor Requirements
The Middle Eastern studies minor requires five courses (20 credits) drawn from the list of approved courses or from exceptional courses and opportunities approved by the affiliate faculty in respective disciplines. The five-course requirement will include one general introductory course chosen from the following:
HIST 425, Islamic Cultures and Civilizations  
ANTH 550C, Peoples and Cultures of the Middle East  
GEOG 540, Geography of the Middle East  
POLT 559, Comparative Politics of the Middle East  

Students must receive a grade of C- or better for a course to count toward the minor. Courses for the minor may not be taken on a pass/fail basis.  

**Foreign Language Study:** The study of a Middle Eastern language or language relevant to Middle Eastern studies is strongly encouraged but not required. Students are encouraged and permitted to count Arabic toward the five-course requirement. Students who have studied Hebrew, Turkish, Farsi, or other Middle Eastern languages at other institutions may apply for transfer of their credit toward the minor. Through petition to the minor coordinator and with support of affiliate faculty in the respective discipline, students may apply for European languages, such as French and Italian, to count toward minor requirements, provided these are relevant to their research and study interests in the region.  

**Transfer or Articulation Agreements with other Institutions:** Transfer of credits may be approved by the coordinator to count toward the minor if the transfer is accepted by the University and fits within the scope of the minor.  

Students interested in the minor should contact the coordinator and/or affiliated faculty to discuss their program of study. The coordinator, Sara Wolper, may be reached at esw@unh.edu, (603) 862-3884.  

You can visit the program's website at [cola.unh.edu/interdisciplinary-studies/program/mes](http://cola.unh.edu/interdisciplinary-studies/program/mes).  

**Neuroscience and Behavior Major**  
[http://cola.unh.edu/interdisciplinary-studies/program/neuroscience-and-behavior-bs](http://cola.unh.edu/interdisciplinary-studies/program/neuroscience-and-behavior-bs)  

This interdisciplinary major is jointly housed in the College of Liberal Arts and the College of Life Sciences and Agriculture.  

See description under [College of Life Sciences and Agriculture](http://cola.unh.edu/interdisciplinary-studies/program/neuroscience-and-behavior-bs) for full program information.  

**Queer Studies Minor**  
[http://cola.unh.edu/womens-studies/program/queer-studies](http://cola.unh.edu/womens-studies/program/queer-studies)  

The queer studies minor provides students with opportunities to research and understand a rapidly growing field whose focus is the study of lesbian, gay, bisexual, trans, and allied peoples, their histories, and cultures. Queer studies is a method of inquiry that explores the role of same-sex desire and constructions of gender across and among cultures and histories. In
these classes, students will consider sexualities and genders as identities and social statuses, as categories of knowledge, and as lenses that help to frame how we understand our world. The minor consists of interdisciplinary coursework in queer studies and is open to all students. Students who wish to pursue the queer studies minor should consult with Tamsin Whitehead at Tamsin.Whitehead@unh.edu or (603) 862-0939.

Queer Studies Course Offerings
Please note that additional courses may count. Please visit the program's website for the most up-to-date information.

ANTH 625, Female, Male, and Society
ANTH 685, Gender, Sex, and HIV in Sub-Sahara Africa
CMN 583, Gender and Expression
CMN 697, Gender and Sexuality in U.S. Public Culture
ENG 586, Women Writers of the 19th and 20th Century
ENG 693/798Q, LGBT Writing, Queer Reading
ENGL 746, No More Drama: Studies in American Drama
ENGL 785, Virginia Woolf: Public Intellectual, Cultural Icon
FS 746, Human Sexuality
FS 757/857, Race, Class, Gender, and Families
HIST 497, Gender and Sexuality in African History
HIST 595, Colloquium: Gender and Sexuality in Pre-Modern Europe
HIST 595, Colloquium: Sex and Sexuality in Islamic History
HIST 596, Introduction to Gay and Lesbian History
HIST 665, Sex in the City
HUM 401, Sex and Love in Literature and Philosophy
INCO 404, Honors Seminar: History of Body and Sexuality
JUST 695, Topics in Race, Gender
POLT 525, Multicultural Theory
PSYC 595, Applied Psychology (Research, Field, or Academic Experience)
SOC 520, Sociology of the Family
SOC 570, Sexual Behavior
SOC 630, Sociology of Gender
SOC 675, Sociology of AIDS
SW 715/815, Social Work Practice with GLBT People
WS 405, Gender, Power, and Privilege
WS 444, Trans/Forming Gender
WS 444B, Gender and Diversity in Sports
WS 505, Survey: Violence Against Women
WS 505, Survey: Gender, Race, and Sexuality in Visual Culture
WS 632, Feminist Thought (depending on instructor)
WS 632, Honors Thesis (or other departmental designation)
WS 795, Independent Study (or other departmental designation)
WS 798, Colloquium: Race, Gender, and Representation
WS 798, Colloquium: Gay Marriage and Kinship
WS 798, Colloquium: Women in Prison

**Electives (require program approval and may vary by instructor)**
ARTS 690, Women Artists of the 19th and 20th Century
CMN 567, Gender, Race, and Class in the Media
CMN 697, Seminar: Contemporary Feminist Rhetoric
EDUC 507, Mentoring Adolescents
EDUC 705/805, Contemporary Educational Perspectives
ENGL 786, 20th Century British Fiction
ENGL 618, Film Theory
ENGL 685, Women's Literary Traditions: Dreamgirls: Black Music, Black Beauty, and Diva
AUTOBIOGRAPHY
FS 545, Family Relations
HUMA 401, Introduction to Humanities: Marriage
INCO 450, Introduction to Race, Culture, and Power
LLC 440, Cultural Approaches to Film and Fascism
POLT 522, Dissent and Political Community
POLT 721/821, Feminist Political Theory
PSYCH 763, Community Psychology
SOC 630, Sociology of Gender
SOC 570, Human Sexual Behavior
SOC 697, Women, Health, and Illness
SW 840, Implications of Race, Culture, and Oppression for Social Work Practice
THDA 762, Women in 20th and 21st Century Theatre
WS 401, Introduction to Women's Studies
WS 444A, Race Matters
WS 595, Topics: Feminisms and Global Perspectives
WS 595, Topics: Activism: VAW, Poverty, Repro Rights
WS 632, Feminist Thought
WS 796, Capstone Experiences
WS 797, Internship (or other departmental designation)
WS 798, Colloquium: Violence Against Women/Activism
Race and Ethnic Studies Minor ▼

http://cola.unh.edu/interdisciplinary-studies/program/res

The race and ethnic studies (RES) minor examines how racial and ethnic categories are created and maintained—politically, socially, and culturally. RES uses critical, interdisciplinary, and comparative approaches to study race relations as they intersect with factors including gender and sexuality, class, religion, and immigration status. The minor prepares students for life and work in a world increasingly characterized by difference derived from racial and ethnic identities.

Learning Outcomes:

a. Facilitate understanding of how the social constructions of race affect the social fabric of our historical and contemporary world;

b. Enhance students' abilities to appreciate differences and to actively and critically engage in civic responsibilities, especially with respect to social justice;

c. Prepare students to negotiate an increasingly interconnected world and apply their education in a wide range of occupations;

d. Gain exposure to the theories and methods of ethnic studies;

e. Compare representations of borderlands, hybridity, migration, and diaspora from different cultures to comprehend how national boundaries, as well as local, national, and transnational cultures and politics, affect the constitution of racial and ethnic categories.

Classes for the RES minor are housed in a variety of departments in the College of Liberal Arts, offering students a truly interdisciplinary experience.

Requirements

The race and ethnic studies minor consists of five courses or 20 credits. To complete a minor, students are required to:

- Enroll in an introductory-level course. (These are listed on the minor website each semester.)
- Enroll in at least one course at the 600/700-level.
- Understand that no more than 8 credits used to satisfy the requirements for a major may be used for a minor.
- Earn a C- or better in each course and maintain a 2.0 grade-point average in courses taken for the minor.

Additional Information
Undergraduate Course Catalog

- Courses taken pass/fail may not be used toward a minor.
- A relevant internship may be substituted for one of the electives.

Classes are approved by the coordinator and announced each semester on the program's website, [www.cola.unh.edu/res](http://www.cola.unh.edu/res).

After completing the 20-credit sequence, the student submits the Certification of Completion of Minor form, available online or from the RES coordinator. Once this certification is approved by the RES coordinator and major adviser, the form goes to the college dean and the registrar to be recorded on the transcript. The certification form must be completed by the beginning of the student's final semester at the University.

For further information, please visit [cola.unh.edu/interdisciplinary-studies/program/res](http://cola.unh.edu/interdisciplinary-studies/program/res) for course listings and program details.

**Religious Studies Minor**

[http://cola.unh.edu/interdisciplinary-studies/program/religious-studies-minor](http://cola.unh.edu/interdisciplinary-studies/program/religious-studies-minor)

The religious studies program at the University of New Hampshire currently offers an interdisciplinary minor, bringing together courses in several fields that address religion as a cultural, logical, or expressive phenomenon in human history. A religious studies major is available through the self-designed major program. Religious studies courses at UNH avoid theological or confessional biases and emphasize multicultural tolerance and diversity.

Requirements of the religious studies minor include the basic two-semester sequence, History of World Religions (RS/HIST 483) and Patterns in World Religions (RS/HIST 484); the advanced Minors' Seminar in Religious Studies to be taken in the student's senior year (RS 699); and at least two other courses either cross-listed in religious studies or otherwise relevant to the study of religion (by student's petition to the program director). Students especially interested in religious studies are encouraged to combine the minor with further pertinent coursework in one of the established departments contributing to the program: history, philosophy, anthropology, and English. The religious studies self-designed major involves seven courses beyond the minor requirements, at least five of which are 600 level or higher. The program director can aid in advising such a major program.

Courses ordinarily have some degree of focus on issues related to the academic study of religion, conceptualizing religion, or religious influences as a principal problem, asking comparative questions, and/or developing models of cross-cultural usefulness. Courses listed here generally are offered at least once every two years:
**Historical-Cultural**

RS/HIST 483, History of World Religions  
HIST 585, Middle East History to the Medieval Islamic Era  
HIST 587, Africa South of the Sahara  
HIST 589, Islam in Africa  
HIST 642, Religious Conflict in Early Modern Europe  
HIST 688, African Religions

**Theoretical**

PHIL 417, Philosophical Reflections on Religion  
ANTH 616, Religion, Culture, and Society  
RS/HIST 682, Cults and Charisma  
RS 699, Senior Seminar in Religious Studies

**Textual**

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

Interested students also should be alert for special topics courses in history (HIST 600), English (ENGL 697/698), anthropology (ANTH 500), religious studies (RS 600), and other disciplines that might be relevant to the study of religion.

Students interested in the religious studies minor should see the director to fill out an intent-to-minor form by the beginning of their junior year. For more information, consult the director, Funso Afolayan, Department of History, 415 Horton Social Science Center, (603) 862-3026, e-mail funso.afolayan@unh.edu.

**Security Studies Minor ▼**

[http://cola.unh.edu/security-studies](http://cola.unh.edu/security-studies)

The security studies minor will provide students with the opportunity to explore the many dimensions of security through the interdisciplinary study of political science, anthropology, communication, geography, history, humanities, justice studies, sociology, women's studies, economics, and aerospace studies. This well-rounded curriculum will enable students to build upon their interest in political science by specializing in an area of increasing importance—domestic and global security.
The field of security studies has always been important within the discipline of political science, but the concept of security has broadened and become more problematized in recent years. Following the terrorist attacks of 9/11, federal, state, and local governments created thousands of jobs that require knowledge of security issues and the ability to conduct research. Leaders at all levels count on staff with analytical skills to design and conduct research to support decision-making, and communicate the results of this research effectively to policy-makers. Individuals who understand the national security environment and have the ability to design and conduct research are in critical demand in the public sector, private sector, and not-for-profit entities.

**Requirements**

Five courses (20 credits)

Students must receive a grade of C or better for a course to count toward the minor requirements.

No more than 8 credits may double count between majors and minors. Thus, political science majors pursuing the security studies minor can only double count up to two of the three required political science courses below. The third required course must be taken in addition to courses taken to fulfill major requirements.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Course(s)</th>
<th>Credits</th>
</tr>
</thead>
</table>
| **one** core POLT course | Choose from:
POLT 560, World Politics
POLT 562, Strategy and National Security Policy
POLT 568, Introduction to Intelligence | 4 |
| **two** intermediate POLT courses | Choose from:
POLT 513, Civil Rights and Liberties
POLT 548, The Drug Wars
POLT 559, Comparative Politics in the Middle East
POLT 560, World Politics*
POLT 562, Strategy and National Security*
POLT 565, U.S. Policy in Latin America
POLT 567, Politics of Global Resources
POLT 568, Introduction to Intelligence*
POLT 570, Counterterrorism
POLT 595, Strategies for Political Inquiry
POLT 765, Security Intelligence Study | 8 |
| POLT 778, International Organization |
| *If not counted for core requirement.* |

**At least one of these electives must be in a humanities department or program.**

**Choose from:**

**Electives Within Humanities Departments and Programs**
- ANTH 411, Global Perspectives on the Human Condition: An Introduction to Anthropology
- ANTH 680, Globalization, Development, and Poverty
- GEOG 402, Regional Geography of the Non-Western World
- HIST 444C, World War Propaganda in Britain and the United States
- HIST 444E, American at War: Society, Culture, and the Home Front
- HIST 537, Espionage and History
- HIST 613, American Ways of War
- HIST 620, Foreign Relations of the United States
- HIST 679, Rights Revolution
- HIST 680, Historical Geography
- PHIL 430, Ethics and Society
- PHIL 436, Social and Political Philosophy, or, PHIL 437, Social and Political Philosophy
- PHIL 635, Philosophy of Law
- WS 405, Gender, Power & Privilege
- WS 798, Women in Prison

**Electives Outside Humanities Departments and Programs**
- AERO 681, National Security Affairs I
- AERO 682, National Security Affairs II
- CMN 456, Propaganda and Persuasion
- CMN 772, Critical Approaches to Surveillance
- PSYC 756, Psychology of Crime and Justice
- SOC 515, Introductory Criminology

**two electives from other disciplines**
SOC 540, Private Troubles, Public Issues: Contemporary Social Problems
SOC 656, Terrorism
SOC 693, Global Social Change

Other POLT courses can be approved by the core faculty upon request.

Once students have declared the minor, they are required to meet with the coordinator or appropriate affiliated faculty adviser at least once per semester for regular review and assessment of their program, learning outcomes, and progress toward the degree.

Transfer credits may be approved by the coordinator to count toward the minor. If the transfer credit is accepted by the University and fits within the scope of the minor, it will be considered.

For more information, contact Stacy D. VanDeveer, stacy.vandeveer@unh.edu, (603) 862-0167.

**Technical Writing and Public Speaking Cognate**

http://cola.unh.edu/interdisciplinary-studies/twps-cognate

The cognate in technical writing and public speaking (TWPS) offers students intensive instruction in oral and written communication as important means of addressing technical, professional, or practical problems whose solutions require others' cooperation. Students learn practical precepts for analyzing those "communication situations" and for making informed, strategic decisions when composing oral and written responses in response to them. Students also undergo extensive practice creating standard and, thus, widely applicable forms of spoken and written communication. All students acquire a foundation in effective expression by taking introductory courses in public speaking and in professional and technical writing. Students then build upon that foundation and complete the cognate with one advanced course in either public speaking or professional and technical writing. This cognate is attractive to students who recognize that effective expression is valued in nearly any field of endeavor they are likely to pursue in their post-graduate lives.

**Requirements**

12 credits (3 courses)

**Two introductory courses:**

CMN 500, Public Speaking
ENGL 502, Professional and Technical Writing
One advanced course:

CMN 600, Public Speaking as a Civic Art

or

ENGL 602, Advanced Professional and Technical Writing

Please contact the Liberal Arts Dean's Office for additional information, (603) 862-2062, 110 Murkland Hall.

Women's Studies Major and Minor

http://cola.unh.edu/womens-studies

Because the women's studies program offers both a major and a minor, the program description and details are listed in the Programs of Study section of the catalog. See women's studies program.
Anthropology (ANTH)

Chairperson: Meghan C.L. Howey
Associate Professor: Eleanor Harrison-Buck, Meghan C.L. Howey, Justus M. Ogembo, Svetlana Peshkova, Robin E. Sheriff
Research Associate Professor: Curt D. Grimm
Assistant Professor: Casey Golomski
Affiliate Assistant Professor: Adam Kaeding, Astrid Runggaldier
Affiliate Faculty: Susan MacDougall
Lecturer: Marieka Brouwer Burg, Sara Withers

Anthropology asks the question: What does it mean to be human? We answer this fundamental query with a global perspective on the human condition as students explore both the similarity and diversity of human experience. Through courses that cover a wide range of societies throughout the world, we investigate the human condition, past and present. Introductory courses provide an overview of the fields of anthropology: social and cultural anthropology, archeology, physical anthropology, and linguistics. More advanced courses provide the opportunity for students to pursue intensive study of particular topics in cross-cultural perspective. The department emphasizes critical thinking and writing skills and encourages close faculty/student contact in seminar courses and at the upper level. Students, in consultation with their academic adviser, have the opportunity to take courses in other departments that complement specific foci in anthropology.

At this time of increasing globalization, anthropology provides students with a broad overview of diverse peoples and cultures. Majors are therefore well prepared to live in a rapidly changing world. The major both prepares students for graduate-level studies and serves as a foundation for a wide range of careers. With backgrounds in anthropology, our students become teachers,
social workers, public policy experts, forensic investigators, health practitioners, primatologists, international business executives, and community and economic development specialists, as well as pursuing various other careers.

To declare a major in anthropology, students must have completed at least one introductory level anthropology course at the 400 or 500 level with a grade of C or better.

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

**Required**
- ANTH 411, 412, or 415
- ANTH 500 or 501
- ANTH 511
- ANTH 513 or 514
- ANTH 611

One additional course numbered 500 or above

Three additional courses numbered 600 or above
(Note: While 8 credits, ANTH 699, Senior Thesis; ANTH 699H, Honors Senior Thesis; and ANTH 675, Archaeology Summer Field School in Belize, count only as one ANTH 600-level course requirement.)

The Discovery Program capstone requirement may be fulfilled by completing one 700-level course (seminar format). Seminar courses include ANTH 705, 730, 740, 750, 770, 785, and 797. Other courses, internships, or experiences may be substituted with the permission of the student's adviser and department chair.

The required minimum overall GPA in major coursework is 2.0.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

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

Honors-in-major and senior thesis options are available.

Students who declare a major in anthropology are expected to make steady progress toward
fulfillment of major requirements. Normally, this means taking at least one anthropology course per semester until all of the requirements have been met. A student who has fulfilled most of the major requirements may request an exception to this policy from his or her adviser.

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

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

» Click to view course offerings

Arabic (ARBC)

» http://cola.unh.edu/llc/arabic-studies

» Click to view course offerings

Senior Lecturer: Ruwa Majid-Pokorny

Interested students may take Arabic language courses. While there is currently no Arabic major or minor option, courses can be used to fulfill electives, to fulfill requirements for the Middle Eastern studies minor or, in some cases, to fulfill the bachelor of arts foreign language proficiency requirement. For a program description, please see the Languages, Literatures, and Cultures website.

» Click to view course offerings

Art and Art History (ARTS)

» http://cola.unh.edu/art-and-art-history

» Click to view course offerings

Chairperson: Craig A. Hood

Professor: Brian W.K. Chu, Grant Drumheller, Patricia A. Emison, Craig A. Hood, Jennifer K. Moses

Associate Professor: Benjamin S. Cariens, Julee Holcombe, Leah Woods

Assistant Professor: Sachiko Akiyama, Ivo van der Graaff, Susan Wager

Lecturer: Michael Cardinali, Richard Fox, Trevor Verrot, Don Williams
The courses offered by the Department of Art and Art History provide an opportunity, within the liberal arts framework, for students to acquire a thorough knowledge of the basic means of visual expression, to study intensively the history of art, or to prepare themselves for a career in art teaching. In addition, these courses offer foundation experience for students who are interested in art but are majoring in other departments in the University. The Department of Art and Art History offers programs leading to a bachelor of arts degree in the arts with either a studio art or art history option, and a bachelor of fine arts degree in studio art. Certification for art teaching in the public schools is also offered in cooperation with the Department of Education (see Education, under Programs of Study).

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

**Bachelor of Arts Curriculum (The Arts: Studio Art Option)**

Students selecting to work toward a bachelor of arts degree in studio art must complete a minimum of 14 courses (56 credits), with a minimum grade of C in each course.

**The following courses are required**

- ARTS 480, Introduction to Art History
- ARTS 532, Introductory Drawing
- ARTS 546, Introductory Painting
- ARTS 567, Introductory Sculpture
- ARTS 632, Intermediate Drawing

**One of the following**

- ARTS 536, Introductory Printmaking: Intaglio
- ARTS 537, Introductory Printmaking: Lithography
- ARTS 551, Darkroom Photography
- ARTS 552, Digital Photography

**One of the following**

- ARTS 501, Ceramics
- ARTS 525, Woodworking

**Three** additional courses in a studio concentration at 600 level or above (one must be an advanced 700-level course or the third workshop of the same medium)

**Two** additional studio electives (ARTS 598, An Artist's Life, may be used)

**Two** additional art history courses, at least one of which must be at the 600 level or above
While these courses represent the minimum departmental requirements for the studio art option, students may wish to plan a program involving greater depth in one or several of the studio areas.

The Discovery Program capstone requirement may be fulfilled by completing a 600 level or above course in the studio concentration. The student will work with the course's instructor to complete a mutually agreed upon capstone project associated with the course’s medium.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

**Bachelor of Arts Curriculum (The Arts: Art History Option)**

The art history curriculum provides a comprehensive, in-depth study of Western art from the ancient world to the present as well as some exposure to non-Western cultures and artistic traditions. All courses in the program teach basic skills of interpretation and critical analysis within the framework of broad cultural perspectives that connect the visual arts to larger historical developments. They also teach good writing and research skills. In addition, art history majors typically branch out into other fields, such as history, literature, and foreign languages. By the time they graduate, most majors are well equipped to pursue such traditional careers in the field as museum and gallery work, teaching, publishing, or librarianship. But because art historical education is so broad, it also prepares students for a variety of other, more flexible options, such as law, business, or architecture.

Students must complete a minimum of 10 courses (40 credits).

**The following courses are required**

- ARTS 480, Introduction to Art History
- ARTS 532, Introductory Drawing
- ARTS 795, Methods of Art History
- ARTS 799, Seminar in Art History

Also required are six 600- or 700-level art history courses: one each from the Pre-Renaissance, Renaissance/Baroque, and Modern areas, and three in any area. These courses must be completed with a minimum grade of C-. Art history students receive preferential placement in ARTS 532. Students contemplating graduate school should learn German, and, if
possible, either French, Italian, or another language relevant to their areas of interest.

The Discovery Program capstone requirement may be fulfilled by completing ARTS 795, Methods of Art History.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

**Bachelor of Arts Curriculum (The Arts: Studio Art/Art Education Option)**

The program in art education is organized into a five-year, teacher-education sequence. This curriculum is designed to prepare teachers of art in the public schools. The satisfactory completion of the B.A. studio art curriculum for art education students and required education courses, in conjunction with the fifth-year internship, will satisfy the initial certification requirements for teachers of art in the public schools of New Hampshire and in most other states. These requirements may change by the time students apply for certification and the students are required to fulfill the then-current requirements. Art education students may take accredited crafts courses at other institutions as art electives.

Students selecting to work toward a bachelor of arts degree in studio art/art education must complete a minimum of 14 courses (56 credits), with a minimum grade of C in each course.

**The following courses are required**

ARTS 480, Introduction to Art History
ARTS 501, Ceramics
ARTS 532, Introductory Drawing
ARTS 546, Introductory Painting
ARTS 552, Digital Photography
ARTS 567, Introductory Sculpture
ARTS 632, Intermediate Drawing or ARTS 633, Life Drawing

**One of the following**

ARTS 525, Woodworking
ARTS 536, Introductory Printmaking: Intaglio
ARTS 537, Introductory Printmaking: Lithography

**Three** additional courses in a studio concentration at the 600 level or above (one must be an
advanced 700-level course or the third workshop of the same medium)

**One** additional studio or art history elective

**Two** additional art history courses, at least one of which must be at the 600 level or above; one of the 600-level courses must have depth of content that addresses 20th-21st century art

**The following three courses are also required for certification**
EDUC 500, Exploring Teaching
ARTS 791, Art Education: Elementary
ARTS 792, Art Education: Secondary

The Discovery Program capstone requirement may be fulfilled by completing a 600 level or above course in the studio concentration. The student will work with the course’s instructor to complete a mutually agreed upon capstone project associated with the course’s medium.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

**Bachelor of Fine Arts Major**

Incoming first-year applicants wishing to enter the bachelor of fine arts (B.F.A.) degree program must first apply for, and be admitted to, the bachelor of arts (B.A.) in The Arts: Studio Art option. After taking the introductory studio art courses at UNH, interested students can then seek out two faculty members to sponsor their application for the B.F.A. program. Students generally wait until they are well into the intermediate-level courses before submitting a portfolio for the B.F.A. review, which is held before a full faculty committee twice a year.

The B.F.A. curriculum provides training for students who plan to enter professional graduate school or pursue careers as professional artists. Students selecting to work toward a B.F.A. degree must complete a minimum of 17 courses and 72 credits, with a minimum grade of C in each course.

**The following courses are required**
ARTS 480, Introduction to Art History
ARTS 532, Introductory Drawing
ARTS 546, Introductory Painting
ARTS 567, Introductory Sculpture
ARTS 598, An Artist's Life
ARTS 632, Intermediate Drawing, or ARTS 633, Life Drawing
ARTS 798, Seminar/Senior Thesis (8 credits)

One of the following
ARTS 551, Darkroom Photography
ARTS 552, Digital Photography
ARTS 536, Introductory Printmaking: Intaglio
ARTS 537, Introductory Printmaking: Lithography

One of the following
ARTS 501, Introductory Ceramics
ARTS 525, Introductory Woodworking

Four courses in one of the major program areas of the department (two must be at the advanced 700-level or the third and fourth workshops of the same medium)

Two additional art electives (studio or art history); 2D should take at least one 3D elective and 3D should take at least one 2D elective

Two additional art history courses, at least one of which must be at the 600 level or above

The possible areas of concentration within the department are painting, sculpture, ceramics, drawing, printmaking, photography, and furniture design. Proposals for individualized programs are accepted only by permission of the departmental chairperson, the major adviser, and the departmental bachelor of fine arts committee. Candidates applying for the bachelor of fine arts program are required to submit a portfolio to the B.F.A. committee, which meets each semester one week before preregistration.

The Discovery Program capstone requirement may be fulfilled by completing ARTS 798, Senior Seminar.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

Double Option in The Arts
Students may earn a B.A. degree in the arts with both a studio art option and an art history option provided the requirements for each option are met. No more than 8 credits used for one
option may be used for the second option. These 8 credits will be in Introductory Drawing and Introduction to Art History.

Minors in the Department of Art and Art History
Students must receive a minimum grade of C- in all required courses. For art majors, only two courses from the art and art history major requirements can be applied toward the minor.

A maximum of two courses (8 credits) may be transferred from another accredited institution, provided UNH has accepted them as transfer credits. Transfer courses must be a minimum of three credits. Students with transfer courses that are accepted with less than four semester credits must still meet the credit requirement for completion of the minor.

Minor in Architectural Studies
The minor in architectural studies provides students with an interdisciplinary introduction to the history, theory, and methods of architecture and its symbolism. The program allows students who are interested in this field to receive programmatic recognition of their work. It is designed to assist those who are contemplating enrollment at a school of architecture; are particularly interested in architectural history; want to supplement their technical majors (e.g., civil engineering) with strong academic minors; or plan to pursue careers in preservation, education, community service, and public relations.

The minor in architectural studies consists of five courses (18-20 credits) distributed in the following way:

The following courses are required
ARTS 532, Introductory Drawing
ARTS 574, Introduction to Architectural History

One of the following
ARTS 455, Architectural Design Studio
ARTS 525, Woodworking
ARTS 567, Introductory Sculpture
THDA 652, Scene Design (may be used in this category or as one of the two electives)

Two electives chosen in consultation with the minor coordinators. A list is available from the department.

Minor in Art
The minor in art consists of five courses (20 credits) chosen from the offerings of the department, two of which must be at the 500 level or above. Courses can be in studio art or art
Minor in Art History

The art history minor offers those majoring in other fields (including studio art) the chance to gain a serious knowledge of aspects of the history and meanings of Western art from antiquity to the modern world. Particularly for those working in history and the humanities, a minor in art history will provide new interdisciplinary perspectives on their major fields. The minor consists of five courses (20 credits) with a distribution that includes ARTS 480, Introduction to Art History, and four additional art history courses at the 600 level or above.

Minor in Studio Arts

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

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Chinese (CHIN)

» http://cola.unh.edu/llc/asian-studies

» Click to view course offerings

Assistant Professor: Wenjin Cui
Lecturer: Zhu Ling, Qun Wan, Lihua Wang

Interested students may take Chinese language and culture courses. While there are currently no Chinese major or minor options, courses can be used to fulfill electives, to fulfill requirements for the Asian studies minor, and, in some cases, to fulfill Discovery Program requirements and the bachelor of arts foreign language proficiency requirement.

For more information, see the Asian studies program website.

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Classics (CLAS)

» http://cola.unh.edu/chi/program/classics-ba

» Click to view course offerings
Professor: Robert Scott Smith, Stephen M. Trzaskoma
Associate Professor: Stephen Andrew Brunet
Assistant Professor: Harriet Fertik
Senior Lecturer: Richard E. Clairmont, Susan Curry
Lecturer: Anna Newman

Classics encompasses the interdisciplinary study of the Greeks and Romans, as well as the ways in which the ancient world’s influence extends to the Medieval Period, the Renaissance, and the modern world. Studying classics, therefore, is to investigate several thousand years of material through the study of languages, literature, history, politics, law, archaeology, art, mythology and folklore, gender and sexuality, religious studies, philosophy and more—all with methods derived from a variety of humanistic and social science perspectives. This breadth provides an excellent liberal arts education that prepares students for a variety of careers, as well as for further study. Classics majors from UNH have gone on to law school, medical school, and graduate school in classics and many related disciplines and have taken up careers in teaching, government service, the military, and business.

Classics majors have many opportunities at UNH to pursue their own interests in the ancient world while completing their requirements. Along with Greek and Latin, the Classics program offers Hittite and Sanskrit, the ancient languages of Anatolia and India. Students are encouraged to take courses offered outside the department that relate to the field of classics, such as those in ancient history, archaeology, ancient philosophy, classical art, modern languages, linguistics, and English literature. Some of these courses can even count for major requirements; a current list of approved courses is available from any departmental adviser. Study abroad is another way that many majors broaden their studies. Students have frequently spent semesters at many study abroad sites, including the Intercollegiate Center for the Classical Studies in Rome. (UNH is part of the consortium of Universities that supports this program.) The Department of Classics, Humanities, and Italian Studies regularly runs its own popular January Term course in Rome and manages study abroad programs in Ascoli Piceno, Italy; and Budapest, Hungary, that may be appropriate for classics majors, depending on their interests.

The program offers three different options for the classics major. In brief, the differences are (see below for detailed requirements):

The Classical Languages and Literatures (CLL) option allows for the most in-depth study of the ancient languages and requires knowledge of both Ancient Greek and Latin. It thus provides the strongest preparation for students considering graduate study in classics or related areas, and can also be an appropriate choice (with careful planning) for those thinking about teaching Latin in secondary schools. At the same time, it is designed for any student who
desires a solid liberal arts education.

The **Ancient Mediterranean Civilizations (AMC)** option balances language study with the opportunity for students to select from a wide range of courses covering many aspects of the Greek and Roman worlds, as well as the neighboring peoples in Europe, North Africa, and the Near East. The flexibility of this option makes it especially attractive for students who wish to double major in another subject. It is generally not suitable, however, for those who wish to pursue related graduate study or a career in teaching Latin. AMC majors can, however, supplement the requirements with additional coursework to keep these options open.

The **Latin and Latin Teaching (LLT)** option is designed to provide a good foundational liberal arts education centered on Latin and the Roman world, but it also includes specific elements that make it particularly appropriate for students who are considering careers teaching Latin in secondary schools after graduation. This option does not lead directly to state certification, which can be pursued during a fifth year of study in the Department of Education.

**Requirements**

**Classics: Classical Languages & Literatures (CLL option)**
To complete the CLL option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

Language courses (12–24 credits)—Students must take at least one class (4 credits) at the 700 level in the primary language (GREK or LATN) and at least one class (4 credits) at the 504 level or above in the secondary language (LATN or GREK). Students must earn at least 12 credits in language courses at the 503 level or above and may count as many as 24 toward the CLL major option. No credits from language courses at the 400 level may be counted toward this option.

Non-language courses (16–28 credits)—Students must take at least 16 credits in CLAS courses and may count as many as 28 credits toward this option, but no more than 4 credits may come from courses at the 400 level. There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

In addition to coursework, students must complete an approved capstone experience from the following list: senior thesis; honors thesis; CLAS capstone course at the 700 level; at least 8 credits in 700-level LATN or GREK courses; approved internship; or approved semester study abroad focused on the classical world.
Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Classics majors pursuing the CLL option may satisfy their World Culture Discovery requirement with intermediate GREK or LATN courses, but, otherwise, major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

The required minimum overall GPA in major coursework is 2.0.

**Classics: Ancient Mediterranean Civilizations (AMC option)**

To complete the AMC option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

- **Language proficiency (8 credits)**—Students must demonstrate proficiency by taking at least 8 credits in GREK or LATN at the 503 level or above.

- **Other courses (32 credits)**—Students must take at least 32 additional credits in CLAS, GREK, or LATN courses. These must include either CLAS 405 (Introduction to Greek Civilization) or 406 (Introduction to Roman Civilization). No more than 8 credits may come from CLAS courses at the 400 level and no credit at all may be used from 400-level LATN or GREK courses. At least 12 credits must be at the 600 level or above. There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

In addition to coursework, students must complete an approved capstone experience from the following list: senior thesis; honors thesis; CLAS capstone course at the 700 level; at least 4 credits in 700-level LATN or GREK courses; approved internship; or approved semester study abroad focused on the classical world.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses for the Classics AMC option may not be used to satisfy Discovery category requirements except in the case of a second major.

The required minimum overall GPA in major coursework is 2.0.

**Classics: Latin & Latin Teaching (LLT option)**

To complete the LLT option of the classics major, a student must complete 10 courses (40
credits), distributed as follows:

Latin language courses (20–24 credits)—Students must take at least 20 credits of LATN courses at the 504 level or above. At least 4 credits must come from LATN 631 and at least 4 credits must come at the 700 level.

Other courses (16–20 credits)—Students must take between 16 and 20 credits in approved CLAS courses. An up-to-date list of these courses is always available from department advisers, and these advisers can also approve exceptions in writing. (At present, the following CLAS courses do not count: 402, 405, 411–412, 413–414, 506, 525, 595/6, 694.) These must include CLAS 401 (Classical Mythology), CLAS 406 (Introduction to Roman Civilization) and either CLAS 601/701 (Classical Myth II) or 604/704 (Golden Age of Rome). Besides CLAS 401 and 406, no other 400-level courses may count. No Greek language courses are required for the LLT option, but students are encouraged to complete at least the introductory sequence (401–402).

There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

In addition to coursework, students must complete an approved capstone experience from the following list: senior thesis; honors thesis; CLAS capstone course at the 700 level; at least 12 credits in 700-level LATN courses; approved external internship; 4-credit internal Latin teaching internship (CLAS 694); or approved semester study abroad focused on the classical world.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses for the Classics LLT option may not be used to satisfy Discovery category requirements except in the case of a second major.

The required minimum overall GPA in major coursework is 2.0.

Please note that the LLT option does not by itself meet New Hampshire state certification requirements. Those who intend to pursue this certification should enroll in EDUC 500 as early as possible and then apply early in the fall of their year of graduation for a fifth year of internship and study through UNH’s Department of Education. Students are also encouraged strongly to consider taking some EDUC electives during their period of undergraduate study.

**Classics Minor**

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

Latin Minor
A minor in Latin consists of five courses (20 credits) in Latin.

The coordinator is Scott Smith, Murkland Hall; Department of Classics, Humanities, and Italian Studies; (603) 862-2388; e-mail scott.smith@unh.edu.

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Classics, Humanities, and Italian Studies (CHI)

» http://cola.unh.edu/chi

Professor: Michael K. Ferber, Jan V. Golinski, Robert Scott Smith, Stephen M. Trzaskoma, Charlotte Elizabeth Witt
Affiliate Professor: Paula M. Salvio
Associate Professor: Amy Boylan, Stephen Andrew Brunet, Piero Garofalo, Gregory McMahon
Assistant Professor: Harriet Fertik, Ann Zimo
Affiliate Faculty: Cristian Muscelli
Senior Lecturer: Richard E. Clairmont, Susan Curry, Catherine M. Peebles
Lecturer: Giuseppina Di Filippo, Anna Newman, Nicole Ruane, Kristen Swann

The Department of Classics, Humanities, and Italian Studies (CHI) unites three interdisciplinary programs and leverages the knowledge, research, and teaching of additional faculty from around the College of Liberal Arts to provide a uniquely comprehensive curriculum in the humanities. Courses allow students to explore fundamental questions of human life and discover how these have been answered by thinkers, artists, and writers from the ancient world to the present day. The classics and Italian studies programs concentrate on the Mediterranean world and its cultures, while the humanities program broadens the focus with critical inquiry into not only the reception of ancient Greek and Roman civilizations but also the ways in which comparative studies across time, space, and cultures can illuminate the human condition. The programs offer an explicitly comparative and interdisciplinary training that nourishes expertise across arts, cultures, geographies, and languages, and develops cultural fluency and critical thinking skills that form the basis for lifelong learning.

The faculty of CHI is committed to combining these theoretical considerations with practical concerns in order to help the University’s students become productive, responsible, and
involved citizens and leaders of their communities, businesses, and political institutions. Students thus gain both fundamental disciplinary knowledge, such as competency in a foreign language, and also explore perspectives that allow them to appreciate and critique the values, ideals, and intellectual and artistic accomplishments of individuals and societies both present and past.

The Department offers three different undergraduate majors (classics, humanities, and Italian studies) and five minors (classics, Latin, Greek, humanities, and Italian studies). The curriculum includes a variety of courses in English in interdisciplinary humanities, classical civilization, and Italian studies and also provides extensive language coursework in Ancient and Modern Greek, Italian, and Latin, as well as additional offerings in Hittite and Sanskrit.

For those students who wish to study abroad, the department is also home to two programs in Italy and one in Hungary. Students of any major can take part in a year-round program in Ascoli Piceno (UNH-in-Italy), the January-term program in Rome (UNH-in-Rome), or a spring semester program in Budapest (Humanities Spring Budapest Program).

College of Liberal Arts (COLA)

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Communication (CMN)

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Chairperson: James M. Farrell
Professor: Sheila McNamee, Joshua Meyrowitz, Lawrence J. Prelli
Associate Professor: Jennifer L. Borda, Mardi J. Kidwell, John Lannamann, Josh Lauer, Danielle Pillet-Shore
Assistant Professor: Nora Draper, Michelle Gibbons, Kevin Healey
Senior Lecturer: Renee Heath, R. Michael Jackson
Lecturer: Per E. Fjelstad, Michelle Michaud, Edward Reynolds, Michael Soha, Joseph Terry

The purpose of the communication major is to prepare students to engage more knowingly with the communicative patterns, problems, and practices that they will encounter in their personal, professional, and civic lives. This purpose requires that students learn to move beyond commonplace and conventional understandings of "communication" and acquire sophisticated
perspectives—workable orientations—for describing, analyzing, reflecting upon, and engaging with those patterns, problems, and practices. Accordingly, the major not only acquaints students with a variety of empirical, critical, historical, theoretical, and pragmatic perspectives on communication phenomena, but encourages them to formulate workable orientations of their own for engaging with communication issues and questions. Students who graduate with a communication major are prepared to become thoughtful and proficient “communication decision-makers” during their postgraduate lives.

Students wishing to declare communication as a major should contact the department’s academic adviser, Andrew Sharp, for application information and requirements.

**Communication Major**

Majors must complete ten courses (40 credits) with a 2.0 overall average in the major. The distribution of required courses for the major is as follows:

**Three introductory courses (12 credits)**

CMN 455, 456, and 457 (12 credits). Majors must earn a grade of C or better in each introductory course.

**Three 500-level communication analysis courses (12 credits)**

At least two of the three 500-level courses must have different 400-level prerequisites. Majors must earn a grade of C- or better in all three of these analysis courses. CMN 500, Public Speaking, and CMN 599, Internship, cannot be used to fulfill an analysis course requirement.

**Four upper-division courses (16 credits)**

Students are eligible to take upper-division courses after successfully completing at least two of the 500-level analysis courses, each with a different 400-level prerequisite. Students will be encouraged to focus at least three of their upper-division courses on one of six thematic concentrations: Histories and Traditions in Communication; Political Communication and Public Space; Communication, Community, and Everyday Life; Culture and Identities; Citizenship and Advocacy; and Visual Communication. At least one of the student's four upper-division courses must be at the 700 level. Majors must earn a grade of C- or better in all upper-division courses.

A maximum of 8 credits of independent study (CMN 795) may be counted toward the major. CMN 799, Honors Thesis, and CMN 796, Commentary, cannot be used to fulfill an advanced course requirement. The Discovery Program Capstone requirement may be fulfilled by completing any 700-level communication course except CMN 796. CMN 795 can only fulfill the capstone requirement with department approval and can be repeated for a maximum of 8 credits.

Transfer students must complete 20 credits of their communication coursework at UNH to
complete the major satisfactorily. Exchange students may transfer no more than 10 approved credits from another institution to be applied toward completion of the communication major at UNH.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

**Communication Minor**

The communication minor consists of five courses (20 credits). Students must complete a minimum of two 400-level introductory courses (CMN 455, CMN 456, or CMN 457), a minimum of two 500-level analysis courses, and a minimum of one advanced 600-level or 700-level course.

Students who pursue a communication minor must complete five courses within the minor with a C or better at the 400 level and with a C- or better at the 500, 600, and 700 levels, and maintain a minimum grade-point average of 2.0. The two 500-level analysis courses each must have a different 400-level prerequisite and be taken before enrolling in an advanced level course. No more than two transfer courses from other institutions can be applied to the minor and all transfers are contingent upon departmental approval. No more than 4 credits of independent study can count toward the minor. No pass/fail or credit/fail courses can count toward the minor. CMN 500, Public Speaking, cannot be used to fulfill a minor requirement.

**Media Practices Option**

This option is designed for qualified students who want to augment their communication major at Durham with training in media production and applied media communication through courses in the communication arts department at the Manchester campus. Qualified students who meet all requirements will graduate with a B.A. degree in communication: media practices option. In addition to communication major requirements, students are required to take two designated media practices courses at the Manchester campus and earn a minimum grade of C-, and complete a 4-credit media practices internship (CMN 599). Students must maintain an in-major grade-point average of at least 2.5 to satisfactorily complete the media practices option.

**Business Applications Option**

This option is designed for qualified students who want to augment their communication major with professional training in such areas as marketing, advertising, and organizational behavior through courses at the Peter T. Paul College of Business and Economics. Qualified students who meet all requirements will graduate with a B.A. degree in communication: business
applications option. In addition to communication major requirements, students are required to take three business applications option courses designated at PAUL and earn a minimum grade of C-, and complete a 4-credit business applications internship (CMN 599). Students must maintain an in-major grade-point average of at least 2.5 to satisfactorily complete the business applications option.

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Education (EDUC)

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Chairperson: Leslie J. Couse
Professor: Eleanor D. Abrams, Leslie J. Couse, Todd A. DeMitchell, Jane A. Nisbet, Paula M. Salvio
Affiliate Professor: Michael A. Gass, David C. Hagner, Sarah Redfield
Research Associate Professor: Mary C Schuh
Affiliate Associate Professor: Brent J. Bell, John W. Nimmo, Jayson O. Seaman
Assistant Professor: Jade Caines, Elyse Hambacher, Sameer Honwad, Diane Pimentel, Emilie M. Reagan, Winston Thompson
Research Assistant Professor: Betsy Humphreys, Lauren Provost, Bethany Silva
Affiliate Assistant Professor: Kathryn Dodge, John F. Hornstein, Cari A. Moorhead, Julie F. Simpson
Clinical Assistant Professor: Kathryn McCurdy
Clinical Instructor: Shaleen Cassily
Affiliate Faculty: Christine Consales, Mark Wiley
Senior Lecturer: Timothy J. Churchard
Lecturer: Brandie Bolduc

Basic Programs

At the undergraduate level, students have the opportunity to begin taking courses in teacher preparation programs, which will lead at the graduate level to teacher licensing in elementary and secondary education, early childhood education, early childhood special needs, and special education. They also may wait to prepare to teach solely at the graduate level.
Students majoring in music, mathematics, Pre-K-3rd grade, and physical education have the option of participating in a five-year program leading to licensure and a graduate degree. Or they may choose the four-year option in those majors, which leads to licensure at the undergraduate level. Students interested in the four-year option in these areas should contact the departments for information.

Elementary teaching and most secondary areas require completion of a minimum of a one-year graduate program, which leads to a master's degree and teacher licensure. Most students who plan to teach in elementary and secondary schools apply to the graduate school to complete a five-year program. In the five-year program, students begin preparation for teaching at the undergraduate level with a semester of field experience (EDUC 500, Exploring Teaching) and professional coursework in education. Students complete a baccalaureate degree outside of education and move into a fifth year of study and a full-year internship leading to the M.Ed. or M.A.T. degree and licensure in teaching.*

There also are opportunities for study or certification at the graduate level in administration, counseling, elementary and secondary teaching, early childhood, special education, and adult and occupational education. The department encourages students interested in graduate study or in relevant undergraduate courses to meet with these graduate program coordinators in the Department of Education.

Students at the undergraduate level who are interested in special education or early childhood education can begin to complete prerequisite coursework for the graduate program leading to certification in special education (K-12) or early childhood education. For students seeking the M.Ed. in special education or early childhood education without certification in general education, it is not necessary to complete Education 500. For coursework that can be taken at the undergraduate level, students should see program advisers in the Department of Education.

*Students in the five-year program may combine their program for teacher licensure with a master's program in their major field department.

Program Philosophy and Mission

Unit Mission Statement
The following conceptual framework guides all of the programs that prepare professionals in education at the University of New Hampshire:

The professional education unit at the University of New Hampshire seeks to prepare
practitioners who will become leaders in their own practice settings and within their profession, applying knowledge to improve education for all students and enrich the lives of clients. Immersion in subject matter, research, theory, and field-based experience provides a base for our graduates to make well-reasoned judgments in complex situations, render informed decisions, model exemplary practice, and take initiative for planned change.

Students learn to establish caring environments that celebrate individual differences and backgrounds while fostering cooperation and educational improvement. We stress reflective critical inquiry as a mode of study and community-building as a means for promoting change. We value and support both our students' local practice and their broader leadership within the profession.

Mission of Programs in Teacher Education

The following mission statement gives direction to the basic and advanced programs in teacher education:

We seek to prepare beginning teachers who demonstrate excellence in classroom practice and who will become educational leaders. Our graduates will possess the knowledge, skills, and dispositions required for outstanding classroom practice and eventual leadership within the local school community and the larger education community.

Undergraduate Work toward Teacher Certification in Elementary and Secondary Education

Step I. Enroll in Exploring Teaching: Education 500

Students are encouraged to take EDUC 500, Exploring Teaching, as a sophomore, but completion during junior or senior year also can leave enough time for other education course requirements.

Step II. Professional Coursework in Education at the Undergraduate Level

Education 500 is a prerequisite to further work in the teacher education program. An undergraduate receives a co-adviser in the Department of Education (usually the Exploring Teaching instructor). Along with the major adviser, this co-adviser works with the student to plan the undergraduate portion of the five-year teacher education program.

Every student must take four credits in each of five areas, as follows: EDUC 700, Educational Structure and Change; EDUC 701, Human Development and Learning: Educational Psychology; EDUC 703, Alternative Teaching Models [or other required methods course(s)]; EDUC 705, Alternative Perspectives on the Nature of Education; EDUC 751, Educating
Exceptional Learners. EDUC 707, Teaching Reading through the Content Areas, is required for some secondary subject licensure areas. Elementary education students are required to have four methods courses: one each in the teaching of reading, mathematics, science, and social studies. Those who do not intend to use this coursework for initial licensing may enroll with instructor permission. All 700-level education courses at UNH are restricted to students with junior or senior standing. These courses may also be taken at the graduate 800 level.

Any course taken in the Department of Education that will be used to fulfill a teacher licensure requirement must be completed with a grade of B- or above.

**Step III. Admission to the Internship and Graduate Phase of the Teacher Education Program**

Undergraduate seniors should apply to the Graduate School in early November in the first semester of the senior year for the final phase of the teacher education program. Students with an undergraduate grade-point average of 3.2 or better admitted into the accelerated master's program may be allowed to begin the program in the second semester of the senior year, earning a maximum of 12 graduate credits.

Undergraduate juniors with an undergraduate grade-point average of 3.2 or better should apply to the Graduate School in early February in the second semester of the junior year for the final phase of the teacher education program. Students with an undergraduate grade-point average of 3.2 or better admitted into the accelerated master's program may be allowed to begin the program in the first semester of the senior year, earning a maximum of 12 graduate credits during the senior year.

The final phase of the program includes a full-year internship, electives, and a program portfolio and colloquium. This phase normally takes an academic year plus a summer to complete.

The yearlong internship (EDUC 900/901) is part of the final stage of the five-year program. It meets the goals of increased clinical experience and better integration of theory and practice.

The internship is a teaching and learning experience in which the intern is involved in an elementary or secondary school over the course of an entire school year. Interns become a part of the school staff, sharing appropriate instructional tasks, and often carrying the full instructional duties in one or more classes.

Interns are mentored and supervised by a school staff member who is designated as a "cooperating teacher." A UNH faculty member collaborates in intern supervision and conducts a weekly seminar for all interns with whom he/she is working.
The internship is a full-time experience for 6 graduate credits each semester. It typically begins in September and runs through May or June. Due to the intensive time commitment, it is recommended that, at most, only one course be taken in addition to the internship each semester.

Before the internship, all students will have completed a bachelor’s degree with a major outside of education. Because of this, they will possess a depth of knowledge in a subject area and a broad general education, in addition to substantive preparation for teaching. Secondary education candidates must have completed an approved major, or its equivalent, in the subject that they intend to teach. Elementary education candidates may pursue an undergraduate major in any area; however, majors in the core disciplines taught in elementary schools are desirable.

Undergraduates should apply for internship in September of their senior year. At the same time, it is advisable to begin the application process for graduate school. Arranging an appropriate placement is a time-consuming process. Starting early will facilitate finding the best setting for students’ needs and goals. The director of field experiences in Durham and the associate director of teacher education in Manchester play a major role in identifying internship sites and should be consulted regarding the placement process. Internship applications are available at the Department of Education, Durham, and the Office of Teacher Education, Manchester. Admission to the internship requires a completed application to the internship, admission to the graduate school, and a consultation with the director of field experiences. Please note: Undergraduates interested in the master’s degree in early childhood education, the early childhood special education option, and special education do not apply for internships in their senior year. Internships for this program are arranged with program faculty once core graduate requirements are met.

Admission to the Program

Step 1. Exploring Teaching is open to all students, subject to available space. Approximately 150 students are accepted each semester.

Step 2. Continuation in professional coursework is dependent upon positive recommendations from Education 500, Exploring Teaching.

Step 3. Admission to the internship and the graduate program requires acceptance to the Graduate School. The process is competitive because of high admissions standards and limited space in the program. Approximately 80 percent of applicants for Phase III are accepted.
In determining admission of students to teacher education graduate programs, several criteria are used:

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

2. **The Graduate Record Examination Scores**
   The Graduate Record Examination (GRE) minimum acceptable scores are as follows: Verbal, 146-154; Quantitative, 140-152; Writing, 4.0-5.0.

3. **Recommendations**
   Positive recommendations from EDUC 500, Exploring Teaching, or the equivalent and from those able to relay information about a candidate’s performance in teaching situations or related areas are important. Recommendations from undergraduate subject major professors also are important.

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

**Accelerated Master’s Program**
UNH undergraduate seniors with a minimum of a 3.2 cumulative grade-point average at the end of the first semester of their senior year and undergraduate juniors with a minimum of a 3.2 cumulative grade point average at the end of the second semester of their junior year can apply for “early admission” to the Graduate School (November for seniors, February for juniors). Such candidates may register for a maximum of 12 credits of dual-credit coursework.
(undergraduate/graduate level course work, e.g., 700/800) prior to completing their bachelor’s degree. A student must be admitted to the Graduate School before the start of the semester in which the course(s) will be taken in order to receive graduate credit. Once accepted, a student must maintain the minimum 3.2 cumulative grade point average until their undergraduate degree is awarded. A student would apply for early admission on the regular Graduate School application available at www.gradschool.unh.edu.

Four-Year, Undergraduate Option
A bachelor’s degree including a one-semester student-teaching requirement allows students to be recommended for licensure in certain specialized areas. Those areas are mathematics, music, Pre-K-3rd grade, and physical education.

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

For admission to supervised student teaching, a minimum 2.8 cumulative grade-point average at the time of application to student teaching is required. Students in music, mathematics, and physical education need to apply by March 1st of the junior year and October 15th of the senior year for spring semester to the Department of Education for student teaching. An unofficial transcript and a current résumé must accompany the application. Return applications to the Department of Education Office, 203 Morrill Hall.

Students also may become licensed for P-3 (early childhood licensure) by completing the master’s degree program in early childhood education.

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English (ENGL)

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Chairperson: Rachel Trubowitz
Professor: Monica E. Chiu, Burt H. Feintuch, Michael K. Ferber, Diane P. Freedman, James
Krasner, Douglas M. Lanier, Rochelle Lieber, Mekeel McBride, Petar Ramadanovic, David Rivard, Sarah Way Sherman, Rachel Trubowitz, David H. Watters

**Affiliate Professor:** Luchen Li

**Associate Professor:** Brigitte Gabcke Bailey, Dennis Britton, Robin Hackett, Susan M. Hertz, Delia C. Konzett, Martin McKinsey, Lisa C. Miller, Sean D. Moore, Christina Ortmeier-Hooper, Thomas Payne, Siobhan Senier, Sandhya Shetty, Reginald A. Wilburn, Ann J. Williams

**Affiliate Associate Professor:** Georgeann Murphy

**Assistant Professor:** Seth Abramson, Cristy Beemer, Rachel Burdin, Jaed Coffin, Marcos Del Hierro, Tom Haines, Soo Hyon Kim, Alecia M. Magnifico, Samantha Seal

**Senior Lecturer:** Tomasen Carey, Shelley Girdner, Stephanie Harzewski, David Howland, Krista L. Jackman, Clark Knowles, Matthias Konzett, Christine O'Keefe, Cindy Pulkkinen, Nancy Sell, Oksana Semenova, Laura A. Smith, Charli Valdez, Leah D. Williams

**Lecturer:** Lawrence Beemer, Mary Berguin, Donna Brown, Molly Campbell, Denise Desrosiers, Meaghan Dunn, Joseph C. Dunn, Sarah Earle, Joseph Gilbert, Meghan Heckman, Carolyn J. Hutton, Rachel Lachance, Sean Madigan, Gayle McIntyre, Andrea Minnis, Prentiss Phillips, James Rioux, Elissa Scogland, Kevin Smith, Hulya Varlikli, Nathan Webster, Melinda White, Carol A. Zickell

The English department offers four majors: English, English Literature, English Teaching, and English/Journalism. A fifth undergraduate program is the interdepartmental Linguistics major.

Through these diverse but interrelated programs of study, the English department pursues a three-pronged mission in undergraduate instruction. We seek first to train students in the professional study of literature in the English language. In conjunction with this broad, multifaceted aim, we strive to educate students about the history and nature of English language in its spoken and written forms. As a third and equally important part of our mission, we teach students to write clearly, persuasively, and elegantly. In all five of its undergraduate majors, the English department provides students with the kinds of critical thinking, research, and writing skills that will serve them well in their personal and professional lives.

**The English Major**

The dual objectives of the general English major are to provide all students with a common core of literary experience and to offer the opportunity to shape a course of study suited to their personal interests. Flexible requirements place a responsibility on each student to devise a program that has an intelligent rationale. For example, students with a special interest in writing are free to take the minimum number of literature courses (five) and complete their major by taking offerings in fiction, creative nonfiction, and poetry writing. All the undergraduate courses offered by the department are open to English majors so that students may sample a range of courses in literature, linguistics, creative or nonfiction writing, and English teaching, according to particular interests that change and grow.
By its very nature, the English major is broad, open, and liberal. It enables students to sample a variety of courses in order to understand the operation of language from many perspectives.

For the English major, students must complete a minimum of 40 credits of major coursework with a grade of C- or better, with the exception of ENGL 419, which must be completed with a grade of C or better. ENGL 401, 403, 415, or 444 classes may not be used to satisfy major requirements.

Students must complete ENGL 419, two 500-level courses (or one 500-level course and ENGL/LING 405), six courses numbered 600 and above, and one additional 500-, 600-, or 700-level English course of their choosing. In selecting these courses, students must be sure to meet the following distribution requirements:

1. Two courses in literature written before 1800: either two advanced courses (numbered 600 or above), or one advanced course and ENGL 512 or ENGL 513.

2. Two courses in literature written since 1800: either two advanced courses, or one advanced course and one course from the following list: ENGL 514, 515, or 516.

3. One course that addresses race, the construction of race, and racial theories. Students may choose from: ENGL 517, 540, 550, 609, 690, 738, 739, 740, 693R, or 797R. Other courses may count, when relevant and with prior written approval of the adviser.

The Discovery Program capstone for English majors is one of the following:

- For students who entered the English major in fall 2014 and beyond:

  Capstone requirement may be fulfilled by one 700-level class in addition to the 10-course major. Minimum grade required: C. The course selected for capstone may not be double-counted toward English major requirements. Students should submit a Capstone Declaration form indicating the English course taken for capstone credit at the time of registration. Capstone Declaration forms are available in the English Department main office.

- For students who entered the English major between spring 2011 and spring 2014:

  Capstone requirement may be fulfilled by the English Major Seminar (ENGL 787), a 700-level class taken for capstone credit, one additional 700-level class, or a writing portfolio. (See the English Department website for specific descriptions of these requirements.)

The required minimum overall GPA in major coursework is 2.0.
Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

Majors entering the department in Fall 2012 and beyond may only count one online course toward their English major requirements.

Students interested in majoring in English should consult Carla Cannizzaro, coordinator of the Department of English, 113 Hamilton Smith Hall, (603) 862-1313.

**The English Literature Major**

The English literature major has been developed for those students looking for a more focused study of literature, especially those who plan to go on to graduate school in English or other fields in the humanities. Its requirements have been designed to engage students in a sustained study of literature that explores the formal, historical, cultural, and theoretical dimensions of written texts.

These requirements are designed to strengthen students’ knowledge of literary history and cultural contexts, forms of literary expression, and the interpretive questions that shape critical inquiry. Students in this program will develop a deep understanding and appreciation of literatures in English, including both British and American literatures, as well as literary traditions organized around other principles, such as postcolonial or African-American. The English literature major also encourages students to develop a higher proficiency in critical writing, in formulating and addressing complex problems, and in synthesizing research.

For the English literature major, students must complete a minimum of 40 credits of major coursework with a grade of C- or better, with the exception of ENGL 419, which must be completed with a grade of C or better. ENGL 401, 403, 415, or 444 classes may not be used to satisfy major requirements.

Additional requirements include two 500-level courses, one of which must be a survey course; ENGL 619; and ENGL 787. A minimum of six courses must be completed at the 600 level or higher. In selecting courses, students must be sure to meet the following distribution requirements (please note that, in many cases, a single course may satisfy a requirement in two or more categories):

1. Two courses in literature written prior to 1800: either two advanced courses (600 level and above) or one advanced course and ENGL 512 or ENGL 513.
2. Two courses in literature written since 1800: either two advanced courses or one advanced course and one of the following: ENGL 514, 515, or 516.

3. One American literature course at the 600/700 level.

4. One British literature course at the 600/700 level.

5. Two courses that investigate and question representations of identity (ENGL 517, 540, 555, 581, 585, 586, 681, 685, 690, 738, 739, 740, 775, or 777); genre, including film, with the exception of ENGL 533 (616, 618, 630, 631, 632, or 777); and/or theoretical positions (ENGL 713, 714). Other courses may count, when relevant and with prior written approval of the adviser.

6. One course that addresses race, the construction of race, and racial theories. Students may choose from ENGL 517, 540, 550, 609, 690, 738, 739, 740, 693R, or 797R. Other courses may count, when relevant and with prior written approval of the adviser.

The Discovery Program capstone for English Literature majors is the English Major Seminar, ENGL 787.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

The required minimum overall GPA in major coursework is 2.0.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

Majors entering the department in Fall 2012 and beyond may only count one online course toward their English major requirements.

Students interested in majoring in English Literature should consult Carla Cannizzaro, coordinator of the Department of English, 113 Hamilton Smith Hall, (603) 862-1313, or the director of the English Literature program.

The English Teaching Major
The English teaching major is designed for students wishing to teach English in middle or high schools (grades 5-12). Students receive a B.A. in English Teaching upon completion of their undergraduate studies. Completion of the undergraduate major does not in itself, however, meet state certification requirements to teach in public schools in New Hampshire. English
teaching majors who want to gain certification at UNH must apply for admission to (and complete) graduate study, including coursework and a year-long internship within the Department of Education. (Students usually apply for the master's program in their senior year; please see the Department of Education for details on the M.A.T. and M.Ed. programs.) Much of the work for a master's degree may be completed during this fifth year, likely including additional time spent in summer courses or additional semesters. Most students, however, will be recommended for certification at the end of the fifth year and receive the graduate degree. The New Hampshire teaching certificate is recognized by many but not all states.

The goal of the English teaching major is to prepare students as informed, thoughtful, and skilled English teachers who will become educational leaders in their schools and, more broadly, in the profession itself. To that end, the department seeks to make its preservice teachers thoroughly familiar with the knowledge base available in the Departments of English and Education. From their courses within the English department, students learn what the study of English entails and how areas of knowledge and the abilities to read, write, and discuss can best be taught to students in grades 5-12. Preservice teachers also acquire knowledge of certain content areas, such as American and British literature and English grammar. From their courses within the education department, students learn about human development and learning, the history and structure of schools, and different philosophical perspectives on public education. Finally, through the yearlong teaching internship, students apply their knowledge from both sources to actual practice. This requirement reflects a core belief that the opportunity to combine theory and practice is essential in preparing effective beginning teachers.

Completion of the undergraduate teaching major does not in itself meet state certification requirements. Students should enroll in the undergraduate major and:

1. Pass the following English courses with an average of 2.5 or better: ENGL 419; 514; 516; 657; 725 and 726 or 710 and 792; 718 or 791; two additional literature courses numbered 600 or above; one course that addresses race, the construction of race, and racial theories from a department-approved list (other courses may count, when relevant and with prior written approval of the student's adviser); and any English department course in writing, linguistics, critical theory, film, or literature (except 401, 403, 415, and 444). ENGL 512 or 513 may be substituted for one of the two required literature courses numbered 600 or above.

2. Apply for the fifth-year teaching internship and master's degree program by fall or spring of their senior year (usually September 30 for the internship and November 1 or February 1 for the master's program). Students with a GPA of 3.2 or better can apply for the master's degree program in their junior year. If accepted early, the student can earn graduate credit for up to three undergraduate English or education courses.
3. Complete the Discovery Program capstone for English Teaching majors: ENGL 789, Special Topics in English Teaching.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of Arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

Majors entering the department in Fall 2012 and beyond may only count one online course towards their English major requirements.

Students interested in majoring in English teaching should consult Carla Cannizzaro, coordinator of the Department of English, 113 Hamilton Smith Hall, (603) 862-1313, or the director of the English teaching program.

The English/Journalism Major

The English/journalism major focuses on the study and practice of rigorous reporting and nonfiction storytelling in many forms. It prepares students for careers in writing, editing, and digital journalism. It also incorporates the study of literature, an important foundation for critical thinking and storytelling. In addition to learning the basic skills of interviewing, fact gathering, verification, and writing in both news and feature styles, students are taught to produce stories for digital platforms using audio, photo, video, and more. These skills will launch successful careers in journalism or any vocation that requires strong research and communication skills.

English/journalism majors must complete ENGL 401 with a B or better before taking the first journalism course, ENGL 534, 21st Century Journalism: How the News Works. After completing ENGL 534, majors may move on to ENGL 621, Writing and Reporting the News I. Students must get a B or better in 621 to go on to ENGL 622, Writing and Reporting the News II, and ENGL 631, Introduction to Digital Reporting—both courses are required for the major.

Students then have to take two more journalism courses, choosing from ENGL 623, 711, 712, 722, 724, 735, or 708. Certain courses publish student writing digitally, at times in collaboration with professional news outlets. Students are also encouraged to write and edit for student publications such as The New Hampshire and Main Street. Beyond these requirements, majors work at one media internship for a semester (ENGL 720). Students must get at least a B in 621 and permission of their 622 or 631 instructor to do the internship. A faculty member supervises the internships, which are central to the English/journalism major, requiring students to use their new skills in a professional environment.
In addition to their journalism courses, English/journalism majors must complete ENGL 419 with a grade of C or better. They must also take the following literature courses:

1. one course in literature written prior to 1800;
2. one course in literature written since 1800;
3. one course that addresses race, the construction of race, and racial theories. To fulfill this requirement, students may choose from ENGL 517, 540, 550, 609, 690, 738, 739, 740, 693R, or 797R. Other courses may count when relevant and with prior written approval of the instructor.

ENGL 419 is the only 400-level course that may be used to satisfy English/journalism requirements; ENGL 401, 403, 415, or 444 classes may not be used to satisfy major requirements.

Because media outlets expect even entry-level staff to have an area of expertise, English/journalism majors must take a three-course concentration in another field, such as sociology, German, environmental science, criminal justice, or other English disciplines (e.g., African American studies). Courses taken for a minor will count toward the three-course concentration.

The Discovery Program capstone for English/journalism majors is the Journalism Internship, ENGL 720.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

Majors entering the department in Fall 2012 and beyond may only count one online course toward their English major requirements.

Students interested in the English/journalism major should see Carla Cannizzaro, coordinator of the Department of English, 113 Hamilton Smith Hall, (603) 862-1313, or the director of the Journalism Program.

**English Minor**

Students who wish to minor in English at UNH must complete five courses (20 credits). At least three of the courses must be at the 600 level or above. ENGL 419 is recommended as one of the five courses. ENGL 401, First-Year Writing, and ENGL 415, "Literature and...," courses cannot be applied toward the English minor. No more than two transfer courses can be applied
toward the English minor. The minimum acceptable grade for each course is C-.

**Writing Programs**

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

**Writing Minor**

Students must complete at least five 4-credit courses (20 credits) from the list of approved courses. At least three of the courses must be at the 600 level or higher. ENGL 415, "Literature and...," courses cannot be applied toward the English writing minor. The minimum acceptable grade for each course is C-. No more than two transfer courses can be applied toward the English writing minor. English literature and English teaching majors may declare a writing minor with the approval of their faculty adviser. A maximum of two English courses (8 credits) are allowed to double-count toward the literature or teaching major and writing minor. Other English Department majors are not eligible to declare a writing minor.

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**French (FREN)**

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*Professor:* Nadine S. Bérénguier, Heidi Bostic  
*Assistant Professor:* Ileana Chirila  
*Senior Lecturer:* Claire-Hélène Gaudissart, Anna K. Sandstrom, Emilie Talpin  
*Lecturer:* Elizabeth Hebbard

**The French Major**

The French major offered by the Department of Languages, Literatures, and Cultures provides knowledge of the language, literature, and culture of France and other French-speaking countries around the world. An undergraduate major in French is useful in a variety of careers, such as business, law, government or public service, and teaching. Students considering a career in teaching should consult with the Department of Education. In addition, they should make special note of the LLC 791 requirement (which does not count toward completion of a major in French).
A major consists of 40 credits in courses numbered 631 or above, in which readings are in French. Coursework for the French major must be completed with a grade of C or better. Majors are required to take FREN 631-632, 651, 652, 790, and at least two 700-level literature courses at the Durham campus. Students are required to enroll in at least one course each semester in their major program and to spend at least one semester abroad in a French-speaking country. The UNH-managed program in Dijon is highly recommended and offers year- and semester-long options. Other options are available, but non-UNH programs must be chosen in consultation with a major adviser and the UNH Center for International Education. Students in majors with inflexible curricula (like engineering, some sciences, and health care) who wish to complete a second major in French should consult with a French adviser about possible alternate means of satisfying the study abroad requirement.

Transfer students must earn a minimum of 12 major credits at the Durham campus. Of these 12 credits, one course must be FREN 790 and at least one 700-level course in French/Francophone literature. The Discovery Program capstone requirement may be fulfilled by completing FREN 790, Advanced Language and Style.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. However, majors may use the required study abroad experience to satisfy the World Cultures Discovery category requirement.

**The French Studies Major**

This major gives students a variety of perspectives not only on French and Francophone literature but also on a variety of other issues pertaining to the Francophone world. A major in French studies prepares graduates to negotiate successfully the economic reality of an increasingly international job market, and provides them with a wide range of career prospects after they leave the University.

The major consists of 44 credits in French courses numbered 631 or above and of cross-listed courses in other departments, including the following requirements: FREN 631-632, 651, 652, 675 or 676 or 677, 790, and two 700-level courses in French or Francophone literature. In addition, at least three elective courses (12 credits) closely related to French and Francophone cultural studies are required. These are to be chosen in consultation with a faculty adviser from among the following departments: history, geography, or anthropology, one 600- to 700-level
course; art history or music, one 600- to 700-level course; economics, political science, or education, one 600- to 700-level course. Coursework for the French studies major must be completed with a grade of C or better. Students are required to enroll in at least one course each semester in their major program and to spend at least one semester abroad in a French-speaking country. The UNH-managed study abroad program in Dijon is highly recommended. It offers both year- and semester-long programs. Other options are available, but non-UNH programs must be chosen in close consultation with a major adviser and the UNH Center for International Education. Students in majors with inflexible curricula who wish to complete a second major in French studies should consult with a French adviser about alternate means of satisfying the study abroad requirement.

Transfer students must earn a minimum of 12 credits on the Durham campus. Of these 12 credits, one course must be FREN 790 and at least one 700-level course in French/Francophone literature. The Discovery Program capstone requirement may be fulfilled by completing FREN 790, Advanced Language and Style.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. However, majors may use the required study abroad experience to satisfy the World Cultures Discovery category requirement.

**The French Minor**

A minor in French consists of 20 credits in French courses numbered 503 and above. No fewer than three courses have to be taken at UNH. No more than one course conducted in English (e.g., FREN 525 or 625) will be counted toward the minor, although students may elect to take more than one such course provided they earn more than 20 credits. Those entering the minor at FREN 504 or higher will be expected to complete FREN 651 or 652. LLC 791 does not count for the minor. After completing the five required courses, students submit a “Completion of Minor” form.

**The French Studies Minor**

The minor in French studies consists of 20 credits numbered FREN 503 or above. No fewer than three courses have to be taken at UNH. No more than one course conducted in English (FREN 525 or 625) will be counted toward the minor. Students entering the minor at FREN 504 or higher will be expected to complete FREN 651 or 652. LLC 791 does not count toward the minor. After completing the five required courses, students submit a “Completion of Minor”
Study Abroad in Dijon

The department offers a junior year and semesters abroad at the University of Burgundy in Dijon, France (see FREN 690). This program is open to all qualified students at the University of New Hampshire who have completed, with a grade of B- or better, FREN 631-632 and FREN 651-652 by the end of the semester preceding their departure. Early consultation with the director of the program is urged. Non-credit orientation meetings are required during the semester prior to departure.

Summer Study in Dijon

This program is open to all students interested in an immersion program during the summer. It provides four to eight weeks of intensive courses in French at the CIEF (Centre International des Etudes Francaises) at the Universite de Bourgogne in Dijon, France. A minimum GPA of 2.5 is required. The pre-requisite for non-French majors is a minimum of one year of elementary French. The pre-requisite for French majors is FREN 631, 632, 651 and/or 652. For French majors, the course is only open to those who cannot fulfill their semester-long study abroad requirement for documented academic reasons. By petition only. Special fee. 4 to 8 credits.

Teaching Assistantship in France

Each year the French government offers teaching assistantships in a French secondary school to graduating French majors or minors. Applications are accepted during the fall semester.

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Geography is the study of how and why things vary from place to place around the world. Geographers study the environment. They study the geography of human activity. They study places and all that makes them distinctive. They study how people interact with the natural world.

Geography is a multifaceted and inherently interdisciplinary field. It is an integrating discipline, drawing on knowledge from many other fields in order to understand geographic patterns and the character of individual places. Geography is also a way of looking at the world. Nearly any subject can be viewed through a geographic lens.

The Department of Geography at UNH is strongest in cultural, political, urban, historical, and environmental geography, climatology, and geotechniques. Individual faculty members possess regional specialties in New England, North America, Latin America, the Middle East, and Japan.

The geography major provides undergraduates with a solid foundation in geography while enabling them to develop a specialization in one of the three main areas of geography—human geography, environmental geography, and geotechniques. A geography degree will prepare students to pursue a wide variety of careers or enter graduate school.

UNH geography graduates have gone on to careers as teachers, geographic information systems analysts, pilots, environmental consultants, hurricane hunters, city planners, emergency medical physicians, meteorologists, land surveyors, real estate agents, sports psychologists, “Jeopardy” clue researchers, cartographers, marketing managers, financial portfolio strategists, transportation planners, social analysts, travel consultants, college professors, and more.

Requirements
To earn a bachelor of arts in geography, students must complete 10 geography courses with a minimum grade of C-minus: five core courses, four courses in one of three areas of concentration, plus one elective. Students must select an area of concentration within six months of declaring geography as their major.

Core courses
All geography majors must complete five core courses:

GEOG 401, Regional Geography of the Western World
GEOG 402, Regional Geography of the Non-Western World
GEOG 572, Geography of the Natural Environment
GEOG 581, Human Geography
GEOG 658, Introduction to Geographic Information Systems
The core courses are intended to provide students a basic understanding of human, physical, and world regional geography, plus geographic information systems. They should be taken as early as possible in a student’s program because they provide a foundation for more advanced coursework.

Students are encouraged to complete GEOG 595, Statistics for Geographers, or another statistics course approved by their adviser, before enrolling in GEOG 658.

**Human Geography Concentration**

Intended for students most interested in the geography of human activity, including population, urban, cultural, political, and economic geography.

*Students must complete three of the following, including one course at the 600-level or above:*

- GEOG 582, Economic Geography
- GEOG 583, Urban Geography
- GEOG 584, Political Geography
- GEOG 588, Geography of Food
- GEOG 673, Issues in Environmental Geography
- GEOG 680, Historical Geography
- GEOG 685, Geography of Population and Development
- GEOG 690, Geography of Third-World Development

*Students must complete one of the following regional geography courses:*

- GEOG 510, Geography of New England
- GEOG 514, Geography of the United States and Canada
- GEOG 520, Geography of Latin America and the Caribbean
- GEOG 540, Geography of the Middle East
- GEOG 541, Geography of Japan
- GEOG 550, Geography of Sub-Saharan Africa

**Environmental Geography Concentration**

Intended for students most interested in the geography of the natural environment, including weather, climate, landforms, biogeography, and human-environment interactions.

*Students must complete three of the following, including one course at the 600-level or above:*

- GEOG 473, Elements of Weather
- GEOG 560, Geography of Natural Hazards
- GEOG 573, Biogeography
- GEOG 574, Geography of Landforms
GEOG 670, Climatology
GEOG 671, Weather Forecasting
GEOG 673, Issues in Environmental Geography

Students must also complete GEOG 595, Statistics for Geographers, or another statistics course approved by their adviser. If the approved statistics course also satisfies a Discovery category requirement, student must take a fourth course from the above list.

**Geotechniques Concentration**
Intended for students most interested in geographic information systems, aerial photo interpretation, remote sensing, photogrammetry, and other geographic techniques.

*Students must complete three of the following:*

GEOG 650, Field Methods in Geography
GEOG 757, Remote Sensing of the Environment
GEOG 759, Digital Image Processing for Natural Resources
GEOG 760, Geographic Information Systems in Natural Resources

Students must also complete GEOG 595, Statistics for Geographers, or another statistics course approved by their adviser. If the approved statistics course also satisfies a Discovery category requirement, student must take a fourth course from the above list.

**Additional Requirements**
Students entering UNH beginning in August 2010 must pass a comprehensive examination in their senior year to fulfill the Discovery capstone requirement.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

The University's foreign language requirement can be fulfilled by the following languages: French, Italian, Spanish, Portuguese, German, Russian, Chinese, Japanese, Arabic, Latin, or Greek. Other languages will be considered by petition.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.
German (GERM)

» https://cola.unh.edu/llc/program/german-ba

» Click to view course offerings

Professor: Edward T. Larkin
Associate Professor: Mary E. Rhiel
Assistant Professor: Charles Vannette

The German major is offered by the Department of Languages, Literatures, and Cultures. This program is of interest to the following groups of students:

• Those who have a special interest in the German language, literature, and culture.

• Those who intend to enter fields in which a background in foreign languages and literatures is desirable, such as international business and law, trade, journalism, science, library science, government service, and international service organizations.

• Those who plan to teach German in secondary schools. Since most secondary schools require their teachers to teach more than one subject, students planning to enter teaching at this level should plan their programs carefully. They should combine a major in one language and its literature with a minor or at least a meaningful sequence of courses in another subject. Dual majors also are possible. For certification requirements, see the section coordinator.

All German majors are strongly encouraged to double major or include a relevant minor in their studies.

A major consists of 10 courses in German beyond German 402. Required for the major are GERM 503, 504, 525, 631, 632 (or their equivalents), and five more courses, which must be taken at the 600 or 700 levels. A successful IROP or SURF application may count as one of the 700-level courses. A grade of C- or better is required in all major coursework. Majors are required to spend a minimum of one semester in an approved German-speaking study abroad program, or at least eight weeks in a summer study program. For students spending one semester abroad, two or three of the five upper-level courses are normally taken in Durham. For students spending an academic year abroad, three or four of the five upper-level courses are normally taken in Durham. LLC 791 does not count for major credit; 791 is recommended as an elective and required for teacher certification. The Discovery Program capstone requirement may be fulfilled by completing any 700-level German course (including 797 and 798).
The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. However, majors may use the required study abroad experience to satisfy the World Cultures Discovery category requirement.

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

**Study Abroad**

**Summer Study in Berlin, Germany**

The UNH German Program manages a five-week program in Berlin, Germany. Students earn 4 or 8 credits through German 586, designed to give students an immersion experience in the German language and culture. In the course of five weeks, students will receive seventy hours of intensive language instruction at the appropriate level (elementary, intermediate, or advanced) at the BSI Private Language School in central Berlin. No prior German language study is required. On designated weekday afternoons, students will gather for cultural excursions and discussions with the on-site UNH faculty member. Students can receive UNH language credit and fulfill the World Cultures Discovery requirement. In line with UNH’s goals to educate students to become global citizens, this immersion experience will give students insight into what it means to experience a different culture and language. For more information, contact Mary Rhiel at (603) 862-3052, e-mail berlin.program@unh.edu, or visit cola.unh.edu/study-abroad/program/germany-berlin.

**Other Programs**

The University allows both German majors and minors and other students to attend approved study abroad programs for UNH credit. Students may attend accredited one- or two-semester programs at universities such as Berlin, Freiburg, Heidelberg, Innsbruck, Marburg, Munich, Tübingen, or Vienna. Most study abroad programs require a minimum of two years of college German. For details, see the German coordinator or the foreign study coordinator in the Center for International Education. Internships with a German firm or organization may also be taken for credit (see GERM 595). Financial aid applies to all approved programs.
Greek (GREK)

» [http://cola.unh.edu/chi/program/greek-minor](http://cola.unh.edu/chi/program/greek-minor)

» [Click to view course offerings](#)

**Professor:** Robert Scott Smith, Stephen M. Trzaskoma

**Associate Professor:** Stephen Andrew Brunet

**Senior Lecturer:** Richard E. Clairmont, Susan Curry

**Lecturer:** Anna Newman

Greek courses and a Greek minor are offered by the classics program of the [Department of Classics, Humanities, and Italian Studies](http://cola.unh.edu/chi/program/greek-minor).

A Greek minor requires 20 credits of coursework in Greek. Students are encouraged to take courses in related fields such as Latin, classics, and ancient history, and to take part in overseas study programs in Greece.

The coordinator is Scott Smith; Murkland Hall; Classics, Humanities, and Italian Studies; (603) 862-2388; e-mail [scott.smith@unh.edu](mailto:scott.smith@unh.edu).

» [Click to view course offerings](#)

History (HIST)

» [https://cola.unh.edu/history](https://cola.unh.edu/history)

» [Click to view course offerings](#)

**Interim Chairperson:** Jan V. Golinski

**Professor:** David Bachrach, W. Jeffrey Bolster, Kurk Dorsey, Ellen Fitzpatrick, Cathy A. Frierson, Jan V. Golinski, Eliga H. Gould, J. William Harris, Janet L. Polasky

**Affiliate Professor:** Benjamin Harris

**Associate Professor:** Funso Afolayan, Marion Girard Dorsey, Nicoletta F. Gullace, Jessica M. Lepler, Yan Lu, Elizabeth W. Mellyn, Julia E. Rodriguez, Lucie E. Salyer, Jason Sokol, Cynthia J. Van Zandt, Ethel Sara Wolper

**Affiliate Associate Professor:** Gregory McMahon

**Assistant Professor:** Michael Leese

**Senior Lecturer:** Phillip Deen

**Lecturer:** Sarah Batterson

The study of history is an essential element of the liberal arts education. The history major
provides both an awareness of the past and the tools to evaluate and express one’s knowledge. The student who majors in history will have the opportunity to study the breadth of the human past and will acquire the skills in critical reading and writing that form the foundation of the educated life. The study of history may include all of human culture and society and provides tremendous latitude in the subjects that may be studied. The interdisciplinary nature of the field makes it a natural focus for study that may encompass a variety of other fields.

To complete a major in history, students must take ten, 4-credit history courses or their equivalent. Students who enter the University as history majors or who declare a major in history should take the first required course, HIST 500, Introduction to Historical Thinking, as soon as possible. To declare a major in history, students must have completed two history courses with a grade of C- or better. HIST 500 is a prerequisite for the second required course, HIST 797, Colloquium in History, which fulfills the Discovery Program capstone requirement for history majors and is taken during the senior year. Students should consult the list of topics for HIST 797 advertised each semester. Besides HIST 500 and HIST 797, a major must take at least eight courses, of which a minimum of three must be at the 600 level or above. Only one, HIST 695, Independent Study, may be used to fulfill the 600-level requirement, and no more than two independent study courses may count toward the ten-course requirement. No more than two 400-level courses may be counted toward the major requirements. Students must receive at least a C in HIST 500 and at least a C- in the other nine courses. Majors must maintain a 2.0 or better in all history courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

History majors must satisfy the language requirement for the B.A. degree in an international language that they could use for historical research. That list includes Arabic, Chinese, French, German, Greek, Italian, Japanese, Latin, Portuguese, Russian, and Spanish. Students may petition the department curriculum committee for exceptions.

A student’s program of study must include two parts:

1. An area of specialization. A student must select at least four courses to serve as an area of specialization within the major. Up to two courses (each four credits or their equivalent) in the area of specialization may be taken in other departments; such courses must be 500 level or above and have the approval of the student’s adviser. The area of specialization may be in a nation, region, a time period, or an interdisciplinary field.
2. Complementary courses. A student must select, in consultation with his or her adviser, at least three history courses in fields outside the area of specialization, chosen to broaden his or her understanding of the range of history. Normally, each major should take at least one course from each of Groups I, II, and III, unless explicitly excused by his or her adviser. Group I contains all American history courses, Group II contains all European history courses, and Group III contains all other history courses.

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

For transfer students, a minimum of five of the semester courses used to fulfill the major requirements must be taken at the University. One upper-level course may be transferred to satisfy the requirement that a major must take at least three courses numbered 600 or above. Transfer students must complete both HIST 500 or its equivalent and HIST 797.

A minor in history consists of 20 semester credits with C- or better and at least a 2.0 grade-point average in courses that the Department of History approves. Courses taken on a pass/fail basis may not be used for the minor. No more than 12 credits in 400-level courses may be used for this minor. For transfer students, no more than two transfer courses, or 8 transfer credits, may be used toward the minor.

Students intending further work in history beyond the bachelor's degree are urged to take HIST 775, Historical Methods.

Students intending to major in history should consult with the department administrative assistant in Horton 423. Suggested programs for students with special interests or professional plans are available in the department office.

**Undergraduate Awards for Majors**

*The Philip M. Marston Scholarship*, an award of $500, is available to students who are interested in colonial or New England history and have demonstrated financial need. There are course requirements for this scholarship. More details are available from the history office.

Each spring, the members of the departmental undergraduate committee choose history majors to receive the following prizes in history:
The William Greenleaf Prize is given for the best senior colloquium paper. Award candidates must have a minimum grade-point average of 3.2 in history courses. Individuals may nominate themselves or may be nominated by faculty members.

The Allen Linden Prize for the best senior history thesis is funded by the Signal Fund.

The Charles Clark Prize is for the best essay or research paper submitted by a history major and is funded by the Signal Fund.

Phi Alpha Theta, the history honor society, is an international scholastic organization dedicated to promoting historical study on the undergraduate and graduate levels. Admission to the UNH Psi Pi chapter is open to undergraduates with an overall grade-point average of 3.0, a grade-point average of 3.4 or better in history courses, and completion of HIST 500.

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Humanities (HUMA)

» http://cola.unh.edu/chi/humanities-ba

» Click to view course offerings

Coordinator: Catherine M. Peebles
Professor: Michael K. Ferber, Jan V. Golinski, Charlotte Elizabeth Witt
Assistant Professor: Ann Zimo
Senior Lecturer: Phillip Deen, Catherine M. Peebles
Lecturer: Nicole Ruane

Core Faculty: Jennifer K. Armstrong, Willem A. DeVries, R. Valentine Dusek, Robert Haskins, John R. Kayser, Edward T. Larkin, Gregory McMahon, Elizabeth W. Mellyn, Petar Ramadanovic, David M. Richman

The humanities program examines the fundamental questions and issues of human civilization. Through studying diverse texts in the arts, music, literature, history, philosophy, and science, students seek answers to questions that thoughtful human beings must address in the course of their lives. Whether these questions come from Socrates (What is justice?), from Sir Thomas More (What is obligation to God?), from Raphael (What is beauty?), from Newton (What are the laws of nature?), or from Martin Luther King, Jr. (What is freedom?), they direct our attention to
enduring human concerns and to texts that have suggested or illustrated the most profound and powerful answers. The humanities program is housed in the Department of Classics, Humanities, and Italian Studies.

**Humanities Major**

The humanities major consists of a minimum of 42 credits of academic work, with a minimum grade of C, including the following core requirements:

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

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

*Seminar in the Humanities (HUMA 700).* Each student takes at least one offering (4 credits) of the Seminar in the Humanities, preferably during the junior or senior year. This seminar provides an opportunity for in-depth reading, viewing, and/or listening to texts and artifacts. The emphasis is on the multiple perspectives and methodologies that can be brought to bear upon these works from several humanistic disciplines.

*Discovery Program Capstone: Research Project in the Humanities (HUMA 798 and 799).* Each student participates in the research tutorial (for a total of 6 credits) throughout the senior year. The tutorial provides a context within which students may discuss and receive direction in the course of completing a major research paper, the senior thesis. At the end of the second semester, students present their research to the faculty and their fellow students.

**Additional Requirements.** Beyond the 22 credits of core requirements, each student must fulfill the following requirements: (1) a minimum of eight additional credits from other humanities program courses; (2) an additional 12 credits from humanities program offerings and/or from the offerings of other departments and programs, with the advice and approval of each student’s major adviser or the program coordinator. These offerings should bear some relation to the student’s particular interests and senior research paper, as seems appropriate in each individual case.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts
candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

**Humanities Minor**

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

Inquiries about the humanities major and minor should be directed to Catherine Peebles, coordinator of the humanities program, 320 Murkland Hall, (603) 862-3638; e-mail huma@unh.edu.

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**International Affairs Dual Major (IA)**

» [http://www.unh.edu/cie/international-affairs-dual-major-minor](http://www.unh.edu/cie/international-affairs-dual-major-minor)

The international affairs program is administered by the UNH Center for International Education. For program description, see Special University Programs.

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**Italian Studies (ITAL)**

» [http://cola.unh.edu/chi/italian-studies](http://cola.unh.edu/chi/italian-studies)

» Click to view course offerings

*Associate Professor:* Amy Boylan, Piero Garofalo  
*Lecturer:* Giuseppina Di Filippo, Kristen Swann

The Italian studies program offers courses in Italian language, culture, literature, history, and cinema, as well as courses on Italian American culture. Italian courses can also be used to fulfill Discovery Program requirements and the bachelor of arts foreign language proficiency requirement. In addition to the Italian studies major, an Italian studies minor is available.

The program provides opportunities, including studying in Italy, both to achieve high
competence in Italian language and culture and to apply these knowledge skills to other disciplines. The Italian studies program encourages independent and innovative thinking and research so that students may pursue and achieve individualized goals while they prepare for the challenges of thriving in the world community.

**Italian Studies Major**

**Requirements**

The Italian studies major curriculum consists of **10 courses (40 credits)** that include:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced language proficiency</td>
<td>ITAL 632, Advanced Conversation and Composition II, or equivalent proficiency</td>
<td>0-24</td>
</tr>
<tr>
<td>Sixteen credits minimum at upper level</td>
<td>600-level or above ITAL courses</td>
<td>16+</td>
</tr>
<tr>
<td>Study abroad</td>
<td>Minimum of one semester approved immersion experience abroad</td>
<td></td>
</tr>
<tr>
<td>Two complementary courses</td>
<td>Two courses from approved complementary disciplines of classics, humanities, or similar approved electives. Choose from the electives list below.</td>
<td>8</td>
</tr>
<tr>
<td>Discovery capstone requirement</td>
<td>Choose one of the following options: a. Thesis: ITAL 795 or ITAL 796, Independent Study in Italian Language and Literature b. Seminar: one 700-level ITAL course c. Internship: ITAL 595A: Practicum</td>
<td>4</td>
</tr>
<tr>
<td>Additional ITAL</td>
<td>Any additional ITAL courses that may be needed to reach 40 credits.</td>
<td></td>
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</tbody>
</table>

**Additional Requirements**

- The minimum grade for each major course is a C.
- Once students declare the Italian studies major, they must maintain a 2.5 cumulative grade point average in order to fulfill the study abroad requirement.
- Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

**List of Complementary Discipline Elective Courses**

This list of electives is not exhaustive. Additional courses may be used to satisfy the Italian studies major requirements after consultation with and subject to approval by the adviser.

**ARTS 572, Art of the Age of Humanism**

**ARTS 574, Architectural History**
ARTS 677, Early Medieval Art
ARTS 678, Romanesque and Gothic Art Early
ARTS 681, Renaissance Art in Italy
ARTS 682, High Renaissance and Mannerist Art in Italy
ARTS 683, Baroque Art in Southern Europe
ARTS 685, Graphic Art of the Renaissance and Baroque Periods
ARTS 6951, Problems in Visual Arts/Italy

ECON 645, International Economics

EDUC 500, Exploring Teaching

ENGL 619, Critical Approaches to Literature
ENGL 651, Comparative Literature

HIST 500, Introduction to Historical Thinking
HIST 501, Medieval Military History
HIST 521, Origins of Modern Science
HIST 540, Foundations of Medieval History: 300-1300CE
HIST 565, Women in Modern Europe
HIST 640, Holy War in the Holy Land: The Medieval Crusades
HIST 641, Europe after the Black Death
HIST 642, Religious Conflict in Early Modern Europe
HIST 652, Topics in European Intellectual History

LLC 551, Comparative Literature: Masterpieces of World Literature 1
LLC 552, Comparative Literature: Masterpieces of World Literature 2
LLC 791, Methods of Foreign Language Teaching

LING 605, Intermediate Linguistic Analysis

MUSI 501, History and Literature of Music
MUSI 502, History and Literature of Music
MUSI 715, Survey of Opera

NUTR 595, Mediterranean Diet and Culture

PHIL 570, Ancient Philosophy
PHIL 571, Medieval Philosophy
PHIL 580, Modern Philosophy from Descartes to Kant
PHIL 620, 20th Century European Philosophy
PHIL 652, Contemporary European Politics
POLT 560, World Politics

**Italian Studies Minor**

The Italian studies minor is offered by the Department of Classics, Humanities, and Italian Studies. It provides students with the opportunity to explore the language, culture, and society of Italy through an interdisciplinary program. The minor consists of five courses. At least four of these courses must be under the ITAL rubric. One course from a related field of study (subject to the approval of the Italian studies adviser) can be counted toward the minor. Students must demonstrate linguistic proficiency at the level of intermediate Italian (ITAL 504 or an equivalent). All courses for the Italian studies minor must be completed with a minimum grade of C.

The Italian studies minor is advantageous for applicants to graduate and professional schools in Italian, modern languages, linguistics, film, history, theater, philosophy, and law. It is also a valuable asset for careers in economics, international affairs, international business, fashion, teaching, communications, translation, interpretation, government, and Foreign Service.

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

**Study Abroad**

Students may participate in the UNH-in-Italy Program in the medieval city of Ascoli Piceno for a semester, year, or summer (see ITAL 685). The program allows students to register for UNH courses taught by UNH faculty. Students with advanced language skills also may enroll in courses at the University of Ascoli Piceno. Internships are available. There is no language prerequisite.

» [Click to view course offerings](#)

Japanese (JPN)▼

» [http://cola.unh.edu/llc/asian-studies](http://cola.unh.edu/llc/asian-studies)

» [Click to view course offerings](#)

_Senior Lecturer: Pamela B. Ikegami_

Interested students may take Japanese language and culture courses. While there are currently no Japanese major or minor options, courses can be used to fulfill electives, to fulfill requirements for the Asian studies minor, and, in some cases, to fulfill Discovery Program requirements and the bachelor of arts foreign language proficiency requirement.
Justice Studies (JUST)

» http://cola.unh.edu/justice-studies

» Click to view course offerings

Coordinator: Ellen S. Cohn
Affiliate Professor: Lynn Mather
Affiliate Assistant Professor: Lindsey Cole, Rick Trinkner
Clinical Professor: Charles T. Putnam
Clinical Associate Professor: Donna M. Perkins
Lecturer: Katherine Abbott


The justice studies dual major and minor is an interdisciplinary area that blends topics from humanities departments (e.g., philosophy), social science departments (e.g., psychology, sociology, women’s studies), departments that include both humanities and social science faculty (history, political science), and professionally oriented departments (education, family studies, social work). Topics studied include courts, family violence, rights, substance abuse, juvenile justice, school law, children as witnesses, hate crimes, and community policing. Students will be required to choose a first major before they will be able to declare justice studies as a second major. The goal is to produce graduates who have a higher level of knowledge about law and justice in American society and in the world so that they will mature into more knowledgeable and effective citizens. The justice studies dual major is intended for students who are looking for careers in the justice system or who seek graduate training in law or social sciences and humanities related to the law.

Justice Studies Dual Major

Required Courses

The dual major in justice studies requires students to take a minimum of eight courses (32 credits), each completed with a grade of a C- or better. Students are required to have a grade-
point average of a 2.5 or better before they can be accepted into the program. The dual major cannot be declared until after a first major has been declared. Students can count no more than two courses for both the first major and dual major, and students are not allowed to take more than two courses from any one department (except for JUST). An unlimited number of dual major courses can be used to satisfy Discovery requirements.

JUST 401, Introduction to Justice Studies
JUST 501, Research Methods (prerequisite: a statistics course)
JUST 601, Internship (seniors only) or JUST 602, Research Internship (seniors only)
JUST 701, Senior Seminar (writing-intensive course)

And one of the following three courses
POLT 407, Law and Society
POLT 507, Politics of Crime and Justice
SOC 515, Introductory Criminology

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

BIOL 420, Introduction to Forensic Science
CD 717, Law of Community Planning (offered every other year)
CMN 703, Seminar in Rhetorical Theory: Controversy and Reasoning in Law
CMN 765, Police Talk
EDUC 767, Students, Teachers, and the Law
FS 772, International Approaches to Child Advocacy
FS 776, Children, Adolescents, and the Law
FS 794, Families and the Law
HMP 734, Health Law
HIST 509, Law in American Life
HIST 600, Crime and Punishment in Modern History
HIST 609, Special Topics: American Legal History
HIST 645, 19th Century European Great Powers—Diplomacy and International Law
HMGT 625, Hospitality Law (only HMGT majors allowed)
HMGT 627, Employment Law
HUMA 650, Humanities and the Law: The Problem of Justice in Western Civilization
INCO 404F, Medicine and Law in the United States
JUST 401, Introduction to Justice Studies (required course)
JUST 405, Technology, Crime, and Society
JUST 501, Research Methods (required course; prerequisite: a statistics course)
JUST 520, Girls Gone Bad
JUST 530, Inside the Courtroom
JUST 550/551, Mock Trial (must take yearlong course)
JUST 591, Forensic Psychology (or PSYC 591)
JUST 595, Special Topics in Justice Studies (no more than two courses)
JUST 601/602, Internship/Research Internship (required course)
JUST 650/651, Budapest Study Abroad
JUST 695, Special Topics in Justice Studies (no more than two courses)
JUST 701, Senior Seminar (required course, writing-intensive course)
JUST 767, Students, Teachers, and the Law
JUST 795, Reading and Research (variable credit)
KIN 798, Sports Law
MGT 647, Business Law (only Business Administration, Accounting, and Business Administration and Management allowed)
MGT 648, Business Law II
NR 566, Wildlife Enforcement I
NR 718, Law of Natural Resources and Environment
PHIL 436, Social and Political Philosophy
PHIL 635, Philosophy of Law
PHIL 660, Law, Medicine, and Morals
PHIL 701, Value Theory
PHIL 730, Theories of Justice
PHIL 740, Advanced Topics in Philosophy of Law
POLT 407, Law and Society
POLT 444B, Cruel and Unusual
POLT 507, Politics of Crime and Justice
POLT 508, Supreme Court and the Constitution
POLT 513, Civil Rights and Liberties
POLT 520, Justice and the Political Community
POLT 547, Race and Justice in the Americas
POLT 548, The Drug Wars
POLT 568, Introduction to Intelligence (only when taught by Professor MacPherson)
POLT 660, Terrorism and Political Violence
POLT 701, The Courts and Public Policy
POLT 707, Criminal Justice Administration
POLT 708, Administrative Law
POLT 798B, Security Intelligence
PSYC 591, Forensic Psychology (or JUST 591)
PSYC 755, Psychology of Law
PSYC 756, Psychology of Crime and Justice
PSYC 791, Advanced Topics: Psychology of Delinquency
RMP 772, Law and Public Policy in Leisure Services (must have junior/senior status)
SOC 515, Introductory Criminology
SOC 525, Juvenile Crime and Delinquency
SOC 535, Homicide
SOC 620, Drugs and Society
SOC 650, Family Violence (must have junior/senior status)
SOC 655, Sociology of Law and Justice
SOC 656, Terrorism
SOC 715, Criminological Theory
SOC 720, Sociology of Drug Use
SOC 780, Social Conflict
SOC 797, Special Topics: Crime and Justice
SW 525, Introduction to Social Welfare Policy
WS 595, Special Topics: Violence Against Women
WS 595, Special Topics: Gender and the Law

The Discovery Program capstone requirement may be fulfilled by completing either JUST 601, Internship, or JUST 602, Research Internship, AND JUST 701, Senior Seminar.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Students who are interested in a dual major in justice studies will need to file an Intent to Dual Major form. The form is available in the justice studies office or can be downloaded from the program website at cola.unh.edu/justice-studies. Program offices are located in Room 202 of Huddleston Hall and are open Monday through Friday from 8 a.m. to 12 p.m. and 1 p.m. to 4:30 p.m. For more information, please contact Ellen Cohn at (603) 862-3197, e-mail ellen.cohn@unh.edu; or Debbie Briand at (603) 862-1716, e-mail justice.studies@unh.edu.

**Justice Studies Minor**

The minor in justice studies requires students to take a total of five courses (20 credits) each with a grade of C- or better in order to complete the program. Students are allowed to “double count” no more than two courses toward their major and minor, and are not allowed to take more than two courses from any one department (except for justice studies).
Required Courses
JUST 401, Introduction to Justice Studies

And one of the following three courses
POLT 407, Law and Society
POLT 507, Politics of Crime and Justice
SOC 515, Introductory Criminology

Elective Courses
Students are required to select three elective courses from the justice studies approved course list. This list is approved and published yearly by the Justice Studies Executive Committee. Departmental offerings that are currently accepted for the minor are listed above.

For program information on the forensics minor, see Interdisciplinary Programs.

» Click to view course offerings

Languages, Literatures, and Cultures (LLC)
» http://cola.unh.edu/llc

» Click to view course offerings

Chairperson: Holly R. Cashman
Professor: Nadine S. Bérenguier, Heidi Bostic, Edward T. Larkin, Lina Lee
Associate Professor: Arna Beth Bronstein, Holly R. Cashman, John M. Chaston, Carmen García de la Rasilla, Lori Hopkins, Jaume Martí-Olivella, Mary E. Rhiel
Assistant Professor: Daniel Chávez, Ileana Chirila, Wenjin Cui, Charles Vannette, Scott E. Weintraub
Affiliate Assistant Professor: Richard C. House
Senior Lecturer: Claire-Helene Gaudissart, Sarah E. Hirs, Pamela B. Ikegami, Ruwa Majid-Pokorny, Maria I. Rossi, Anna K. Sandstrom, Emilie Talpin
Lecturer: Jorge Abril Sanchez, Fernando Beleza, Ekaterina Burvikova, Elizabeth Hebbard, Derek Hubbard, Zhu Ling, Leticia Mantilla, Margarita Muñoz Piña, Qun Wan, Lihua Wang
Principal Lecturer: Linda J. Thomsen

The Department of Languages, Literatures, and Cultures offers undergraduate majors in French, French studies, German, Russian, and Spanish, plus coursework in Arabic, Chinese, Japanese, and Portuguese. An M.A. in Spanish is also offered.
In addition, the department sponsors several study abroad programs and a variety of co-curricular activities, including conversation hours and language clubs.

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

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

» Click to view course offerings

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Latin (LATN)

» http://cola.unh.edu/chi/program/latin-minor

» Click to view course offerings

Professor: Robert Scott Smith, Stephen M. Trzaskoma
Associate Professor: Stephen Andrew Brunet
Senior Lecturer: Richard E. Clairmont, Susan Curry
Lecturer: Anna Newman

A Latin and Latin teaching option is offered in the classics program of the Department of Classics, Humanities, and Italian Studies. A Latin minor is also offered by the classics program. Please see the classics program for complete details.

The coordinator is Scott Smith; Murkland Hall; Classics, Humanities and Italian Studies; (603) 862-2388; e-mail scott.smith@unh.edu.

» Click to view course offerings

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Linguistics (LING)
Coordinator: Rochelle Lieber
Assistant Professor: Rachel Burdin, Soo Hyon Kim
Lecturer: Sean Madigan
Core Faculty: Holly R. Cashman, Richard E. Clairmont, Willem A. deVries, Piero Garofalo, Mardi J. Kidwell, Lina Lee, Rochelle Lieber, Gregory McMahon, Paul McNamara, Christina Ortmeier-Hooper

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries between the sciences and the humanities. The program is an excellent liberal arts major or preprofessional major for education, law, medicine, clergy, and others. It is a particularly appropriate major for students who want to teach English as a second language. Dual majors with a foreign language, international affairs, business administration, and the like are quite feasible.

Students interested in the major or the minor should consult with the program coordinator or with any professor who teaches linguistics courses. To declare a major in linguistics, a student must meet with the linguistics coordinator to design a course of study. Information is available from the Advising Center, Hood House, and at cola.unh.edu/linguistics.

**Linguistics Major**

**Requirements for the Major**

*All of the following*

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

*One course in historical linguistics*

CLAS 506, Introduction to Comparative and Historical Linguistics
ENGL 752, History of the English Language
ITAL 733, History of Italian
RUSS 733, History and Development of the Russian Language
SPAN 798A, History of the Spanish Language

*Two years college study (or equivalent) of one foreign language*
One of the following cognate specialties
One year college study (or equivalent) of a second foreign language from a different language family or subfamily (Old English may count as the second foreign language if the first foreign language is not in the Germanic family)

PSYC 712, Psychology of Language (with its prerequisite, either PSYC 512, Psychology of Primates, or PSYC 513, Cognitive Psychology)

Two elective courses from the list below
Anthropology: 670, Language and Culture; 795, 796, Reading and Research in Anthropology: B. Anthropological Linguistics
Communication: 572, Language and Social Interaction; 666, Conversation Analysis
Communication Sciences and Disorders: 522, The Acquisition of Language; 738, Linguistics of American Sign Language; 775, Advanced Language Acquisition
English: 444F, Language Matters in America; 606, Languages of the World; 715, TESL: Theory and Methods; 716, Curriculum, Materials, and Assessment in English as a Second Language; 719, Sociolinguistics Survey; 727, Issues in Second Language Writing; 752, History of the English Language; 790, Special Topics in Linguistics; 791, English Grammar
LLC: 791, Methods of Foreign Language Teaching
Italian: 733, History of Italian
Latin: 795, 796, Special Studies in Latin (when topic is appropriate)
Linguistics: 444F, Language Matters in America; 606, Languages of the World; 620, Applied Experience in Linguistics; 719, Sociolinguistics Survey; 790, Special Topics in Linguistics; 795, 796, Independent Study
Philosophy: 550, Symbolic Logic; 618, Recent Anglo-American Philosophy
Psychology: 512, Psychology of Primates; 513, Cognitive Psychology; 712, Psychology of Language (Students may count either PSYC 512 or 513 toward the linguistics major or minor, but not both.)
Russian: 733, History and Development of the Russian Language
Spanish: 641, Spanish Phonetics; 645, Introduction to Spanish Linguistics; 798A, History of the Spanish Language

Discovery Program Capstone Experience
Either LING 779, Linguistic Field Methods, or LING 695, Senior Honors

Other courses may be substituted, with the permission of the student’s adviser and the linguistics committee, when they are pertinent to the needs of the student’s program.

The required minimum overall GPA in major coursework is 2.0.
Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

**Linguistics Minor**

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

**TESOL Minor**

A minor in TESOL also is available. The TESOL minor is a set of courses that are related to teaching English to speakers of other languages. This minor primarily is for students who are interested in teaching English to speakers of other languages, but it is also appropriate for students who are going into social work or other professions that require regular interaction with nonnative English speakers.

The TESOL minor will not certify students to teach in New Hampshire public schools (K-12). For that purpose, students must complete the ESL certification program that is offered at the graduate level by the Education and English departments. However, the coursework in this minor will provide a very good start for students who want to later pursue ESL certification or an M.A. in TESOL at UNH or another institution.

The TESOL minor requires the following five courses:

ENGL 715, TESL Theory and Methods
ENGL 716, Curriculum, Materials, and Assessment in ESL

*One course on the structure of English*

ENGL 791, English Grammar; or
ENGL/LING 405, Introduction to Linguistics

*Two electives from the list of approved TESOL electives*

COMM 522, Acquisition of Language
ENGL 791 or ENG/LING 405, whichever was not taken before
ENGL/LING 719, Sociolinguistics Survey
ENGL 727, Issues in Second Language Writing (WI)
ENGL 752, History of the English Language (WI)
ENGL/LING 790, Special Topics in Linguistics (when offered on a TESOL-related topic) (WI)
LLC 791, Methods of Foreign Language Teaching

Special topics courses that are related to TESOL
(The TESOL coordinator can provide you with a list of available courses for a particular semester.)

Students must receive a C- or better in each course and achieve a 2.0 GPA in the five courses.

No more than eight transfer credits will be accepted.

For more information about the TESOL minor, please contact Soo Hyon Kim, soohyon.kim@unh.edu, 603-862-5290.

» Click to view course offerings

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Music (MUSI, MUED)

» http://cola.unh.edu/music

» Click to view course offerings

Chairperson: Jenni Carbaugh Cook  
Professor: Michael J. Annicchiarico, Andrew A. Boysen, Lori E. Dobbins, Robert Haskins, William G. Kempster, Christopher Kies, Nicholas N. Orovich, David K. Ripley, Robert Stibler, Peggy A. Vagts

Associate Professor: Daniel Beller-McKenna, Jenni Carbaugh Cook, Mark S. DeTurk, Robert W. Eshbach, Elizabeth Gunlogson, Peter W. Urquhart

Assistant Professor: Nathan Jorgensen  
Senior Lecturer: Casey S. Goodwin, David Upham, Mark Zielinski  
Lecturer: Rose Pruiksma, Ryan Vigil

The Department of Music offers two degree programs: the bachelor of arts in music and the bachelor of music.

The University of New Hampshire Department of Music is an accredited institutional member of the National Association of Schools of Music.

Prospective majors in music are advised to contact the department for information on acceptance into the major.

All music students must earn grades of C- or better in all required music and music education courses. The required minimum overall GPA in required music and music education coursework is 2.0.
Bachelor of Arts in Music

The bachelor of arts in music program offers students an opportunity to major in music within the liberal arts curriculum. This program is intended for those who wish to pursue the serious study of music and to acquire at the same time a broad general education; it is recommended for those considering graduate study leading to master's or doctoral degrees.

To be admitted formally to the B.A. program, students must give evidence of satisfactory musical training by taking an admission audition. Students must declare music as a major before the beginning of the junior year, but it is highly recommended that they declare as early as possible, considering the large number of required courses.

The bachelor of arts degree is offered with three options: music liberal studies, performance study, and composition. Students enrolling in the B.A. music liberal studies program—a program that stresses the development of skills in analysis, writing, and critical thinking about a wide variety of music and the larger connection with history, culture, and society—are required to submit a writing sample and interview with one of the music liberal studies program faculty members. The writing sample should be non-fiction, preferably an assignment for a course in English, history, or a similar subject, 500 words or more in length. Students wanting to declare composition as their option must submit a music portfolio in addition to an audition on their major instrument.

For all options listed above, the Discovery Program capstone requirement is fulfilled by a final project or a public performance given during the senior year. For students in the music liberal studies option, there is a choice of completing a half recital or comparable final project; for students in the music composition option, a half lecture, half lecture-recital, or a half recital including at least one original composition; for those in performance study, a full recital.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. B.A. in music majors may use MUSI 502 (a required core course for the major) to satisfy the Inquiry Discovery requirement.

Requirements for the bachelor of arts in music and its options are listed below.

**Bachelor of Arts in Music Core Curriculum**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

MUSI 471-472  Theory I  6
MUSI 473-474  Ear Training I  2
*MUSI 475-476  Functional Piano I  2
MUSI 571-572  Theory II  6
MUSI 573-574  Ear Training II  2
*MUSI 575-576  Functional Piano II  2
MUSI 501-502  History and Literature of Music  6
MUSI 515  Music in World Cultures  4
MUSI 703-715  Advanced Music History  3
MUSI 771, 781 or 782  Counterpoint or Analysis: Form and Structure  3
MUSI 541-564, 741-764  Performance Study (Applied Lessons)  Variable
**MUSI 441-464  Performing Ensemble  Variable

*Students will be given the opportunity to test out of MUSI 475-476 and MUSI 575-576.

**A maximum of 8 ensemble credits may count toward graduation for all bachelor of arts in music students.

**Option 1, Music Liberal Studies**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*MUSI</td>
<td>771, 775-777, 779, 781-782, 703-715</td>
<td>Various advanced theory and music history courses</td>
<td>12 total</td>
</tr>
<tr>
<td><strong>MUSI</strong></td>
<td>536-564 or 736-764 and/or 441-464</td>
<td>Performance Study and/or Performing Ensemble</td>
<td>8 total</td>
</tr>
</tbody>
</table>

* Any combination of advanced theory and history (12 credits) in addition to the core curriculum.

** Any combination of performance and/or ensemble study (8 credits total).

+Degree program has plan approval from the National Association of Schools of Music.

**Option 2, Music Composition**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI</td>
<td>771, 779, 781-782</td>
<td>Advanced Music Theory</td>
<td>6 total</td>
</tr>
</tbody>
</table>
Students in the composition option, if not in a lesson studio, will attend composition seminar.

+Degree program has plan approval from the National Association of Schools of Music.

**Option 3, Performance Study**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI</td>
<td>731</td>
<td>Conducting</td>
<td>2</td>
</tr>
<tr>
<td>*MUSI</td>
<td>541-565/741-764</td>
<td>Performance Study (Applied Lessons)</td>
<td>16 total</td>
</tr>
<tr>
<td><strong>MUSI</strong></td>
<td>520-521</td>
<td>Diction for Singers I &amp; II</td>
<td>4 credits total</td>
</tr>
<tr>
<td>MUSI</td>
<td>441-464</td>
<td>Performing Ensemble</td>
<td>8 total</td>
</tr>
</tbody>
</table>

The language requirement for a student in the vocal performance option is satisfied by taking ITAL 401-402, GERM 401-402, or FREN 401-402.

* 2 credits per semester

** Required for vocal performance option only

+Degree program has final approval from the National Association of Schools of Music.

**Bachelor of Music Degree Program**

The bachelor of music degree program is offered to students who wish to develop their talent in performance, composition, or music education to a high professional level. The program is recommended to those considering graduate study leading to the M.M. or D.M.A. degrees. The music education option is part of the undergraduate certification program (see the Department of Education).

To be admitted to the B.M. program, students must demonstrate a high degree of musical competence or significant creative ability during an audition or examination. Selection is made on the professional requirements appropriate to each option. Students must formally declare the B.M. as a degree program before the beginning of the sophomore year. Continuation into the upper level of the program is subject to review by the department faculty.
Four degrees are offered in the bachelor of music curriculum: bachelor of music in music education*; bachelor of music in performance*; bachelor of music in composition+, and bachelor of music pre-teaching+.

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the performance option, a full recital is required.
- Students in the bachelor of music in performance degree program are required to perform a half junior recital.
- For those in composition, a full lecture, lecture-recital, or recital including at least one original composition is required.
- For students in the music education and pre-teaching option, a half recital is required.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.M. in music majors may use MUSI 502 (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 (a required core course for the major) to satisfy the World Cultures Discovery category requirement. Additionally, B.M. music education and preteaching majors may use MUSI 501 to satisfy the Fine and Performing Arts Discovery category requirement.

Additional requirements, grouped by option, are shown below the core curriculum table.

*Degree program has final approval from the National Association of Schools of Music.

+Degree program has plan approval from the National Association of Schools of Music.

**Bachelor of Music Core Curriculum**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI</td>
<td>471-472</td>
<td>Theory I</td>
<td>6</td>
</tr>
<tr>
<td>MUSI</td>
<td>473-474</td>
<td>Ear Training I</td>
<td>2</td>
</tr>
<tr>
<td>*MUSI</td>
<td>475-476</td>
<td>Functional Piano I</td>
<td>2</td>
</tr>
<tr>
<td>MUSI</td>
<td>571-572</td>
<td>Theory II</td>
<td>6</td>
</tr>
<tr>
<td>MUSI</td>
<td>573-574</td>
<td>Ear Training II</td>
<td>2</td>
</tr>
<tr>
<td>*MUSI</td>
<td>575-576</td>
<td>Functional Piano II</td>
<td>2</td>
</tr>
<tr>
<td>MUSI</td>
<td>501-502</td>
<td>History &amp; Literature of Music</td>
<td>6</td>
</tr>
<tr>
<td>MUSI</td>
<td>515</td>
<td>Music in World Cultures</td>
<td>4</td>
</tr>
<tr>
<td>MUSI</td>
<td>731</td>
<td>Conducting</td>
<td>2</td>
</tr>
</tbody>
</table>

Bachelor of Music in Performance (Voice)+

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUED</td>
<td>741</td>
<td>Techniques &amp; Methods in Choral Music</td>
<td>2</td>
</tr>
<tr>
<td>MUED</td>
<td>755</td>
<td>Vocal Pedagogy</td>
<td>2</td>
</tr>
<tr>
<td>MUSI</td>
<td>520-521</td>
<td>Diction for Singers I and II</td>
<td>4 total</td>
</tr>
<tr>
<td>MUSI</td>
<td>713 or 715</td>
<td>Art Song or Survey of Opera</td>
<td>3</td>
</tr>
<tr>
<td>*MUSI</td>
<td>545/745</td>
<td>Performance Study (voice lessons)</td>
<td>25 total</td>
</tr>
<tr>
<td>**MUSI</td>
<td>441, 442, or 448</td>
<td>Performing Ensemble</td>
<td>8 total</td>
</tr>
<tr>
<td>ITAL, GERM, or FREN</td>
<td>401-402</td>
<td>Elementary Italian, German, or French</td>
<td>8 total</td>
</tr>
</tbody>
</table>

* Three credits of lessons each semester until the student's senior recital semester; then it is 4 credits.

** Four credits must be MUSI 441; the remaining 4 credits must be 441, 442, or 448.

+Degree program has final approval from the National Association of Schools of Music.

Bachelor of Music in Performance (Piano)+

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUED</td>
<td>743</td>
<td>Material &amp; Methods in Piano Music</td>
<td>2</td>
</tr>
<tr>
<td>*MUSI</td>
<td>771, 781, or 782</td>
<td>Counterpoint or Analysis: Form &amp; Structure</td>
<td>3</td>
</tr>
<tr>
<td>**MUSI</td>
<td>775-777, or 779</td>
<td>Compostion or Orchestration</td>
<td>3</td>
</tr>
</tbody>
</table>
**MUSI  700 Level**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 795V</td>
<td>Special Studies - advanced piano pedagogy</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 795E</td>
<td>Special Studies - piano literature</td>
<td>1-2</td>
</tr>
<tr>
<td>MUSI 455</td>
<td>Piano Ensemble</td>
<td>4 total</td>
</tr>
</tbody>
</table>

***MUSI 541/741***

| Performance Study (piano lessons) | 25 total |

| MUSI 441-464 | Performing Ensemble | 4 total |

* A B.M. piano performance major must take a total of two of these three courses: 771, 781, and 782.

** A B.M. piano performance major must take an additional 700-level music history or music theory course.

*** Three credits of lessons each semester until the semester of the senior recital; then it is 4 credits.

*Degree program has final approval from the National Association of Schools of Music.*

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*MUED</td>
<td>745-751</td>
<td>Techniques &amp; Methods</td>
<td>2-3</td>
</tr>
<tr>
<td>**MUSI</td>
<td>700-level</td>
<td>Advanced Music History or Advanced Music Theory</td>
<td>3</td>
</tr>
<tr>
<td>***MUSI</td>
<td>541-546/741-764</td>
<td>Performance Study</td>
<td>25 total</td>
</tr>
<tr>
<td>MUSI</td>
<td>441-464</td>
<td>Performing Ensemble</td>
<td>12 total</td>
</tr>
</tbody>
</table>

* B.M. instrumental performance majors take one methods class in the appropriate instrumental family, e.g., a trumpet player would take MUED 749, Techniques & Methods in Brass Instruments, to fulfill this requirement.

** This is in addition to the advanced music history and advanced music theory class already required.

*** Three credits of lessons are taken each semester until the student's senior recital semester; then it is 4 credits.
+Degree program has final approval from the National Association of Schools of Music.

Bachelor of Music in Composition+

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI</td>
<td>771, 772, 781, 782</td>
<td>Advanced Music Theory</td>
<td>9 total</td>
</tr>
<tr>
<td>MUSI</td>
<td>775-776</td>
<td>Composition</td>
<td>4 total</td>
</tr>
<tr>
<td>MUSI</td>
<td>777</td>
<td>Advanced Composition</td>
<td>12 total</td>
</tr>
<tr>
<td>MUSI</td>
<td>779</td>
<td>Orchestration</td>
<td>3</td>
</tr>
<tr>
<td>*MUSI</td>
<td>795</td>
<td>Advanced Music Theory</td>
<td>3</td>
</tr>
<tr>
<td>MUSI</td>
<td>795</td>
<td>Electronic Music</td>
<td>2</td>
</tr>
<tr>
<td>**MUSI</td>
<td>703-715</td>
<td>Advanced Music History</td>
<td>3</td>
</tr>
<tr>
<td>MUSI</td>
<td>541-564/741-764</td>
<td>Performance Study (Applied Lessons)</td>
<td>8 total</td>
</tr>
<tr>
<td>MUSI</td>
<td>441-464</td>
<td>Performing Ensemble</td>
<td>8 total</td>
</tr>
</tbody>
</table>

* This is in addition to the other 700-level theory classes outlined above.

** This is in addition to the core required 700-level music history class.

Students in the bachelor of music in composition degree program may use a maximum of 8 ensemble credits toward graduation.

Students in the bachelor of music in composition degree are required to attend 8 semesters of composition seminar.

+Degree program has plan approval from the National Association of Schools of Music.

Bachelor of Music (Music Education)

The bachelor of music degree in music education provides a route to undergraduate certification leading to state of New Hampshire teacher certification in music, grades K-12 (cert. #612.13). New Hampshire also participates in a reciprocal agreement with many other states: the Interstate Certification Compact.

Continuation in the B.M. music education program is made with the recommendation of the appropriate faculty members and contingent upon personal commitment to the teacher licensure program.

Students in music education must maintain an overall minimum 2.8 grade-point average at the
time of application for student teaching (February 15 of junior year). Any education course taken for a teacher licensure requirement must be completed with a B- or better.

B.M. music education majors may use MUSI 501 (a required core course for the major) to satisfy the Fine and Performing Arts Discovery category requirement. In addition, they may use MUSI 502 (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 (a required core course for the major) to satisfy the World Cultures Discovery category requirement.

The four-year bachelor of music in music education curriculum is highly structured due to the number of required courses to complete. In the table below is the list of additional classes required to earn a degree and a certificate to teach. Students may elect a vocal/choral or instrumental emphasis. See curriculum chart for differing requirements.

**Click to view course offerings**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUED</td>
<td>741</td>
<td>Techniques &amp; Methods in Choral Music</td>
<td>2</td>
</tr>
<tr>
<td>MUED</td>
<td>745</td>
<td>Techniques &amp; Methods in String Instruments</td>
<td>2</td>
</tr>
<tr>
<td>MUED</td>
<td>747</td>
<td>Techniques &amp; Methods in Woodwind Instruments</td>
<td>2 (vocal) or 3 (instrumental)</td>
</tr>
<tr>
<td>MUED</td>
<td>749</td>
<td>Techniques &amp; Methods in Brass Instruments</td>
<td>2</td>
</tr>
<tr>
<td>MUED</td>
<td>751</td>
<td>Techniques &amp; Methods in Percussion Instruments</td>
<td>2</td>
</tr>
<tr>
<td>MUED</td>
<td>755</td>
<td>Vocal Pedagogy</td>
<td>2 (vocal) or 1 (instrumental)</td>
</tr>
<tr>
<td>MUED</td>
<td>765</td>
<td>Instrumental Music Methods</td>
<td>2 Instrumental emphasis only</td>
</tr>
<tr>
<td>MUED</td>
<td>790</td>
<td>Teaching Elementary School Music</td>
<td>2</td>
</tr>
<tr>
<td>MUED</td>
<td>791</td>
<td>Teaching Secondary School Music</td>
<td>2</td>
</tr>
<tr>
<td>MUSI</td>
<td>520</td>
<td>Diction I</td>
<td>2 Vocal emphasis only</td>
</tr>
<tr>
<td>MUSI</td>
<td>732</td>
<td>Conducting</td>
<td>2 total</td>
</tr>
<tr>
<td>MUSI</td>
<td>779</td>
<td>Orchestration</td>
<td>3</td>
</tr>
</tbody>
</table>
Students in the bachelor of music in music education degree program may use a maximum of 8 ensemble credits toward graduation. Of the 8 credits in ensemble performance (MUSI 441-464) required during the course of study, it is required that at least 4 credits will be from the following: Concert Choir (MUSI 441), Symphony (MUSI 450), Wind Symphony (MUSI 452), Symphonic Band (MUSI 453), and/or Concert Band (MUSI 451). At least 1 credit of performance in a jazz ensemble (MUSI 460) and 1 credit of Marching Band (MUSI 454) are highly desirable.

+Degree program has final approval from the National Association of Schools of Music.

**Bachelor of Music (Pre-Teaching)**

The bachelor of music pre-teaching degree is the program of choice for most students seeking a five-year, combined bachelor’s and master’s degree program that includes certification to teach music in the public schools. Students will complete all of the skill and knowledge content requirements in this undergraduate program leaving a year-long internship and some advanced study in music and education for the fifth year. The B.M. pre-teaching curriculum is the same as the B.M. music education curriculum with the lone exception being the omission of student teaching during the undergraduate years. Therefore, students should enroll as B.M. music education when admitted and change to B.M. pre-teaching in their junior year.

**Bachelor of Music Pre-Teaching Curriculum**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUED</td>
<td>741</td>
<td>Techniques &amp; Methods in Choral Music</td>
<td>2</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>MUED 745</td>
<td>Techniques &amp; Methods in String Instruments</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MUED 747</td>
<td>Techniques &amp; Methods in Woodwind Instruments</td>
<td>2 (vocal) or 3 (instrumental)</td>
<td></td>
</tr>
<tr>
<td>MUED 749</td>
<td>Techniques &amp; Methods in Brass Instruments</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MUED 751</td>
<td>Techniques &amp; Methods in Percussion Instruments</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MUED 755</td>
<td>Vocal Pedagogy</td>
<td>2 (vocal) or 1 (instrumental)</td>
<td></td>
</tr>
<tr>
<td>MUED 765</td>
<td>Instrumental Music Methods</td>
<td>2 Instrumental emphasis only</td>
<td></td>
</tr>
<tr>
<td>MUED 790</td>
<td>Teaching Elementary School Music</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MUED 791</td>
<td>Teaching Secondary School Music</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MUSI 520</td>
<td>Diction I</td>
<td>2 Vocal emphasis only</td>
<td></td>
</tr>
<tr>
<td>MUSI 732</td>
<td>Conducting</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MUSI 779</td>
<td>Orchestration</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MUSI 541-564/741-764</td>
<td>Performance Study (Applied Lessons)</td>
<td>8 total</td>
<td></td>
</tr>
<tr>
<td>*MUSI 441-464</td>
<td>Performing Ensemble</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>EDUC 500</td>
<td>Exploring Teaching</td>
<td>4</td>
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</tr>
<tr>
<td>EDUC 700</td>
<td>Educational Structure &amp; Change</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EDUC 701</td>
<td>Human Development and Learning: Educational Psychology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EDUC 705</td>
<td>Alternative Perspectives on the Nature of Education</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EDUC 751B</td>
<td>Educating Exceptional Learners: Secondary</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

*Students in the bachelor of music pre-teaching degree program may use a maximum of 8 ensemble credits toward graduation. Of the 8 credits in ensemble performance (MUSI 441-464) required during the course of study, it is required that at least 4 credits will be from the following: Concert Choir (MUSI 441), Symphony (MUSI 450), Wind Symphony (MUSI 452), Symphonic Band (MUSI 453), and/or Concert Band (MUSI 451). At least 1 credit of performance in a jazz ensemble (MUSI 460) and 1 credit of Marching Band (MUSI 454) are highly desirable.

+Degree program has plan approval from the National Association of Schools of Music.
Minor in Music

All students wishing to receive a minor in music must complete a minimum of 20 credits of coursework in music, of which the following are required: MUSI 471-474 or MUSI 411-412; and any two of the following: MUSI 401, 402, 403, 404, 405, 444, 501, 502, 515, or 610.

» Click to view course offerings

Music Education (MUED)

» Click to view course offerings

See music section for program description.

» Click to view course offerings

Neuroscience and Behavior (NSB)

» http://cola.unh.edu/interdisciplinary-studies/program/neuroscience-and-behavior-bs

This interdisciplinary major is jointly housed in the College of Liberal Arts and the College of Life Sciences and Agriculture.

See description under College of Life Sciences and Agriculture for full program information.

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Philosophy (PHIL)

» http://cola.unh.edu/philosophy

» Click to view course offerings

Chairperson: Nicholas J. Smith
Professor: Willem A. deVries, R. Valentine Dusek, Nicholas J. Smith, Charlotte Elizabeth Witt
Affiliate Professor: Chris Brooks
Associate Professor: Drew Christie, Paul McNamara, Ruth J. Sample, Timm A. Triplett
Assistant Professor: Subrena Smith
Senior Lecturer: Jennifer K. Armstrong, Phillip Deen
Lecturer: Matt Dowd, William Seeley

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

Philosophy has always been at the heart of liberal education, deepening and enriching the lives of those who pursue it. The philosophy major provides students with the opportunity to confront a wide variety of questions, especially those that cannot be dealt with in the framework of other disciplines. Such questions include those about the ultimate nature of reality: Does God exist? Are minds distinct from bodies? Are there more things between heaven and Earth than are dreamed of in science? Other questions probe what it is to know: Do we know that material bodies external to our minds exist? What does it mean to justify a belief? Still other questions are about how we ought to be or act: What is a good person? Are there moral rules? How are they justified? Must we obey them?

Philosophy also concerns itself with other disciplines: What makes something a work of art? What distinguishes a scientific theory from a religious theory or myth? Is capitalism amoral? Is legal authority moral or political?

The Department of Philosophy offers a wide range of courses exposing students to the full scope of philosophical activity. Grappling with major primary texts from the history of philosophy is an important emphasis of the program, for philosophy today is the continuation of a conversation that extends back to the ancient Greeks and the Vedic scriptures. Philosophy also always has wrestled with cutting-edge topics emerging in the current culture. Some recent examples are: What are the prospects for machines with mental lives? What are the implications of new views in cosmology? How do we handle the pressing ethical dilemmas brought on by emerging medical technologies, or by the historically unparalleled rate of destruction of the Earth’s environment? Are gender and race socially constructed concepts rather than biological concepts?

Career Opportunities

Philosophy offers excellent training for a variety of careers by providing a unique combination of lifelong skills: analytic and interpretive skills; critical reasoning skills; the enhanced capacity to detect problems and to solve them; excellence in oral and written presentation and defense of one’s ideas; skill at asking probing and central questions about the ideas of others (as well as about one’s own ideas); and skill at effectively understanding, organizing, and evaluating complex systems of thought.

Considering these skills, it is not surprising that philosophy majors score in the very top
percentiles on the GRE, LSAT, and GMAT standardized exams. For example, in a recent GRE study, philosophy majors were ranked among the very top majors in their mean scores on the verbal, analytic, and quantitative components of the exam; in a recent LSAT study, philosophy majors had a higher mean score than even prelaw majors; and for recent GMAT tests, the mean score for philosophy majors exceeded that of any type of business major. Virtually no other major does this well on such a wide cross-section of standardized exams.

These results reflect the fact that the unique combination of skills acquired in philosophy, along with the breadth of subject matter, provide the philosophy major with an extremely adaptive and resilient mind-set. Philosophy provides superior preparation for a variety of vocational and professional endeavors, and perhaps more importantly, for being a professional.

**The Philosophy Major**

Majors must take a total of 10 philosophy courses. The following courses constitute a core required of all majors: PHIL 412, 500, 530, 570, 580, and one additional course in the history of philosophy (525, 571, 610, 616, 618, 620, or an approved seminar). Majors also must take two seminars (e.g., courses at the 700 level). Please note that a single course can satisfy multiple requirements for the major. PHIL 495 and 795 normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.

The Discovery capstone requirement may be fulfilled by completing two 700-level seminars of the student's choice (as listed just above under "Core Requirements"), provided that at least one of these, if not both, is taken in the senior year. (As with all courses counting for the major, a grade of C- or better is required.)

Note that it is in the nature of 700-level seminars to presuppose by default that students have completed the main 400-level and 500-level core requirements (412, 500, 530, 570, 580) and so free reference is made to materials, views, techniques, etc. covered in those lower-level core requirements.

Although not required, students are strongly encouraged to consider the possibility of doing honors-in-major (and thus writing a thesis or an honors portfolio), and/or presenting research at the Undergraduate Research Conference, and/or fulfilling an undergraduate research grant in their senior year. This is especially encouraged for students considering graduate school in philosophy.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.
Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major and with the exception of PHIL 412, which may be used to satisfy both.

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

**Graduate Preparatory Emphasis**
This emphasis is strongly recommended for students who plan to do graduate work in philosophy. Beyond the 10 program courses, such students should select, with their advisers’ approval, two additional philosophy courses above the 400 level, for a total of 12 courses. One of these should be PHIL 550.

**Distinction on Senior Thesis**
Distinction on Senior Thesis is granted by a unanimous determination of the student’s committee that the thesis exceeds A-level work and is worthy of special recognition.

**Honors in Philosophy**
To receive Honors in Philosophy, students will be expected to pursue a philosophy curriculum that demands greater depth and rigor than what is required by the major; they will be expected to complete the curriculum at a consistently high level of achievement; they will be expected to engage in independent study and research (under the supervision of a faculty member) beyond the requirements of their coursework; and they will be expected to present and defend a culminating project that synthesizes aspects of their study. Students can demonstrate these expectations in either of two ways: a thesis option or a portfolio option. Consult the Department of Philosophy website for more details.

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

» **Click to view course offerings**

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**Political Science (POLT)**
Chairperson: Marla A. Brettschneider
Professor: Marla A. Brettschneider, Melvin J. Dubnick, Mark W. Huddleston
Affiliate Professor: Kenneth M. Johnson
Associate Professor: John R. Kayser, Alylnna J. Lyon, Mary Malone, Lawrence C. Reardon, Dante J. Scala, Susan J. Siggelakis, Jeannie L. Sowers
Affiliate Associate Professor: Andrew E. Smith, James Varn
Assistant Professor: Daniel E. Bromberg, Elizabeth Carter, Divya Devasher
Senior Lecturer: Richard Aliano, Tama Andrews, Lionel R. Ingram, Andrew M. Macpherson
Lecturer: Carolyn Arcand

The study of government and politics, to which the courses and seminars of the Department of Political Science are devoted, includes the development of knowledge of political behavior by individuals and groups as well as knowledge about governments: their nature and functions, their problems and behavior, and their interactions—at the national and international levels and at the local, state, and regional levels.

Much of the learning offered by the Department of Political Science also can be regarded as essential for good citizenship, since political knowledge helps to explain the formal and informal institutions by which we are governed and the forces that lead to policy decisions, and also seeks to clarify the issues and principles that encourage people toward political involvement. It contributes to the store of knowledge necessary for informed citizenship. In addition, such learning is especially valuable to students planning to enter local or national government or other public service, including the Foreign Service, and it will be of great help to those who intend to study law and enter the legal profession. For teaching, particularly at the college level, and for many types of government service, graduate work may be indispensable. An undergraduate major in political science will provide a helpful foundation for any further study of politics and related fields in the social sciences and humanities. Such an emphasis also will be valuable for students seeking careers in journalism, international organizations, and the public affairs and administrative aspects of labor, financial, and business organizations.

The major program in political science consists of at least 10 courses (40 credits) and not more than 12 courses (48 credits). The minimum grade requirement is C- per course. Any grade lower will not count toward major. Courses are to be distributed in the following way:

1. Three 400-level courses: 401, 402, and 403. Once they declare the major, students must complete these three courses within the first calendar year. POLT 407 and any of the 444’s do
not count toward the major.

2. Six 500-level courses. Of these, at least one shall be chosen from each of the four subfields in which the department’s courses are organized: American politics, political thought, comparative politics, and international politics. Students may use a microeconomics course (ECON 402 or 605) or macroeconomics course (ECON 401 or 611) to count as the fifth or sixth electives in this sequence. Additional economics courses will be considered by petition. Only one economics course can count toward this requirement.

3. One 700-level course.

The Discovery Program capstone requirement may be fulfilled by completing any 700-level political science course.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. If students substitute an economics course for a POLT 500-level course, this economics course cannot be used to satisfy Discovery category requirements.

**Five-year B.A./M.A. Program**

The five-year political science B.A./M.A. program (also known as a “dual degree, early admission” program) aims to (1) improve opportunities for excellent undergraduates to prepare for competitive Ph.D. programs or add an additional credential before entering a competitive job market; and (2) allow students interested in politics to advance and further specialize their political science education in only one additional year at UNH.

Students must fulfill all programmatic requirements for the current master’s degree program, as well as fulfill all programmatic requirements for their bachelor’s degree.

Interested students must submit a full graduate application by February 15 of their junior year. Minimum GPA required for admission is 3.2.

For additional information you may contact the graduate coordinator, Tama Andrews, (603) 862-2321, tama.andrews@unh.edu.

**Minor in Political Science**

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

The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor. Students wishing to use transfer credits from abroad or other universities should meet with a political science adviser to determine eligibility toward the minor.

**Internships and Advanced Study**

In addition to the courses regularly offered, the department could have available selected topics, advanced study in political science, and internships. Interested students should check the department's website to learn about the offerings for a given semester.

The department also offers several internship opportunities that give students experience in various aspects of government, policy making, and the legal system at the local, state, and national levels. Student must have taken certain course prerequisites for each kind of internship. In addition, students must have junior or senior standing and normally have a 3.2 average or higher to be eligible for consideration. Students desiring to undertake internships must fully comply with the departmental guidelines as stated on the application forms, which are available on the department website. Applications must be received by the first day of the preregistration period prior to the semester the course will be undertaken. Internships can only fulfill non-subfield requirements at the 500-level. Washington placements are made either through the Department of Political Science or through the Washington Center located in the National Student Exchange Office in Hood House; major credit must be arranged through the department.

**Political Science Language Requirement**

The bachelor of arts degree at the University of New Hampshire requires that a student satisfy the foreign language proficiency requirement. The requirement may be met by demonstrating language proficiency equal to a one-year college-level course (401 and 402, 403 and 503, or 503 and above in spoken language).

The Department of Political Science does not allow American Sign Language (ASL) to count toward the language requirement effective for students who declare the major as of fall 2007. Exceptions to this must be petitioned and approved by the Department of Political Science’s undergraduate committee and a student’s adviser.

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Portuguese (PORT)▼
» http://cola.unh.edu/llc/portuguese-studies

» Click to view course offerings

Lecturer: Fernando Beleza

The Department of Languages, Literatures, and Cultures offers Portuguese language and literature courses at the elementary and intermediate level. For program and course descriptions, see the Languages, Literatures, and Cultures website.

» Click to view course offerings

Psychology (PSYC)▼
» http://cola.unh.edu/psychology

» Click to view course offerings

Chairperson: William Wren Stine
Associate Professor: J. Pablo Chavajay, Brett M. Gibson, Michelle D. Leichtman, Jill A. McGaughy, Carolyn J. Mebert, William Wren Stine
Research Associate Professor: Lisa M. Jones, Kimberly J. Mitchell
Assistant Professor: Sergios Charntikov, Katie Edwards, Robert S. Ross
Affiliate Assistant Professor: Arturo Andrade
Clinical Associate Professor: Joan Glutting
Clinical Assistant Professor: Susan Hess
Senior Lecturer: Robert P. Eckstein, Mark J. Henn, Michael A. Mangan, Kelly Peracchi
Lecturer: Elizabeth Caldwell, Kari Dudley, Maureen Gillespie, Katerina Karaivanova, Jan Tornick

The psychology major provides students with a broad education, while also allowing some specialization. The program exposes students to the scientific study of behavior and encourages an increased understanding of the behavior of humans and animals.

Students who wish to declare psychology as a major after enrolling in the University should consult with the department’s academic counselor for application procedures and criteria.
Students majoring in psychology must complete 44 credits with a minimum grade of C- in each course and a 2.0 overall average in all major requirements. The psychology department does not accept other departments’ statistics courses toward the psychology major. Students who have taken a statistics course other than PSYC 402 must pass a competency exam in order to apply to the major and/or register for PSYC 402. Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. (PSYC 401 cannot be used to fulfill a Social Science; PSYC 571 cannot be used to fulfill a Historical Perspective.) Students who use PSYC 402 for the QR Discovery requirement must take an additional psychology course that is eligible for major credit to replace PSYC 402 in the major. (PSYC 444 and 595 may NOT be used for this purpose.)

**Requirements for the Major**

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

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

   *Two courses from Group I*
   - PSYC 511, Sensation and Perception
   - PSYC 512, Psychology of Primates
   - PSYC 513, Cognition
   - PSYC 521, Behavior Analysis
   - PSYC 522, Behaviorism (offered in Manchester only)
   - PSYC 531, Psychobiology

   *Two courses from Group II*
   - PSYC 552, Social Psychology
   - PSYC 553, Personality Psychology
   - PSYC 561, Abnormal Behavior
   - PSYC 571, Pioneers of Psychology
   - PSYC 581, Child Development
   - PSYC 582, Adult Development and Aging (offered in Manchester only)

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

   *Two courses from Group I*
   - PSYC 702, Advanced Statistics (if not used in group II)
   - PSYC 705, Tests and Measurements (if not used in group II)
   - PSYC 710, Visual Perception
PSYC 712, Psychology of Language
PSYC 713, Psychology of Consciousness
PSYC 720, Animal Cognition
PSYC 722, Behaviorism, Culture, and Contemporary Society
PSYC 731, Brain and Behavior
PSYC 733, Drugs and Behavior
PSYC 735, Neurobiology of Mood Disorders
PSYC 736, Attention Disorders
PSYC 737, Behavioral Medicine
PSYC 741 or 741W, Advanced Topics: examples: Cognitive Neuroscience, Behavioral Neuroscience, ReShaping People: A History

Two courses from Group II
PSYC 702, Advanced Statistics *
PSYC 705, Tests and Measurements *
PSYC 755, Psychology and Law
PSYC 756, Psychology of Crime and Justice
PSYC 758, Health Psychology
PSYC 762, Counseling
PSYC 763, Community Psychology
PSYC 775, Madness in America
PSYC 780, Prenatal Development/Infancy
PSYC 783, Cognitive Development
PSYC 785, Social Development
PSYC 791 or 791W, Advanced Topics: examples: Close Relationships, Culture and Human Development, Psychology and Race, Psychology for Sustainability, Autobiographically Memory
PSYC 793, Internship

*PSYC 702 & 705 can be used for group I or group II but cannot be used for the same group.

Note: Most offerings have one or more prerequisite courses. Students (with the help of their advisers) are expected to select breadth courses that will later enable them to select depth courses appropriate to their interests and career goals.

The Discovery Program capstone requirement, taken during the senior year, may be fulfilled by completing one of the following options: (1) the honors-in-major program with honors project; honors seminar, and research presentation; (2) a 4-credit capstone designated independent study project; (3) PSYC 793, Internship; (4) Capstone Seminar; (5) Capstone-designated 700-level course.

Transfer students who elect to major in psychology must complete at least 24 credits in the program at UNH to qualify for the degree in psychology. Transfer students must earn a total of
44 approved credits for completion of the psychology major. The distribution of these credits will be determined by the department’s academic counselor. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major. Only courses taken in a psychology department can be transferred into the psychology major. Of the four 700-level courses required for the major, at least three must be taken at UNH.

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

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

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

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

See the department coordinator for further details on the major or minor in psychology.

**Advising System**

Students who enter the University as psychology majors are considered “provisional majors” and are advised in the University Advising and Career Center through their freshman year. Provisional psychology majors are encouraged to complete PSYC 401 and 402 during their first year. During the summer after the freshman year, provisional psychology majors’ advising files are transferred to the psychology department. Provisional majors then “confirm” their major in psychology during the fall semester of their sophomore year by attending a major orientation session scheduled by the department. “Provisional majors” are accorded all the rights and privileges of any psychology major. Undergraduate advising in the department is conducted jointly by the department coordinator and the full-time faculty. The department coordinator has primary responsibility for advising newly declared freshman and sophomore psychology majors and is the initial contact for all majors in a state of transition (readmitted, transfer, newly declared, etc.). The department coordinator assists students in all phases of educational
planning and decision making, including registration, long-range academic planning, degree and program requirements, and career selection and planning. Continuing junior and senior psychology majors are assigned to a faculty adviser with appropriate consideration for student preferences. The advising relationship with a faculty member is designed to encourage refining career and educational decisions.

**Undergraduate Awards for Majors**

Each year the faculty chooses psychology undergraduates as the recipients of the following awards: the Herbert A. Carroll Award for an outstanding senior in psychology, the George M. Haslerud Award for an outstanding junior in psychology, and the Fuller Foundation Scholarship for an outstanding junior in psychology with demonstrated interests in clinical psychology. Psychology majors with at least a 3.2 grade-point average are eligible for these awards. Faculty nominate students from the eligibility list and final selection of recipients is made by vote of the full-time psychology faculty.

**Honors Program in Psychology**

The Department of Psychology sponsors an honors program for outstanding students in the major. Students may apply to the honors program in psychology in their sophomore or junior year.

**Eligibility criteria include**

1. Overall grade-point average of 3.2 or above and 3.4 in major courses
2. Completion of PSYC 401, 402, and 502 with a grade of B or above in each

**Requirements of the program include**

1. Designate three of the four 700-level psychology courses as honors or equivalent
2. PSYC 797, Senior Honors Tutorial (fall)
3. PSYC 799, Senior Honors Thesis (spring)

Students interested in applying to the honors program should contact the department coordinator by the end of their sophomore year.

**Undergraduate Research Conference**

The Department of Psychology sponsors the annual George M. Haslerud Undergraduate Research Conference each spring. Undergraduate honors students present their theses at the conference. Contact the department coordinator for more information.

» **Click to view course offerings**
Religious Studies (RS)
» http://cola.unh.edu/interdisciplinary-studies/program/religious-studies-minor

» Click to view course offerings

For program description, see religious studies interdisciplinary minor.

» Click to view course offerings

Russian (RUSS)
» http://cola.unh.edu/llc/program/russian-ba

» Click to view course offerings

Associate Professor: Arna Beth Bronstein
Lecturer: Ekaterina Burvikova

The Russian major provides students with an opportunity to study one of the world’s most important languages, its literature, and its culture. In addition to the intrinsic value of Russian language, literature, and culture as a liberal arts experience, the Russian major leads to a number of careers, such as teaching, translation and interpreting, government, and the Foreign Service. It is also a valuable asset in preparing for careers in law, economics, and international trade, and it can serve as a double major with business administration, international affairs, the natural and physical sciences, and other liberal arts fields such as English, history, political science, sociology, philosophy, theatre, communication, linguistics, and other foreign languages.

New students will be assigned to the proper course after consultation with the Russian faculty. A student may not receive UNH credit for elementary Russian courses if he or she has had two or more years of secondary school Russian; however, a student may petition the Russian program to be admitted to the 400-level courses for credit. In the 503-790 range, a grade of C or better is required to advance to the next course in the language series (503, 504, 631, 632, 790).

The Russian major consists of a minimum of 40 credits above RUSS 504. Specific course requirements are RUSS 425, 521, 522, 601, 631-632, 691, and 790, and two or three electives, depending upon choice of option and concentration. Majors are required to spend a semester
or summer on an approved study abroad program in Russia. Majors are required to take RUSS 631-632 and at least one 700-level Russian course at the Durham campus. The Discovery Program capstone requirement may be fulfilled by completing one of the following: the honors-in-Russian thesis, RUSS 721, RUSS 725, RUSS 733, or RUSS 790. Transfer students must earn a minimum of 12 major credits at the Durham campus.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. However, majors may use the required study abroad experience to satisfy the World Cultures Discovery category requirement. Russian majors may take RUSS 521 to satisfy both a Discovery Inquiry requirement and a major requirement.

The required minimum overall GPA in major coursework is 2.0.

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

Students wishing to major in Russian should contact the program coordinator in Murkland Hall 304.

**Russian Studies Minor**

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

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

» [Click to view course offerings](http://cola.unh.edu/sociology)

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**Sociology (SOC)**

» [http://cola.unh.edu/sociology](http://cola.unh.edu/sociology)

» [Click to view course offerings](http://cola.unh.edu/sociology)
Chairperson: Heather A. Turner
Professor: Michele Dillon, David Finkelhor, Lawrence C. Hamilton, Kenneth M. Johnson, Cesar Rebellon, Heather A. Turner
Associate Professor: Benjamin C. Brown, Rebecca Glauber, Sharyn J. Potter, Thomas G. Safford, James Tucker, Karen Van Gundy
Research Associate Professor: Kristin E. Smith, Wendy A. Walsh
Assistant Professor: Nicole S. Fox
Research Assistant Professor: Marybeth J. Mattingly
Senior Lecturer: Catherine L. Moran
Lecturer: Katherine Abbott, Nena Stracuzzi

Sociology is the study of social life, social change, and the social causes and consequences of human behavior. Sociologists investigate the structure of groups, organizations, and societies, and how people interact within these contexts.

Since human behavior is shaped by social factors, the subject matter of sociology ranges from the intimate family to the hostile mob; from organized crime to religious cults; from the divisions of race, gender, and social class to the shared beliefs of a common culture.

Majoring in sociology provides a solid, multifaceted foundation in the liberal arts, including analytical thinking and writing, and skills in collecting and analyzing data. Students learn diverse theoretical approaches to the social world and acquire tools for conducting and understanding social science research. The wide range of substantive areas taught in the UNH Department of Sociology include courses concentrating on family and work; environmental sociology; social policy; inequalities of race, class, and gender; criminology, social control, and deviant behavior; medical sociology; and religion.

Undergraduate training in sociology is an excellent background for a variety of careers, including the business world, where majors might work in marketing and sales or human resources; government and nonprofit services, where majors might work in education, health services, social welfare, or criminal justice; and research. An undergraduate degree in sociology is also excellent preparation for graduate work in law, social work, criminal justice, counseling, public administration, public health, business administration, urban planning, or further studies in sociology.

To declare a major in sociology, students must have completed at least one introductory-level sociology course with a grade of C or better. New students who declare the major upon admission to UNH must enroll in SOC 400 during their first semester and earn a grade of C to maintain status in the program.
Majors must complete a minimum of 40 semester credits in sociology courses with grades of C- or better in each course and a GPA of 2.0 or better in sociology courses. SOC 400, 502, 599, 601, and 611 are required. At least two of the additional five major courses must be at the 600 or 700 level (upper-level electives). Majors may meet the Discovery Program capstone requirement by completing SOC 611 during their senior year. Both SOC 502 and 599 are prerequisites for SOC 601; SOC 599 must be completed no later than the junior year and is a prerequisite for majors taking 600- and 700-level courses. SOC 595 can be used to fulfill one lower-level elective or SOC 699 can be used to fulfill one upper-level elective. Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. SOC 599 can be used to satisfy both a major requirement and the Inquiry Discovery requirement. (Statistics courses taken in other disciplines are generally not acceptable as a substitute for SOC 502.)

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.A. candidates must also satisfy the foreign language proficiency requirement.

Conjoint minors (allowing double-counting of one or two courses) are available for justice studies; gerontology; American studies; race, culture, and power; women’s studies; and other approved minors. Students also have the opportunity to pursue a second major, including justice studies. Students interested in social work or teaching can develop programs in conjunction with the appropriate departments. The departmental honors program is recommended for students with cumulative grade-point averages over 3.4, and especially for those anticipating graduate study.

Students interested in majoring in sociology should consult with the chair of the undergraduate committee in the sociology department for guidance. It is the responsibility of all sociology majors to obtain the latest information from the department office. A minor consists of any five 4-credit courses in sociology with a C- or better in each course and a grade-point average of 2.0 or better in these courses.

**Sociology Language Requirement**

The bachelor of arts degree at the University of New Hampshire requires that students satisfy the foreign language proficiency requirement. The requirement may be met by demonstrating language proficiency equal to a one-year college-level course (401 and 402, 403 and 503, 501 [Latin only], or 503 and above in a spoken language). American Sign Language courses do not meet the foreign language requirement for sociology majors.
The Department of Sociology requires all students declaring the major after fall 2006 to choose from one of the following languages: Arabic, Chinese, French, German, Greek, Italian, Japanese, Latin, Portuguese, Russian, and Spanish. Exceptions to this list must be petitioned and approved by the Department of Sociology’s Undergraduate Committee and a student’s adviser.

» Click to view course offerings

Spanish (SPAN)

» http://cola.unh.edu/llc/program/spanish-ba

» Click to view course offerings

Professor: Lina Lee
Associate Professor: Holly R. Cashman, John M. Chaston, Carmen García de la Rasilla, Lori Hopkins, Jaume Martí-Olivella
Assistant Professor: Daniel Chávez, Scott E. Weintraub
Senior Lecturer: Sarah E. Hirsch, Maria I. Rossi
Lecturer: Jorge Abril Sanchez, Fernando Beleza, Derek Hubbard, Leticia Mantilla, Margarita Muñoz Piña
Principal Lecturer: Linda J. Thomsen

The major in Spanish is offered by the Department of Languages, Literatures, and Cultures. It is designed to help students develop proficiency in the Spanish language and an appreciation of the cultural and literary achievements of Hispanic societies around the globe. This dual emphasis on communication and understanding prepares students to live in a world community where Spanish is becoming increasingly important for both personal and professional reasons. In addition, the program offers courses in Portuguese. Students also have the option to complete honors in the major providing they complete the necessary classes and a senior thesis in Spanish.

Students who major in Spanish may prepare themselves for a variety of fields in which proficiency in the Spanish language and knowledge of Hispanic cultures are desirable. Such fields might include international relations, business administration, government, social service, and communications. In addition, students can prepare to teach Spanish at the elementary and secondary levels and in bilingual education programs through the foreign language teacher education program. The undergraduate major also provides a basis for graduate study in preparation for scholarly research and teaching at the college level. When combined with coursework or a dual major in other disciplines, the major prepares students for work in
Spanish-speaking areas of the world as well as in bilingual regions of the United States.

The UNH study abroad program in Granada, Spain, open to majors and nonmajors, offers students the opportunity to live and study abroad for a spring semester. A six-week summer immersion program in Costa Rica also is available to students. Financial aid is available for eligible students. Visit cola.unh.edu/llc/program/spain-granada, cola.unh.edu/llc/program/costa-rica-san-joaquin-de-flores, or contact the departmental program directors for further information.

**The Spanish Major**

The major consists of a minimum of 40 credits. All coursework required for the Spanish major must be completed with a grade of C or better. Specific course requirements are 1) Spanish language: 631 and 632; 2) five culture, linguistics, and literature electives from the following: 641, 645, 647, 648, 650, 651, 652, 653, 654, 525 or 526*, or equivalent; 3) three courses taught in Spanish at the 700 level. An approved foreign study experience in a Spanish-speaking country of a minimum of one semester is required; a full academic year is highly recommended. The Discovery Program capstone requirement may be fulfilled by completing SPAN 797R, Senior Seminar, in the fall semester or any 700-level Spanish course in the spring semester. Students completing their Discovery capstone in the spring semester must designate one class as their capstone and present their final work in that class at the Undergraduate Research Conference that semester.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major. However, majors may use the required study abroad experience to satisfy the World Cultures Discovery category requirement.

*SPAN 525 or 526 may be used to satisfy one of these electives, but students are strongly encouraged to select courses taught in Spanish to meet their major requirements. Only one course taught in English may be counted toward the Spanish major.

**The Spanish Minor**

The Spanish minor consists of 20 credits in courses numbered 503 and above, including 631 and 632. At least three courses must be taken in residence at UNH. All coursework required for the Spanish minor must be completed with a grade of C or better and may not be taken
pass/fail.

**The Latin American Studies Minor**

Spanish program faculty coordinate an interdisciplinary minor in Latin American studies. Coursework is drawn not only from the Spanish program, but from other programs across campus, such as anthropology, history, and political science. See the [Latin American studies page](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm@id=2&page=programs.html) for more information.

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

» [Click to view course offerings](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm@id=2&page=programs.html)

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**Theatre and Dance (THDA)**

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

» [Click to view course offerings](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm@id=2&page=programs.html)

Chairperson: David J. Kaye

Professor: David J. Kaye, Deborah A. Kinghorn, H. Gay Nardone, David L. Ramsey, David M. Richman

Associate Professor: Raina S. Ames, Szu-Feng Chen

Assistant Professor: Assaf Benchetrit, John Berst

Senior Lecturer: Carol J. Fisher, Sarah Jane Marschner

Lecturer: Aimee Blesing, Susan Endrizzi, Melissa Manseau, Mary Beth Marino, Lih-Hwa Yu

The Department of Theatre and Dance offers a general theatre degree plus options in acting, dance, design and theatre technology, musical theatre, secondary education, and youth drama. Performance opportunities include six main-stage, faculty-directed productions; three touring productions; and more than 20 student-directed productions including plays, musical theatre, dance, puppetry, improvisation, comedy, and creative drama.

The award-winning faculty provide theatre majors with superlative training within a broad liberal arts context. Students may take courses in acting; voice and movement; dialects; directing; choreography; design and theatre technology; the history, theory, and criticism of drama and theatre; youth drama; secondary theatre education; playwriting; storytelling; puppetry; ballet; theatre dance (jazz and tap); aerial dance; and musical theatre. Students interested in performance, technical, and historical aspects are trained to step into professional careers. The program affords means for independent study and internships, special projects, and active
personal involvement in lecture and laboratory classes, with the possibility for integration with other departments. To assist with financial needs, the department awards scholarships to selected majors each spring.

Requirements for the Major

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

1. courses leading to a theatre major with an option in acting;
2. courses leading to a theatre major with an option in dance: ballet, theatre dance (tap and jazz), and aerial dance. Students also have the option of pursuing dance education leading to K-12 dance teacher certification. To achieve certification, the dance education option should be combined with requirements of the Department of Education, in conjunction with a fifth year master of arts in teaching (M.A.T.) or master of education (M.Ed.) program;
3. courses leading to a theatre major with an option in design and theatre technology;
4. courses leading to a theatre major with an option in musical theatre;
5. courses leading to a theatre major that, if desired, may be combined with requirements of the Department of Education, in conjunction with a fifth year master of arts in teaching (M.A.T.) or master of education (M.Ed.) program, to prepare students for secondary school certification with an undergraduate option in secondary theatre education;
6. courses leading to a theatre major that, if desired, may be combined with requirements of the Department of Education, in conjunction with a fifth year master of education (M.Ed.) program, to prepare students for elementary school certification with an undergraduate option in youth drama.

Auditions/interviews are required for all prospective students. The session will last approximately two and a half (2.5) hours. In addition to the audition/interview, students will have an opportunity to ask questions during a comprehensive department overview. Please note that entrance into Department of Theatre and Dance options is contingent upon acceptance into the University of New Hampshire. Prospective students who live more than 250 miles away may contact the department to discuss other audition options. Audition/interview dates, as well as detailed entrance requirements, can be found at the Department of Theatre and Dance website.

The general theatre major allows students to explore a variety of areas. In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 and 402 (American Sign Language) satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance,
design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

All UNH B.A. degrees require a minimum of 128 credit hours. Within those 128 credit hours, the theatre major offers seven specific course sequences:

**Theatre (B.A.) General Theatre**

Contact David Richman, Paul Creative Arts Center, (603) 862-2218, david.richman@unh.edu.

I. 26-30 Credits Required

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
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<tr>
<td>THDA</td>
<td>436 or 438</td>
<td>History of Theatre I or II</td>
<td>4</td>
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<td>THDA</td>
<td>459</td>
<td>Stagecraft</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>460</td>
<td>Elements of Design</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>462 or 463</td>
<td>Ballet I or Theatre Dance I</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>551</td>
<td>Acting I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>589 A-D</td>
<td>Practicum</td>
<td>4-8*</td>
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<tr>
<td>THDA</td>
<td>798 or 799</td>
<td>Senior Thesis or Capstone Project</td>
<td>2</td>
</tr>
</tbody>
</table>

*Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

II. 4 Credits from Theory/History

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<th>Credits</th>
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<tr>
<td>THDA</td>
<td>436 or 438</td>
<td>History of Theatre I or II</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>444</td>
<td>Inquiry Course (Any Topic)</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>450</td>
<td>History of Musical Theatre in America</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>520</td>
<td>Creative Drama</td>
<td>4</td>
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<td>THDA</td>
<td>541</td>
<td>Arts and Theatre Administration</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>632</td>
<td>Interpretation of Shakespeare in Theatre</td>
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<tr>
<td>THDA</td>
<td>638</td>
<td>American Theatre: 1920-1970</td>
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<tr>
<td>THDA</td>
<td>640</td>
<td>Playwriting</td>
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<td>THDA</td>
<td>657</td>
<td>Play Reading</td>
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<td>THDA</td>
<td>721</td>
<td>Arts Integration</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>727</td>
<td>Methods of Teaching Theatre</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>762</td>
<td>Women in 20th and 21st Century American Theatre</td>
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**III. 4 Credits from Design/Theatre Technology**

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<td>458</td>
<td>Costume Construction</td>
<td>4</td>
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<td>THDA</td>
<td>475</td>
<td>Stage Makeup</td>
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<td>THDA</td>
<td>546</td>
<td>Costume Design for the Theatre</td>
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<tr>
<td>THDA</td>
<td>547</td>
<td>Stage Properties</td>
<td>4</td>
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<td>THDA</td>
<td>548</td>
<td>Stage Lighting Design and Execution</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>583</td>
<td>Introduction to Puppetry</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>641</td>
<td>Stage Management</td>
<td>2</td>
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<td>THDA</td>
<td>650</td>
<td>Scene Painting for the Theatre</td>
<td>2</td>
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<td>THDA</td>
<td>651</td>
<td>Rendering for the Theatre</td>
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<td>THDA</td>
<td>652</td>
<td>Scene Design</td>
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<tr>
<td>THDA</td>
<td>683</td>
<td>Advanced Puppetry</td>
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**IV. 4 Credits from Performance**

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<td>462</td>
<td>Ballet I</td>
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<td>THDA</td>
<td>463</td>
<td>Theatre Dance I</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>470</td>
<td>Movement and Vocal Production</td>
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<td>Credits</td>
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<td>THDA</td>
<td>532</td>
<td>The London Experience</td>
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<td>THDA</td>
<td>552</td>
<td>Acting II</td>
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<td>THDA</td>
<td>555</td>
<td>Musical Theatre I</td>
<td>4</td>
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<td>THDA</td>
<td>592A</td>
<td>Special Topics</td>
<td>4</td>
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<td>THDA</td>
<td>622</td>
<td>Storytelling, Story Theatre, and Involvement Drama</td>
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<td>THDA</td>
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<td>Theatre for Young Audiences</td>
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<td>THDA</td>
<td>655</td>
<td>Musical Theatre Scene Study</td>
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<td>THDA</td>
<td>741</td>
<td>Directing I</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>755</td>
<td>Advanced Musical Theatre</td>
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<td>THDA</td>
<td>756</td>
<td>Producing &amp; Directing the Musical</td>
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<td>THDA</td>
<td>758</td>
<td>Acting III</td>
<td>4</td>
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<tr>
<td>V</td>
<td></td>
<td>8 Credits from any 600- to 800-level course</td>
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<td>Abbreviation</td>
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<td>Credits</td>
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<tr>
<td>THDA</td>
<td>691/791</td>
<td>Internship in Theatre &amp; Dance</td>
<td>1-8</td>
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<td>THDA</td>
<td>795/796</td>
<td>Independent Study</td>
<td>1-8</td>
</tr>
<tr>
<td>THDA</td>
<td>798</td>
<td>Senior Thesis</td>
<td>2</td>
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<tr>
<td>THDA</td>
<td>799</td>
<td>Capstone Project</td>
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</tbody>
</table>

**Total: 46-50 Credit Hours**

**Theatre (B.A.) Option in Acting**

The acting option was created for students with an intense interest in acting and/or directing. The option was designed to develop all aspects of the actor and the director as both an interpretive and creative artist. Students in the acting option are expected to strive for excellence in all areas of the art and craft of acting through highly challenging coursework, performance-based projects, and productions and special workshops with guest artists and instructors.

Contact David Kaye, Paul Creative Arts Center, (603) 862-0667, djk@unh.edu.

**I. 46-50 Credits Required**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>THDA</td>
<td>436</td>
<td>History of Theatre I</td>
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<tr>
<td>THDA</td>
<td>438</td>
<td>History of Theatre II</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>459</td>
<td>Stagecraft</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>460</td>
<td>Elements of Design</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>462 or 463</td>
<td>Ballet I or Theatre Dance I</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>470</td>
<td>Movement and Vocal Production</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>551</td>
<td>Acting I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>552</td>
<td>Acting II</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>589 A-D</td>
<td>Practicum</td>
<td>4-8*</td>
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<tr>
<td>THDA</td>
<td>758</td>
<td>Acting III</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>759</td>
<td>Acting: Period and Style</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>799</td>
<td>Capstone Project</td>
<td>2</td>
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</tbody>
</table>

*Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

II. 4 Credits from Theory/History

<table>
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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>THDA</td>
<td>450</td>
<td>History of Musical Theatre in America</td>
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<td>THDA</td>
<td>632</td>
<td>Interpretation of Shakespeare in Theatre</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>638</td>
<td>American Theatre: 1920-1970</td>
<td>4</td>
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<td>THDA</td>
<td>640</td>
<td>Playwriting</td>
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<tr>
<td>THDA</td>
<td>657</td>
<td>Play Reading</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>762</td>
<td>Women in 20th and 21st Century American Theatre</td>
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III. 12 Credits from any THDA course offering

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<th>Credits</th>
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<tbody>
<tr>
<td>THDA</td>
<td></td>
<td>Choose from any THDA course</td>
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</tbody>
</table>

Total: 62-66 Credit Hours

Theatre (B.A.) Option in Dance
A diverse program in dance is offered as an option within the Department of Theatre and Dance. This option is designed to give the dance teacher, choreographer, and/or performer the skills needed to embark on a successful career. Technique courses in ballet, pointe, tap, jazz, and the aerial arts are at the core of this program. Courses in pedagogy, composition, dance history, and choreography allow dancers to explore a variety of disciplines in the dance field. In addition, dancers are introduced to the technical aspects involved in staging a full-scale performance. Performance opportunities include yearly faculty-directed dance concerts and student-created dance showcases each semester. Dancers may focus on one or all dance forms.

Contact Gay Nardone, Newman Dance Studio, (603) 862-1728, gay.nardone@unh.edu.

I. 20-24 Credits Required

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>THDA</td>
<td>459 or 460</td>
<td>Stagecraft or Elements of Design</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>487</td>
<td>The Dance</td>
<td>4</td>
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<td>THDA</td>
<td>551</td>
<td>Acting I</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>589 A-D</td>
<td>Practicum</td>
<td>4-8*</td>
</tr>
<tr>
<td>THDA</td>
<td>795W/796W</td>
<td>Independent Study in Performance (Writing Intensive)</td>
<td>2</td>
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<tr>
<td>THDA</td>
<td>799</td>
<td>Capstone Project</td>
<td>2</td>
</tr>
</tbody>
</table>

*Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

II. 12 Credits Required from Theory

<table>
<thead>
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<th>Course Number</th>
<th>Title</th>
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<tr>
<td>THDA</td>
<td>633</td>
<td>Dance Composition</td>
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<td>THDA</td>
<td>732</td>
<td>Choreography</td>
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<td>THDA</td>
<td>786</td>
<td>Dance Pedagogy</td>
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III. 8 Credits from Fine Arts

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<th>Course Number</th>
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<tr>
<td>ARTS</td>
<td>572</td>
<td>Art of the Age of Humanism</td>
<td>4</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Course Number</td>
<td>Title</td>
<td>Credits</td>
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<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>THDA</td>
<td>462</td>
<td>Ballet I</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>463</td>
<td>Theatre Dance I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>562</td>
<td>Ballet II (May be repeated to 4 cr)</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>563</td>
<td>Theatre Dance II (May be repeated to 4 cr)</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>576</td>
<td>Pointe</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>597</td>
<td>Dance Theatre Performance (Repeatable to 16 cr)</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>662</td>
<td>Ballet III (May be repeated to 16 cr)</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>663</td>
<td>Theatre Dance III (May be repeated to 16 cr)</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>665</td>
<td>Aerial Dance (May be repeated to 16 cr)</td>
<td>2</td>
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<tr>
<td>THDA</td>
<td>684</td>
<td>Special Topics</td>
<td>2-4</td>
</tr>
</tbody>
</table>

**Total: 56-60 Credit Hours**

**Theatre (B.A.) Option in Design and Theatre Technology**

The design and theatre technology option prepares students for both practical and aesthetic work in the theatre through class work, production assignments, and everyday problem solving.
UNH's theatre technicians and designers are in demand throughout the country, utilizing transferable skills not only in the theatre but in the allied arts and beyond. UNH-trained graduates hold careers across the nation as lighting, scenic, and costume designers; technical directors; property masters; head electricians; and scenic artists.

Contact Szu-Feng Chen, Paul Creative Arts Center, (603) 862-4445, szu-feng.chen@unh.edu.

I. 26-30 Credits Required

<table>
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<th>Title</th>
<th>Credits</th>
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<tr>
<td>THDA</td>
<td>436 or 438</td>
<td>History of Theatre I or II</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>459</td>
<td>Stagecraft</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>460</td>
<td>Elements of Design</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>462 or 463</td>
<td>Ballet I or Theatre Dance I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>551</td>
<td>Acting I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>589 A-D</td>
<td>Practicum</td>
<td>4-8*</td>
</tr>
<tr>
<td>THDA</td>
<td>799</td>
<td>Capstone Project</td>
<td>2</td>
</tr>
</tbody>
</table>

*Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

II. 12 Credits from:

<table>
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<tr>
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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>THDA</td>
<td>458</td>
<td>Costume Construction</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>546</td>
<td>Costume Design for the Theatre</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>548</td>
<td>Stage Lighting Design and Execution</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>652</td>
<td>Scene Design</td>
<td>4</td>
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III. 8 Credits from:

<table>
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<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>THDA</td>
<td>475</td>
<td>Stage Makeup</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>541</td>
<td>Arts and Theatre Administration</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>546</td>
<td>Costume Design for the Theatre</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>547</td>
<td>Stage Properties</td>
<td>4</td>
</tr>
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</table>
THDA 548  Stage Lighting Design and Execution  4
THDA 641  Stage Management  2
THDA 650  Scene Painting for the Theatre  2
THDA 651  Rendering for the Theatre  2
THDA 652  Scene Design  4
THDA 741  Directing I  4

IV. 8 Credits from:

<table>
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<th>Abbreviation</th>
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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ARTS</td>
<td>455</td>
<td>Introduction to Architecture</td>
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</tr>
<tr>
<td>ARTS</td>
<td>525</td>
<td>Woodworking</td>
<td>4</td>
</tr>
<tr>
<td>ARTS</td>
<td>532</td>
<td>Introduction to Drawing</td>
<td>4</td>
</tr>
<tr>
<td>ARTS</td>
<td>546</td>
<td>Introduction to Painting</td>
<td>4</td>
</tr>
<tr>
<td>ENGL</td>
<td>631, 657, 746, 758, 781, 782</td>
<td>The Drama, Shakespeare, Studies in American...*</td>
<td>4</td>
</tr>
<tr>
<td>FREN</td>
<td>522</td>
<td>French Drama in Translation</td>
<td>4</td>
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<tr>
<td>GERM</td>
<td>640</td>
<td>German Drama</td>
<td>4</td>
</tr>
<tr>
<td>SPAN</td>
<td>752, 757, 771</td>
<td>Drama and Poetry of the Siglode Oro, Spanish...**</td>
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<tr>
<td>THDA</td>
<td>532</td>
<td>The London Experience</td>
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<td>THDA</td>
<td>583</td>
<td>Introduction to Puppetry</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>691/791</td>
<td>Internship in Theatre</td>
<td>1-8</td>
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<tr>
<td>THDA</td>
<td>795/796</td>
<td>Independent Study</td>
<td>1-8</td>
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*The Drama, Studies in American Drama, Shakespeare, The Drama of Shakespeare's Contemporaries, English Drama, Modern Drama

**Drama and Poetry of the Siglode Oro, Spanish Drama of the 20th Century, Latin American Drama

Total: 54-58 Credit Hours

Theatre (B.A.) Option in Musical Theatre

The musical theatre option is designed to cultivate and nurture the creative artistry of those highly motivated students who wish to develop their combined talent as singers, actors, and
dancers. Students in the musical theatre option will thrive in this intense and dynamic program of coursework, practical application, performance-based projects, faculty- and student-directed productions, and special workshops with guest artists and instructors. Students will be expected to fully integrate their rigorous training as actors, dancers, and singers with the outstanding liberal arts education they will receive at UNH to become well-rounded and marketable musical theatre artists.

Contact John Berst, Paul Creative Arts Center, (603) 862-3288, john.berst@unh.edu.

I. 34-38 Credits Required

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<th>Title</th>
<th>Credits</th>
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<tr>
<td>THDA</td>
<td>436 or 438</td>
<td>History of Theatre I or II</td>
<td>4</td>
</tr>
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<td>THDA</td>
<td>459</td>
<td>Stagecraft</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>460</td>
<td>Elements of Design</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>462</td>
<td>Ballet I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>463</td>
<td>Theatre Dance I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>470</td>
<td>Movement &amp; Vocal Production</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>551</td>
<td>Acting I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>589 A-D</td>
<td>Practicum</td>
<td>4-8*</td>
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<tr>
<td>THDA</td>
<td>799</td>
<td>Capstone Project</td>
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</table>

*Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

II. 20 Credits Required

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<th>Title</th>
<th>Credits</th>
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<td>THDA</td>
<td>450</td>
<td>History of Musical Theatre in America</td>
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<td>THDA</td>
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<td>Musical Theatre I</td>
<td>4</td>
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<td>THDA</td>
<td>655</td>
<td>Musical Theatre Scene Study</td>
<td>4</td>
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<td>THDA</td>
<td>755</td>
<td>Advanced Musical Theatre</td>
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<td>MUSI</td>
<td>411</td>
<td>Fundamentals of Music Theory</td>
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III. 3 Credits Required

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<tbody>
<tr>
<td>THDA</td>
<td>500</td>
<td>Musical Theatre Voice I</td>
<td>1</td>
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THDA  600  Musical Theatre Voice II  1
THDA  700  Musical Theatre Voice III (repeatable)  1

IV. 4 Credits from:

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<tr>
<td>THDA/MUSI</td>
<td></td>
<td>Non-repeating credits*</td>
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</table>

*Choose four non-repeating credits from any THDA course or any MUSI course that involves vocal training/performance, music theory, ear training, or piano.

Total: 61-65 Credit Hours

Theatre (B.A.) Option in Secondary Theatre Education

For candidates who want to teach drama courses and/or direct high school productions, the secondary theatre education option offers practical and theoretical training for teachers. Through laboratory work, students obtain hands-on theatre teaching experience, so that by the time they reach their graduate school internship, they have spent significant hours working with the K-12 age group. Students are provided with extensive training and practical teaching experience specifically geared toward the goal of being a theatre teacher, either in a traditional classroom or as a teaching artist. Students will be expected to fully integrate education and theatre coursework so that they leave UNH prepared for the rigorous task of teaching.

Contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

I. 56-60 Credits Required from Theatre

<table>
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<td>History of Theatre II</td>
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<td>Stagecraft</td>
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<tr>
<td>THDA</td>
<td>460</td>
<td>Elements of Design</td>
<td>4</td>
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<td>THDA</td>
<td>463</td>
<td>Theatre Dance I</td>
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<td>THDA</td>
<td>475</td>
<td>Stage Makeup</td>
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<td>Acting I</td>
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<td>589 A-D</td>
<td>Practicum</td>
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<td>THDA</td>
<td>624</td>
<td>Theatre for Young Audiences</td>
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<tr>
<td>THDA</td>
<td>721</td>
<td>Arts Integration</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>727**</td>
<td>Methods of Teaching Theatre</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>729</td>
<td>Community-Oriented Drama Programs</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>741</td>
<td>Directing I</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>760</td>
<td>Teacher Planning for Theatre</td>
<td>4</td>
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<tr>
<td>THDA</td>
<td>799</td>
<td>Capstone Project (must be taken in senior year)</td>
<td>2</td>
</tr>
</tbody>
</table>

*Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

**May be taken at the undergraduate level or the graduate level.

II. 4 Credits from Design/Theatre Technology

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>THDA</td>
<td>458</td>
<td>Costume Construction</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>546</td>
<td>Costume Design for the Theatre</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>548</td>
<td>Stage Lighting Design and Execution</td>
<td>4</td>
</tr>
</tbody>
</table>

III. 4 Credits from Education

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>500/935**</td>
<td>Exploring Teaching</td>
<td>4</td>
</tr>
</tbody>
</table>

Total: 64-68 Credit Hours

THDA Electives

*Students should take at least 8 credits from the following courses (one of which should be another design course):

- THDA 450, History of Musical Theatre in America
- 520, Creative Drama
- 547, Stage Properties
- 583, Introduction to Puppetry
- 622, Storytelling, Story Theatre, and Involvement Dramatics
- 632, Interpretation of Shakespeare in Theatre
- 638, American Theatre: 1920-1970
- 640, Playwriting
- 641, Stage Management
- 652, Scene Design
- 657, Play Reading
- 683, Advanced Puppetry
- 762, Women in 20th and 21st Century American Theater
NOTE: It is understood that students will fulfill 20 internship contact hours with theatre students in their option area: elementary, middle, or high school. Projects for 729 cannot count as internship hours. Students may fulfill this requirement through a variety of teaching opportunities with the department's outreach program (both during the school year and in the summer), or they may work with local schools teaching, coaching actors, assistant directing, choreographing, or in some other capacity as specifically arranged with their theatre adviser.

It also is understood that students involved in the above course curriculum in order to get state theatre arts certification must apply to either the UNH Department of Education or another university for acceptance into a fifth-year master of arts in teaching (M.A.T.) or master of education (M.Ed.) degree program that fulfills state requirements for certification.

State K-12 Teacher Certification

In order to obtain state theatre arts certification, students must apply to either the UNH Department of Education or another university for acceptance into a fifth-year master of arts in teaching (M.A.T.) or masters of education (M.Ed.) degree program, which fulfills state requirements for certification. Students who are accepted into early graduate admission may take up to 12 credits toward the 32 credit masters while finishing their undergraduate degree. For further clarification regarding fifth-year certification options, contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

Education Courses Required for Certification**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>700/800</td>
<td>Educational Structure and Change</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>701/801</td>
<td>Human Development &amp; Learning: Educational Psycholo</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>705/805</td>
<td>Alternate Perspectives on the Nature of Education</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>751B/851B</td>
<td>Educational Exceptional Learners: Secondary</td>
<td>4</td>
</tr>
</tbody>
</table>

**May be taken at the undergraduate level or the graduate level.

Theatre (B.A.) Option in Youth Drama

The youth drama option is for those students who wish to use dramatic arts as a teaching tool,
either in the elementary classroom or as a teaching artist. Our comprehensive curriculum is specifically designed to train teachers. Through laboratory work, students obtain hands-on theatrical teaching experience, so that by the time they reach their graduate school internship, they have spent significant hours working with children. Students will be expected to fully integrate education and theatre coursework so that they leave UNH with sound theoretical training in addition to practical instruction on how to use drama to enhance learning outcomes, address classroom discipline issues, and, of course, bring the arts to life in the classroom.

Contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

I. 54-58 Credits Required

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td>459</td>
<td>Stagecraft</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>460</td>
<td>Elements of Design</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>463</td>
<td>Theatre Dance I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>520</td>
<td>Creative Drama</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>583</td>
<td>Introduction to Puppetry</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>589 A-D</td>
<td>Practicum</td>
<td>4-8*</td>
</tr>
<tr>
<td>THDA</td>
<td>622</td>
<td>Storytelling, Story Theatre &amp; Involvement Drama</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>624</td>
<td>Theatre For Young Audiences</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>683</td>
<td>Advanced Puppetry</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>721</td>
<td>Arts Integration</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>727</td>
<td>Methods of Teaching Theatre</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>729</td>
<td>Community-Oriented Drama Programs</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>760</td>
<td>Teacher Planning for Theatre</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>799</td>
<td>Capstone Project (must be taken in senior year)</td>
<td>2</td>
</tr>
</tbody>
</table>

*Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

II. 4 Credits Required from Education

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>500 / 935**</td>
<td>Exploring Teaching</td>
<td>4</td>
</tr>
</tbody>
</table>

State Teacher Certification

Youth Drama options often pursue elementary education certification. In order to obtain state licensure, students must apply to either the UNH Department of Education or another university for acceptance into a fifth year masters of education (M.Ed.) degree program, which fulfills state requirements for certification. Students who are accepted into early graduate admission may take up to 12 credits toward the 32 credit masters while finishing their undergraduate degree. For further clarification regarding fifth-year certification options, contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

Education Courses Required for Certification**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC</td>
<td>700 / 800</td>
<td>Educational Structure &amp; Change</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>701 / 801</td>
<td>Human Development &amp; Learning</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>703F / 803F</td>
<td>Teaching Science</td>
<td>2</td>
</tr>
<tr>
<td>EDUC</td>
<td>703M / 803M</td>
<td>Teaching Elementary Science &amp; Social Studies</td>
<td>2</td>
</tr>
<tr>
<td>EDUC</td>
<td>705 / 805*</td>
<td>Alternative Perspectives on Nature of Education</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>706 / 806*</td>
<td>Introduction to Reading Instruction</td>
<td>4</td>
</tr>
<tr>
<td>EDUC</td>
<td>751A / 851A</td>
<td>Educating Exceptional Learners: Elementary</td>
<td>4</td>
</tr>
</tbody>
</table>

*Must be taken before student teaching internship.

**May be taken at undergraduate or graduate level.

4 Credit Required Math Education Course**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH</td>
<td>601 or 602</td>
<td>Exploring Mathematics for Teachers I or II</td>
<td>4</td>
</tr>
<tr>
<td>MATH</td>
<td>621</td>
<td>Number Systems for Teachers</td>
<td>4</td>
</tr>
<tr>
<td>MATH</td>
<td>622</td>
<td>Geometry for Teachers</td>
<td>4</td>
</tr>
<tr>
<td>MATH</td>
<td>623</td>
<td>Topics in Mathematics for Teachers</td>
<td>4</td>
</tr>
</tbody>
</table>
MATH  703  Teaching of Mathematics, K-6  4
MATH  910  Teaching Elementary School Mathematics  4
EDUC  741 / 841  Exploring Mathematics for Young Children  4

*May be taken at the undergraduate level or the graduate level.
**Must be taken before student teaching internship.

Minoring in Theatre and Dance

A minor acknowledges a level of competence and academic focus without the depth a major requires. Students may pursue a minor while majoring in another subject when the demands of that major prevent the possibility of a double major.

Theatre Minor

The theatre minor provides the broadest overview of the discipline, allowing students to create their course of study by exploring theory and technique classes from acting, design and theatre technology, and history.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

I: 4 Credits From

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td>442 or 460</td>
<td>Introduction to the Art of Acting or Elements of Design</td>
<td>4</td>
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</tbody>
</table>

II. 4 Credits from Theory/History

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td></td>
<td>Choose from section II of General Theatre Major Requirements</td>
<td>4</td>
</tr>
</tbody>
</table>

III. 4 Credits from Design/Theatre Technology

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td></td>
<td>Choose from section III of General Theatre Major Requirements</td>
<td>4</td>
</tr>
</tbody>
</table>
IV. 8 Credits from any THDA Course

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td></td>
<td>Choose from any THDA course</td>
<td>8</td>
</tr>
</tbody>
</table>

Total: 20 Credit Hours

Dance Minor

Students completing the dance minor demonstrate a basic knowledge in the two areas of dance learning: technique and nontechnique courses. A student will minor in dance to keep open the option of pursuing a career in dance by maintaining a level of dance skill.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

I. Up to 16 Credits

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td>462</td>
<td>Ballet I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>562</td>
<td>Ballet II</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>662</td>
<td>Ballet III</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>463</td>
<td>Theatre Dance I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>563</td>
<td>Theatre Dance II</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>663</td>
<td>Theatre Dance III</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>665</td>
<td>Aerial Dance</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>597</td>
<td>Dance Theatre Performance</td>
<td>2</td>
</tr>
<tr>
<td>THDA</td>
<td>576</td>
<td>Pointe</td>
<td>2</td>
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</table>

II. At Least 4 Credits Required

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td>487</td>
<td>The Dance</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>633</td>
<td>Dance Composition</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>684</td>
<td>Special Topics</td>
<td>2-4</td>
</tr>
<tr>
<td>THDA</td>
<td>732</td>
<td>Choreography</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>786</td>
<td>Dance Pedagogy</td>
<td>4</td>
</tr>
</tbody>
</table>

Total: 20 Credit Hours
Musical Theatre Minor

The musical theatre minor offers the student basic knowledge of the history and canon of this uniquely American art form while providing for hands-on experience in both singing and dancing.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

I. 16 Credits Required

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td>440 or 450</td>
<td>Exploring Musical Theatre or History of Musical Theatre in America</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>442 or 551</td>
<td>Introduction to the Art of Acting or Acting I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>463</td>
<td>Theatre Dance I</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>555</td>
<td>Musical Theatre I</td>
<td>4</td>
</tr>
</tbody>
</table>

II. 4 Credits Required

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td></td>
<td>Choose from any THDA course excluding THDA 500, 600, and 700.</td>
<td>4</td>
</tr>
</tbody>
</table>

Total: 20 Credit Hours

Youth Drama Minor

The youth drama minor is ideal for those who wish to explore the dramatic arts. Anyone with an interest in theatre for young audiences, either in acting or as a way to augment teaching strategies with activated and arts-infused methodology, would benefit from this minor.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

I. 24 Credits Required

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>THDA</td>
<td>520</td>
<td>Creative Drama</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>583</td>
<td>Introduction to Puppetry</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>622</td>
<td>Storytelling, Story Theatre &amp; Involvement Drama</td>
<td>4</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>-----------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>THDA</td>
<td>624</td>
<td>Theatre for Young Audiences</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>683</td>
<td>Advanced Puppetry</td>
<td>4</td>
</tr>
<tr>
<td>THDA</td>
<td>721</td>
<td>Arts Integration</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total: 24 Credit Hours**

» Click to view course offerings

^ back to top

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**Women's Studies (WS)**

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

» Click to view course offerings

Coordinator: Marla A. Brettschneider  
Professor: Marla A. Brettschneider  
Affiliate Professor: Sarah Redfield  
Affiliate Associate Professor: Sarra Lev, Mary M. Moynihan  
Assistant Professor: Lyn Kim Lan Tjon Soei Len  
Affiliate Assistant Professor: James Burns, Eden Wales Freedman, Susan Gardner, Sharon Gershoni, Jing Huang, Nancy Nield, Meghan Schrader  
Affiliate Faculty: Jane Stapleton  
Senior Lecturer: Joelle Ryan  
Lecturer: Tamsin Whitehead  
Core Faculty: Amy Boylan, Holly R. Cashman, Katie Edwards, Diane P. Freedman, Robin Hackett, Marc W. Herold, Lori Hopkins, Delia C. Konzett, Mary Malone, Svetlana Peshkova, Janet L. Polasky, Mary E. Rhiel, Judy Sharkey, Reginald A. Wilburn

The UNH women's studies program provides students with an understanding of the status of women and gender roles in various cultures and historical eras. Students learn the use of gender as a category of analysis, and increase their knowledge of women's contributions to many fields and the roles gender plays in them. Women's studies courses offer students critical perspectives on such basic questions of the social order as assumptions about gender roles and gender identity and the ways cross-cutting phenomena such as racism, heterosexism, religion, ableism, and ageism are a part of them.
A major or minor in women’s studies prepares students for careers where the changing roles of women, and gender more broadly, have a perceptible impact. Many women’s studies graduates go on to law school and graduate school in a variety of disciplines. With a women's studies degree, students often take positions with social change or family service agencies, and in fields such as politics, communications, community organizing, education, affirmative action, healthcare, and human resources.

**Women’s Studies Major**

The women’s studies major requires students to complete 40 credits of major-approved coursework with grades of C- or better and an overall grade point average in major courses of 2.00 or higher.

The following **three** courses are required:

- WS 401, Introduction to Women’s Studies, or 405, Gender, Power, and Privilege
- WS 632, Feminist Thought
- Discovery Program capstone requirement: WS 798, Colloquium, or WS 799, Honors Thesis

The remaining **seven** courses may be chosen in consultation with a WS faculty adviser according to the following guidelines:

- At least two of the courses must be WS courses.
- The remaining courses may be either WS courses or WS-faculty-approved courses offered in departments or programs outside of WS (cross-counted courses).

At least five courses for the major must be taken at the 600 level or above. Only two 400-level courses may be used to satisfy major requirements. The Discovery Program capstone requirement is to be fulfilled by taking one of the following: WS 798 or WS 799.

**WS topic courses include WS 444s, WS 505s, WS 510, WS 515, and WS 798s:**

**444 Inquiry Courses**

- WS 444, Trans/forming Gender
- WS 444a, Race Matters
- WS 444b, Score: Gender & Diversity in Sports
- WS 444c, On the Roads to Equality
- WS 444d, Cyborgs, Avatars, and Feminists: Gender in the Virtual World

**505 Surveys**

- How Do We Look? Gender, Race & Sexuality in Visual Culture
- Sustainability & Spirituality
Feminist Activism
Race, Class, and Gender in the Media
19th Century Black Women in New England
Fashion This!
Global Sex Industry
Race, Gender, and Environmental Justice
Queer Sustainability

**WS 510**, Framing Feminism: Gender Politics in Film

**WS 515**, Game Girl: The Social Construction of Gender Identities in Video Games

**798 Colloquiums**
Feminist Studies in Film
Women’s Fiber Arts Traditions
Feminism and Queer Theory
Conflicts within Feminism
The Body
Jewish Feminism, Politics, and Culture
Feminist Autobiography
Global Feminist Issues
Women, Work, and Policy
Black Women in America
Black Feminist Thought
Queers & Kin
Women in Prison
Contemporary American Memoir: Autobiography/Theory
Dreamgirls: Dancing on the Pages of Diva (Auto)biographies
Transgender Feminism
Theater as a Provocative Act
Black Women’s Memoir

For a list of currently-approved cross-counted offerings from other departments, please check the [department website](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm?id=2&page=programs.html).

A practicum, internship course, or research with faculty is strongly recommended.

Major department courses may not be used to satisfy Discovery category requirements, unless women’s studies is your second major. First and second majors may double count no more than two courses between the WS major and another major or minor.

Candidates for a degree must satisfy all of the University Discovery Program requirements in
addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement. ASL: COMM 401 and COMM 402 may be used to satisfy the language competency requirement.

**Women’s Studies Minor**

For the women’s studies minor, students must complete 20 credits of women’s studies courses with a grade of C- or better. Courses taken pass/fail may not be used toward the minor. No more than eight credits used to satisfy the requirements for another major may be used for the women’s studies minor. Students electing the women’s studies minor must complete WS 401, Introduction to Women’s Studies, or WS 405, Gender, Power, and Privilege, and WS 798, Colloquium in Women’s Studies, normally taken at the beginning and end of the course sequence, respectively. It may be possible to substitute WS 795, WS 796, WS 797, and WS 799 for WS 798 with permission from a women's studies adviser. Additionally, students must complete three other women’s studies courses, either program courses or those that are cross-counted with other departments.

Students who wish to major or minor in women’s studies should consult with the coordinator or academic/student services assistant, 203 Huddleston Hall, (603) 862-2194.

» [Click to view course offerings](#)
Introduction

The objectives of the College of Life Sciences and Agriculture (COLSA) are to give students a fundamental education in the biological, natural, and social sciences and to introduce them to the arts and humanities. In addition, advanced technical and professional courses are offered to prepare students for graduate school or entry-level positions in areas concerned with improving the quality of life. Preparation can vary from fundamental studies of cancer cells to community service planning, resource protection to genetic engineering, and molecular biology to biotechnology.

A blend of the basic and applied aspects of life sciences and agriculture, coupled with careful selection of supportive courses ensures graduates develop the background and experiences necessary to be competitive in the job market. Potential employers include federal, state, and local governments; consulting firms; and industrial organizations. Graduates are employed as watershed, soil, and natural resource managers; associates in biomedical and agricultural research laboratories; marketing analysts and extension specialists; nutrition supervisors and environmental regulators; and information educators and communication experts. Community governments employ graduates as service planners and land-use specialists, teachers in traditional education, public health technicians, and urban pest control specialists. Positions are available in private and commercial organizations in production agriculture, food processing, landscaping, agribusiness, sales, and private planning. Graduates may also pursue entrepreneurial careers as greenhouse, nursery, farm, and natural resource managers; or as consultants, arborists, and environmental planners. For those graduates with international aspirations, the Peace Corps and the Foreign Agriculture Service employ farm production experts, soil and water managers, market analysts, agricultural engineers, teachers, plant and animal breeders, and nutrition specialists.

Additionally, COLSA prepares students for advanced study in their chosen field of interest...
where graduate study is required for attaining their career goals.

**Degrees**

The college offers three undergraduate degrees: the bachelor of arts, the bachelor of science, and the bachelor of science in forestry. Some of the courses prescribed in these degree programs partially fulfill the Discovery requirements. Students should see their advisers for specific information.

**General Science Certification**

Students majoring in biochemistry, molecular and cellular biology; biomedical science; biology; environmental conservation sustainability; environmental sciences; forestry; wildlife and conservation biology; or zoology may seek certification to teach science at the middle, junior, or high school level.

For further information, contact the coordinator of teacher education in the [Department of Education](http://www.unh.edu/archive/undergrad-catalog/2016-2017/info.cfm?id=3.html).

**Advising System**

A member of the faculty whose area of interest is closely related to the student’s is appointed as an adviser to assist the undergraduate in planning his or her academic program. Further advising is also available in the dean’s office, Rudman Hall.

**Undeclared Status**

Students may select a major upon entering the college or wait until registration for the sophomore year. Students who are uncertain about choosing a specific major may remain undeclared during their freshman year. In most cases, they should take the following courses, after which they should be ready to declare a major:

**Fall**

- LSA 400
- CHEM 403
- BIOL 412

Discovery Program requirement

An introductory course in any department in the college

**Spring**

- CHEM 404
- BIOL 411
- MATH 424B
Discovery Program requirement

Undeclared freshmen should explore possible majors by taking courses in the areas or programs that interest them most. They should talk to faculty, students, and their adviser concerning requirements, job opportunities, etc., in the various programs and should be prepared to declare a major when they register for the first semester of the sophomore year.

Combined Programs of Study

In addition to pursuing a single major, students may combine programs of study as follows (see University Academic Requirements for more information):

Minors: See University Academic Requirements.
Second major: See University Academic Requirements.
Dual-degree programs: See University Academic Requirements.
Student-designed majors: See Special University Programs.
Other combined and interdisciplinary opportunities: See Special University Programs.

UNH-EcoQuest New Zealand Study Abroad Program

The Department of Natural Resources and the Environment offers highly motivated students the opportunity to study abroad through the UNH-EcoQuest New Zealand applied field studies program. Students engage in a unique multidisciplinary, research-oriented program and receive grade-point average credit for a semester abroad. Four fully integrated courses (NR 660, 661, 662, and 663 for 16 credit hours) focus on the ecological, resource management, and conservation and sustainability issues important to the natural environment, economy, and culture of New Zealand. Alternatively, students may participate in a two-course (NR 660, 662 for 8 credit hours) summer session. Contact Donna Dowal, (603) 862-2036.
Bachelor of Arts

The bachelor of arts degree is available in sustainable agriculture and food systems, and zoology. Students must accumulate 128 credits, attain a 2.0 cumulative grade-point average, satisfy Discovery requirements, and complete a foreign language requirement (see University Academic Requirements for specific B.A. language requirements). Check individual departmental listings for specific major requirements and minimum acceptable grades in major courses.

Bachelor of Arts
Sustainable Agriculture and Food Systems
Zoology

Bachelor of Science

The bachelor of science degree is available in all departments or programs. University requirements are the same as for the bachelor of arts degree, except that a foreign language is not required and minimum acceptable grades may differ in some programs. Check individual departmental or program listings for specific major requirements.

Bachelor of Science
Animal Science
  Dairy Management
Biochemistry, Molecular and Cellular Biology
Biology
Biomedical Science
  Medical Laboratory Science
  Medical Microbiology
  Medical and Veterinary Sciences
Community and Environmental Planning
Environmental and Resource Economics
Environmental Conservation and Sustainability
Environmental Sciences*
  Ecosystems
  Hydrology
  Soil and Watershed Management
Equine Studies
  Equine Industry and Management
  Therapeutic Riding
  Equine Science
Forestry*
Genetics
  Genomics
Marine, Estuarine, and Freshwater Biology
Neuroscience and Behavior
Nutrition
  Dietetics
  Nutrition and Wellness
  Nutritional Sciences
Sustainable Agriculture and Food Systems
Wildlife and Conservation Biology
Zoology

*Designated degree (the name of the specialization is on the diploma, e.g., B.S. in forestry).
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College of Life Sciences and Agriculture

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Interdisciplinary Programs
  - Agribusiness
  - Animal Behavior
  - Community Planning
  - Environmental Horticulture
  - GeoSpatial Analysis
  - Green Real Estate
  - Marine Biology
  - Plant Biology
  - Water Resources Management
  - Wetland Ecology
Other Programs
Programs of Study

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College of Life Sciences and Agriculture

» http://www.colsa.unh.edu/

Agribusiness

The agribusiness minor is designed to provide students in disciplines other than environmental and resource economics training in the economics and management of agricultural and other natural resource business firms. This program prepares students to work for private companies, governmental agencies, or nonprofit, nongovernmental organizations. Students who are interested in operating their own businesses will also find this minor very useful. The courses in the agribusiness minor emphasize the applications of economic and business management principles.

Required
ERECD 411, Environmental and Resource Economics Perspectives, or equivalent
ERECD 501, Agriculture and Natural Resource Product Marketing, or MKTG 550, Survey of Marketing
ERECD 504, Business Management for Natural Resource Firms
ERECD 606, Land Economics Perspectives: Uses, Policies, and Taxes
TOUR 700, Marketing Communications Research: Methodological Foundations

For additional information, contact John M. Halstead, Environmental and Resource Economics Program coordinator, 168 James Hall, (603) 862-3914.

Animal Behavior

This minor is designed for students who are interested in learning more about animal behavior, including the mechanisms that underlie behaviors and the evolutionary forces that may have shaped them. Students must complete, and earn a grade of C- or better in, the following courses to qualify:

- ZOOL 613, Animal Behavior
- at least 16 additional credits of relevant coursework (~four courses from the list below;
courses are 4 credits unless otherwise noted):

—**at least two** of the four electives must come from the Category I list below; the remaining two courses may be from **either** Category I or Category II.

No more than **8 credits** can be counted for both the student’s major and the animal behavior minor (i.e., you may “double count” up to, but no more than, two courses).

If a student is interested in using a course that he or she feels is relevant but that is not included on this list, he or she must seek permission from Dr. Leslie Curren in the Department of Biological Sciences, (603) 862-5103; leslie.curren@unh.edu.

**Required Course**

ZOOL 613, Animal Behavior

**Electives**

*Category I:*

ZOOL 726, Conservation Behavior
ZOOL 733, Behavioral Ecology
ZOOL 736, Genes and Behavior
ZOOL 777, Neurobiology
PSYC 512, Psychology of Primates
PSYC 720, Animal Cognition
PSYC 731, Brain and Behavior
MEFB 714, Field Animal Behavior (3 cr.)

*Category II:*

ZOOL 625, Animal Physiology (3 or 5 cr.)
ZOOL 690, Evolution
BMS 702, Endocrinology
BMS 718, Mammalian Physiology
PSYC 521, Behavioral Analysis
AAS 225, Canine Learning Theory and Application (3 cr.)

**Community Planning**

Land use and its impact on the quality of life has emerged as a major policy issue locally, nationally, and globally. Planning is a multidisciplinary profession that requires professionals who understand both social and natural systems and have command of professional tools required to guide the selection and implementation of alternative approaches compatible with
long-term environmental and socio-economic objectives. Students may supplement their major and Discovery Program requirements with specific courses that will enhance their ability to find employment that requires knowledge of planning concepts and tools used in the formulation and implementation of effective land and resource planning by government agencies, nonprofit organizations, and private business firms. Required: 20 hours of credit

**Required**

**Group I: Theory and Practice of Planning (all courses required)**

- CEP 415, Community Development Perspectives
- CEP 508, Applied Community Development
- CEP 614, Fundamentals of Planning (prereq: EREC 411 or permission)

**Group II: Tools and Applications in Planning (choose one)**

- CEP 673, Green Real Estate
- NR 724, Resolving Environmental Conflicts
- NR 501, Studio Soils (prereq: CHEM 403)
- NR 658, Introduction to Geographic Information Systems
- SOC 660, Urban Sociology
- NR 504, Freshwater Resources

**Group III: Resource Management Theory (choose one)**

- EREC 627, Community Economics (prereq: EREC 411)
- EREC 756, Rural and Regional Economic Development (prereq: EREC 411)
- TOUR 767, Social Impact Assessment
- NR 711, Wetland Ecology and Management (prereq: BIOL 541 or NR 703)

For additional information, contact Mary Friedman, the community and environmental planning program coordinator, at (603) 862-4456 or by e-mail at mary.friedman@unh.edu.

**Environmental Horticulture**

**Environmental Horticulture Minor**

A minor in environmental horticulture is designed to provide a flexible and broad selection of applied horticulture courses to complement any other major area of study. **A MINIMUM OF 20 CREDITS IS REQUIRED.**

**PBIO 421, Introductory Horticulture** (4 cr) is the core course required.

An additional 16 credits should be selected from the courses listed below:

**PBIO 412, Introductory Botany** (4 cr)
BIOL 601, Biology of Plants (4 cr)
PBIO 566, Systematic Botany (4 cr)
PBIO 651, Plant Pathology (4 cr)
PBIO 760, Insect Pest Management (4 cr)
SAFS 405, Sustainable Agriculture and Food Production (4 cr)
SAFS 410, Taste of the Tropics (4 cr)
SAFS 601, Fruit Crop Production (4 cr)
SAFS 679 or 680, Food Production Field Experience (4 cr each)
SAFS 689, Greenhouse Management and Operation (4 cr)
SAFS 731, Sustainable Landscape Design and Management (4 cr)
SAFS 795, Investigations (Horticulture related topics, 1-4 cr)

Up to 8 of the 16 credits may be fulfilled by TSAS (Thompson School) Horticultural Technology classes such as:
HT 404, Plant Propagation (4 cr)
HT 256, Horticultural Pruning (2 cr)
HT 257, Woody Landscape Plants (3 cr)
HT 258, Herbaceous Ornamental Plants (2 cr)
HT 266, Garden Design and Culture (2 cr)

Other electives can count toward the minor based on agreement with adviser or chair. Students are encouraged to discuss their intent to minor with the minor adviser as early as possible, typically no later than the end of the junior year. Not all classes are offered every year.

Certification of Minor
During the student's final semester, an application should be made to the COLSA dean's office to have the minor shown on the academic transcript. The student should fill out a Certification of Completion of Minor form and obtain the signatures of the student's major adviser, minor adviser, and the COLSA dean's office.

Interested students should contact Dr. Catherine Neal in the Department of Biological Sciences, (603) 862-3208.

GeoSpatial Analysis

The geospatial analysis minor is designed for students who wish to have more learning and experience using the tools of geospatial analysis such as statistics, aerial photography, satellite imagery, and geographic information systems (GIS) as they relate to their chosen field of study. Students interested in completing the geospatial analysis minor must complete a total of
20 credits (usually 5 courses) from the list below. A grade of C- or better is required in each minor course and no course can be taken pass/fail. A total of not more than 8 credits from the student’s major requirements can be counted toward the minor.

**Basic Statistics (choose one course)**

- BIOL 528
- PSYC 402
- SOC502
- Other basic statistics course as approved by minor adviser

**Introductory/Field/or Overview Course (choose one course)**

- NR 458, The Science of Where
- CIE 505, Surveying and Mapping
- NR 542, Forestland Measurement and Mapping (2 credits)
- NR 603, Landscape Ecology
- GEOG 650, Field Methods in Geography
- NR/GEOG 757, Remote Sensing of the Environment
- ANTH 674 Archaeological Survey and Mapping in Belize

**A GIS course (choose one course)**

- NR/GEOG 658, Introduction to GIS
- NR/GEOG 760, GIS in Natural Resources
- CIE 796, GIS in Water Resources
- CT 250, GIS Applications in Sustainability
- FORT 281, GIS for Foresters

**A Remote Sensing Course (choose one course)**

- NR/GEOG 757, Remote Sensing of the Environment
- NR/GEOG 759, Digital Image Processing

**An Advanced Analysis Course (choose one course)**

- NR 782, Monitoring Forest Health
- SOC 797, Sociological Methods, Survey Research
- NR 713, Quantitative Ecology
- NR 740, Inventory and Modeling of Ecological Communities
- NR 749, Forest Inventory and Modeling

Students with questions about the minor or who would like more information should contact Dr. Russell G. Congalton in the Department of Natural Resources and the Environment, (603) 862-
Green Real Estate

The green real estate minor will include the basic fundamentals of real estate (a class which is accredited by the New Hampshire Real Estate Commission). Students will learn about local and regional planning, environmental economics and market forces, and environmental issues as they pertain to real estate. In addition, students may choose complementary classes, such as architecture, surveying, land design, soils, wetland delineation, law, etc. Students must complete five courses (18 to 20 credits), get a C- or better in each course, and maintain a 2.0 average or better.

Required Courses
CEP 672, Fundamentals of Real Estate
CEP 673, Green Real Estate
CEP 508, Applied Community Development

Select two from ONE of the following groups:

Green Design and Building (ideal for future architects and builders)
AM 275, Building Science/Residential Construction
ARTS 455, Introduction to Architecture
CHE 410, Energy and Environment
CIE 444, Housing, Everyone Needs a Place to Live
CT 240, Legal Aspects of Surveying
CT 247, Construction Contracting
CT 281, Architecture I History and Design
CT 423, Introduction to Surveying and Mapping
CT 437, Land Design and Regulations

Land Conservation (ideal for future conservation commission members, planners, and environmental advocates in general)
EREC 606, Land Economics Perspectives: Uses, Policies, and Taxes
NR 507 Introduction to Our Energy Systems and Sustainable Energy
NR 785, Systems Thinking for Sustainable Living

Finance and Law (ideal for future green mortgage lenders and social choice investment portfolio managers. NOTE: Business majors only)
ACFI 701, Financial Policy
ACFI 702, Investments Analysis
MGT 798, Topics

For more information, contact Kelly Cullen in the Department of Natural Resources and the Environment, (603) 862-4811 or kelly.cullen@unh.edu.

**Marine Biology**

The minor is designed to provide a foundation in marine biology and related sciences to any UNH undergraduate student with the exception of students majoring in marine, estuarine, and freshwater biology. It is offered through the Department of Biological Sciences. The minor consists of 20 credits with grades of C- or better and no pass/fail courses. No more than eight major requirement credits may be used toward the minor. All courses in the program are selected in consultation with the minor adviser. (Contact Larry Harris, Department of Biological Sciences, Larry.Harris@unh.edu.)

Students should declare their intention to minor in marine biology before the end of the junior year. During the final term, students should apply to the dean to have the minor shown on their transcript.

**Required**

Five courses (20 credits); two of the five courses (eight credits) can count toward the student's major.

**Introductory course in marine science (choose one)**

- ZOOL/PBIO 503, Introduction to Marine Biology
- ESCI 501, Introduction to Oceanography

Four additional courses selected in consultation with the minor adviser.

In addition, students are encouraged to become involved in a research project, either by working in a professor's laboratory or by participating in the Undergraduate Ocean Research Project (TECH 797).

**Plant Biology**

The plant biology minor is designed to provide a flexible and broad selection of courses to complement any other major area of study.

**The requirements for the plant biology minor are:**
PBIO 412 or equivalent or BIOL 601, and a minimum of 16 credits from the following list of courses: PBIO 566, 625, 651, 701/702, 709, 713, 717, 719, 722, 727, 758, 795 (maximum of four credits), 796, 799; BIOL 601; BMCB 754; GEN 772, 774/775.

For advice on course selection, students should see the chairperson of the Department of Biological Sciences, (603) 862-3205.

**Water Resources Management**

Students in biology, environmental conservation studies, forestry, plant biology, wildlife and conservation biology, environmental engineering, environmental and resource economics, community and environmental planning, and related fields should consider a minor in water resources management. There is a strong demand among consulting firms, state and federal agencies, and not-for-profit organizations for persons with knowledge and experience relevant to water resource management. The minor consists of 20 credits (totaling five courses) with grades of C- or better, and no pass/fail courses. No more than 8 credits used to satisfy major requirements may be used for the minor.

**Required**

NR 504, Freshwater Resources  
NR 703, Watershed Water Quality Management  
ESCI 705, Principles of Hydrology

**Choose from the list below for eight additional credits:**

NR 658, Introduction to Geographic Information Systems  
NR 711, Wetland Ecology and Management  
NR 716, Wetland Delineation  
NR 719, Wetlands Restoration and Mitigation  
NR 751, Aquatic Ecosystems  
NR 760, Geographic Information Systems in Natural Resources  
ESCI 710, Groundwater Hydrology  
ZOOL 708, Stream Ecology  
ZOOL 717, Lake Ecology

For additional information, contact the Department of Natural Resources and the Environment, (603) 862-1022.

**Wetland Ecology**
Students in biology, environmental conservation studies, forestry, plant biology, environmental sciences, wildlife and conservation biology, and related majors should consider obtaining a minor in wetland ecology. There is a strong demand among consulting firms, private conservation groups, and state and federal agencies for employees with knowledge and experience relevant to wetland resource management. The minor consists of 20 credits (totaling five courses) with grades of C- or better, and no pass/fail courses. No more than 8 credits used to satisfy major requirements may be used for the minor.

**Required**

NR 504 Freshwater Resources, or NR 703 Watershed Water Quality Management  
NR 711, Wetland Ecology and Management

**One more field-based course with a wetlands focus:**

NR 716, Wetland Delineation  
NR 719, Wetlands Restoration and Mitigation  
ZOOL 708, Stream Ecology  
MEFB 525, Introduction to Aquatic Botany, or PBIO 747, Aquatic Plants in Restoration, Management, and Conservation

**Recommended**

PBIO 566, Systematic Botany  
PBIO 722, Marine Phycology  
GEN 713, Microbial Ecology and Evolution  
NR 527, Forest Ecology  
NR 765, Community Ecology  
NR 751, Aquatic Ecosystems  
NR 425, Field Dendrology  
NR 501, Studio Soils  
NR 602, Natural Resources and Environmental Policy  
NR 621, Field Description of Soils  
NR 706, Soil Ecology  
ZOOL 725, Marine Ecology

For additional information, contact David Burdick, (603) 862-4523.
Undergraduate Course Catalog 2016-2017
College of Life Sciences and Agriculture

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The College of Life Sciences and Agriculture is organized into three departments: Biological Sciences; Molecular, Cellular, and Biomedical Sciences; and Natural Resources and the Environment.

Department of Biological Sciences

Majors: Animal Science (Dairy Management); Biology; Equine Studies (Industry and Management, Therapeutic Riding, Equine Science); Marine, Estuarine, and Freshwater Biology; Neuroscience and Behavior; Sustainable Agriculture and Food Systems; Zoology

Chairperson: Larry Harris


Affiliate Professors: James E. Byers, Clinton J. Dawes, Molly E. Lutcavage, Rakesh Minocha, Andrew F. Page, Ron Rompalla, John A. Ryan, Walter C. Shortle, Kevin T. Smith, Barry J. Wicklow

Extension Professors: Alan T. Eaton, Catherine A. Neil, Cheryl A. Smith

Research Professors: Raymond E. Grizzle

Associate Professors: Alan L. Baker, Patricia D. Bedker, Jessica A. Bolker, Elizabeth P. Boulton, Andre F. Brito, Anita S. Klein

Affiliate Associate Professors: Pingguo He, Richard Langan, Kathy J. Soder

Extension Associate Professors: Shane R. Bradt, Rebecca C. Sideman

Research Associate Professors: Gregg E. Moore
Assistant Professors: Melissa L. Aikens, Arturo S. Andrade, Todd C. Guerdat, Iago Hale, Carrie L. Hall, Daniel R. Howard, Sandra M. Rehan

Affiliate Assistant Professors: Michael D. Chambers, Jennifer Dijkstra, Jason S. Goldstein, Nathaniel Mulcahy, Inga F. Potter, Tracy L. Pugh, Dwight D. Trueblood

Extension Assistant Professors: Michal Lunak, Erik W. Chapman

Research Assistant Professors: Elizabeth A. Fairchild

Lecturers: Leslie Curren, Vanessa Grunkemeyer, Patricia Jarema, Christina Keim, Andrew Ogden, Sarah Hamilton Rigg

Department of Molecular, Cellular, and Biomedical Sciences

Majors: Biochemistry, Molecular and Cellular Biology; Biomedical Science (Medical Laboratory Science, Medical Microbiology, Medical and Veterinary Sciences); Genetics (Genomics); Nutrition (Nutritional Sciences, Dietetics, Nutrition and Wellness)

Chairperson: Rick H. Cote

Professors: Rick H. Cote, Joanne Curran-Celentano, Clyde L. Denis, Thomas M. Laue, Aaron B. Margolin, W. Kelley Thomas, Louis S. Tisa, Paul C. Tsang

Affiliate Professors: Steven K. Crawford, John A. McCracken, James A. Sulikowski

Extension Professors: Catherine A. Violette

Research Professors: Michael P. Lesser, Vernon N. Reinhold

Associate Professors: Feixia Chu, John J. Collins, Estelle M. Hrabak, Colette Janson-Sand, Cheryl A. Whistler

Affiliate Associate Professors: Deena J. Small

Clinical Associate Professors: Joanne D. Burke, Mary Katherine Lockwood, Ruth A. Reilly, Inga F. Sidor

Assistant Professors: Brian A. Barth, Xuanmao Chen, Jeffrey T. Foster, Matthew T. MacManes, David C. Plachetzki

Affiliate Assistant Professors: Kevin M. Culligan, Dean R. Elder, Dennis E. Matthews, Gary B. Smejkal, Nathan L. Smith

Clinical Assistant Professors: Meng Chen, Stephanie L. Clarke, Maggie Leigh Dylewski, Adele J. Marone, David Needle, Kevin Pietro, Brian A. Stevens
Lecturers: Davida L. Margolin, Timothy P. Montminy, Jesse S. Morrell

Department of Natural Resources and the Environment

Majors: Community and Environmental Planning; Environmental Conservation and Sustainability; Environmental and Resource Economics; Environmental Sciences (Ecosystems, Soil and Watershed Management, Hydrology [CEPS]); Forestry; Wildlife and Conservation Biology

Chairperson: Peter J. Pekins


Affiliate Professors: Christopher Eagar, Jeffrey E. Gove, Erik A. Hobbie, David Hollinger, George C. Hurtt, Jeffrey S. Kahl, William B. Leak, Changsheng Li, Rakesh Minocha, Lawrence J. Prelli

Extension Professors: Karen P. Bennett, Julia M. Peterson, Michael R. Sciabarrasi, Sarah S. Smith

Research Professors: Fredrick T. Short

Associate Professors: Heidi Asbjorsen, Kelly L. Cullen, A. Stuart Grandy, Thomas D. Lee, Alberto B. Manalo, Robert A. Robertson

Affiliate Associate Professors: Andrew B. Cooper, Kevin J. Dodds, Joel N. Hartter, Linda S. Heath, Coeli M. Hoover, Herman A. Karl, Peter A. Maddison, Nathan W. Siegert

Extension Associate Professors: Matthew D. Tarr

Research Associate Professors: David M. Burdick, Stephen H. Jones, Adrienne Kovach

Assistant Professors: Jenica M. Allen, Catherine A. Ashcraft, Shadi S. Atallah, Jeffrey R. Garnas, Rebecca J. Rowe, Richard G. Smith, Wilfred M. Wollheim

Affiliate Assistant Professors: Ria Brejaart, John L. Campbell, John R. Coon, Richard A. Hallett, Ryan P. Hanavan, Christopher Longson, William Maddocks, Mary E. Martin, Kalle E. Matso, Isabel A. Munck, Anne Pringle, D. Marcela Bolaños Rodriguez, Irina Trubetskova, Mariko Yamasaki

Senior Lecturers: Mary A. Friedman, Debra Straussfogel
Lecturers: Clayton Mitchell, Jennifer L. Purrenhage
The undergraduate program in animal science is designed to prepare students for a variety of careers by providing strong fundamental and applied education in animal nutrition, reproduction, genetics, physiology, health, and large animal management. On-campus animal facilities available to provide practical experience with agricultural animals include the Fairchild Dairy Teaching and Research Center, the Lou and Lutza Smith Equine Center, the nearby organic dairy housed at the Burley-Demeritt Farm, and aquaculture facilities. Program graduates may be employed in farm ownership, management, marketing, the pharmaceutical industry, agribusiness, finance, manufacturing, public relations, extension, vocational education, or consulting. The animal science B.S. is designed for students interested in animal agriculture. Students who are considering continuing their studies through graduate school or veterinary school are advised to take the recommended additional courses in chemistry, math, and physics.

Animal Science Foundation Courses

BIOL 411, Introductory Biology: Molecular & Cellular
BIOL 412, Introductory Biology: Evolution, Biodiversity, Ecology
CHEM 403, General Chemistry I
CHEM 404, General Chemistry II
BIOL 528, Applied Biostatistics, or BIOL 555, Experimental Design & Analysis Lab, or equivalent (SOC 502 or PSYC 402)
BMS 503, General Microbiology
BMCB 501, Biological Chemistry
(Students interested in graduate school should take two semesters of Organic Chemistry and one semester of Biochemistry.)
CHEM 651/653, Organic Chemistry I/Organic Chemistry Lab
CHEM 652/654, Organic Chemistry II/Organic Chemistry Lab
BMCB 658/659, General Biochemistry/General Biochemistry Lab

Requirements for All Animal Science Majors
AAS 439, Fundamentals of Animal Health
ANSC 406, Careers in Animal Science
ANSC 421, Animal Agriculture Today
ANSC 511, Anatomy and Physiology
ANSC 512, Anatomy and Physiology
ANSC 543, Technical Writing in Animal Science, or equivalent (ENGL 501, 502, 503 or 419) (WI)
ANSC 609, Principles of Nutrition
ANSC 612, Genetics of Domestic Animals

Ethics Course
ANSC 602, Animal Rights and Societal Issues (WI)

Disease Course (choose one)
AAS 574, Dairy Cattle Disease Seminar
ANSC 620, Equine Diseases

Reproduction Course (choose one)
ANSC 701, Physiology of Reproduction
ANSC 715, Physiology of Lactation
ANSC 724, Reproductive Management and Artificial Insemination
BMS 702, Endocrinology

http://animalsci.unh.edu/course-descriptions

Animal Science Electives
Three electives must be chosen and approved by the student's faculty adviser. At least two electives must be at the 500 level or above. For classes less than three credits, two classes must be taken together to count as one requirement. Electives:
Capstone Experience
The capstone requirement may be satisfied through a course (e.g., ANSC 698, ANSC 728W, ANSC 795, or ANSC 797), created work or product, or some form of experiential learning (e.g., honors theses, mentored research projects, and other special student activities).

Requirements for Animal Science Students Interested in Graduate/Veterinary School
BMCB 658 and 659, General Biochemistry
CHEM 651/653, Organic Chemistry I
CHEM 652/654, Organic Chemistry II
MATH 424B, Calculus for Life Sciences
PHYS 401, Introduction to Physics I
PHYS 402, Introduction to Physics II

Students interested in veterinary medicine should consult the pre-veterinary medicine program website (http://www.prevet.unh.edu/).

Animal Science: Dairy Management B.S.
The ANSC: dairy management option is designed to provide students with solid training in areas important to the successful management of a dairy enterprise, for employment in related agribusinesses (e.g., pharmaceutical and feed industries), or for those wishing to pursue additional training leading to the M.S. or Ph.D. degree in dairy science or its related disciplines. Dairy management students receive training in areas such as nutrition, reproduction, diseases, genetics, lactation physiology, forages, agribusiness finance, personnel management, computer science, and public relations. In addition, junior and senior students enrolled in this program will be given complete responsibility for managing the UNH teaching herd with other students, thereby acquiring actual management experience along with their basic subject matter training. The UNH Teaching and Research Center, a modern dairy facility, houses approximately one hundred milking cows plus a similar number of non-lactating animals. For additional information and answers to questions regarding the option in dairy management, email Dr. Peter Erickson.

Students are responsible for the completion of the animal science foundation courses and the requirements for all animal science majors (both sets of courses listed above). In addition, animal science: dairy management B.S. students must also successfully complete:

AAS 423, Dairy Cattle Selection (Little Royal)
AAS 425, Introduction to Dairy Herd Management (may waive ANSC 421)
AAS 432, Introduction to Forage and Grassland Management
AAS 574, Dairy Cattle Disease Seminar
ANSC 602, Animal Rights and Societal Issues (WI)
ANSC 650, Dairy Industry Travel Course
ANSC 698, CREAM (two-semester course)
ANSC 708, Ruminant Nutritional Physiology
ANSC 710, Dairy Nutrition
ANSC 715, Physiology of Lactation
ANSC 724, Reproductive Management and Artificial Insemination
ANSC 727, Advanced Dairy Management I
ANSC 728, Advanced Dairy Management II (WI); will also fulfill the Capstone requirement
EREC 411, Environmental and Resource Economics Perspectives

**GPA Requirements for All Students in Animal Science**

Students will be required to earn a C- or better in the foundation courses and all required courses for the animal science major to receive credit toward graduation. Students failing to do this will need to retake the course in order to receive credit.

**Minor in Animal Science**

A minor in animal science consists of a minimum of 20 credits of animal science (ANSC) courses. No more than 7 credits may be taken in the Thompson School of Applied Science (AAS) and at the 400-level.

- ANSC 421, Animal Agriculture Today, MUST be taken
- ANSC 609, Principles of Animal Nutrition, MUST be taken
- ANSC 612, Genetics of Domestic Animals, MUST be taken
- One ANSC Disease course, MUST be taken

Students must receive a minimum grade of C- in any course used for the minor. Students failing to do this will need to retake the course in order to receive credit. No courses taken on a pass (credit)/fail basis may count toward the minor. Students who transfer from other institutions may petition the animal science program faculty for course approval.

Students wanting to declare a minor in animal science must meet with animal science minor coordinator **Dr. Elizabeth Boulton** DVM, DACVS as early as possible and no later than first semester of their junior year.

Students must complete the minor form their final semester at UNH.

For additional information and answers to questions regarding the animal science B.S. degree, email Dr. Elizabeth Boulton, elizabeth.boulton@unh.edu.

**Minor in Dairy Management**
For a minor in dairy management, students are required to register for AAS 425, Introductory Dairy Herd Management; ANSC 710, Dairy Nutrition; ANSC 715, Physiology of Lactation. An additional 8 credits of coursework must also be taken from the following selection: AAS 423, Dairy Cattle Selection; AAS 574, Dairy Cattle Diseases; ANSC 698, CREAM; ANSC 728, Advanced Dairy Management II. The conditions stated above for MINORS apply also to a minor in dairy management.

Additional information and questions regarding the minor in dairy management may be obtained by e-mailing Dr. Peter Erickson.
Students who major in BMCB can also use their training in conjunction with advanced degrees in law and business. Students obtaining the B.S. in BMCB enjoy excellent job prospects immediately upon graduation. There is currently a demand for skilled research technicians in biotechnology companies, pharmaceutical companies, government agencies, forensics, academic research laboratories, and hospitals. Graduates also have knowledge that is valuable in the fields of management, sales, marketing, regulatory affairs, technical writing, and scientific journalism. With additional courses in education, the B.S. in biochemistry, molecular and cellular biology also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the BMCB major combine a passion for teaching and student advising with strong research expertise in their chosen discipline. BMCB faculty are committed to providing independent research experiences for undergraduate students, and many faculty have well-funded research programs utilizing state-of-the-art equipment and techniques. On-campus research facilities that students can use to enhance their research experience include the Hubbard Center for Genome Studies, the Center to Advance Molecular Interaction Science, and the Center for Comparative and Molecular Endocrinology, among others.

**Bachelor of Science in Biochemistry, Molecular and Cellular Biology**

Students majoring in BMCB must take: i) five BMCB core courses; ii) three major elective courses chosen from an extensive list; iii) four bioscience core courses; and iv) eight foundation courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). In addition, courses for the Discovery Program and the University Writing Requirement must be completed. For a detailed list of curriculum requirements, visit the BMCB website.

**BMCB Core Courses**

Opportunities in Biochemistry, Molecular and Cellular Biology (1 semester)
Genetics of Prokaryotic Microbes, or Molecular Genetics (1 semester)
Principles of Biochemistry (2 semesters)
Cell and Developmental Biology (1 semester)

**BMCB/Biology Major Electives**

One laboratory techniques course

Two other major elective courses in the areas of cell biology, biochemistry, molecular biology, genetics, biomedical sciences, and health issues (list available at...
Bioscience Core Courses
Biology with laboratory (2 semesters)
Microbiology with laboratory (1 semester)
Genetics (1 semester)

Foundation Courses
General Chemistry with laboratory (2 semesters)
Organic Chemistry with laboratory (2 semesters)
Calculus (1 semester)
Statistics (1 semester)
Physics with laboratory (2 semesters)

Pre-Professional Health Programs
Students interested in postgraduate careers in the health care professions should visit the Pre-Professional Health Programs Advising Office online (http://www.unh.edu/premed-advising) or in person (Hood House, Room 102). Requirements for specific professional schools (e.g., medical, dental, physician’s assistant, pharmacy, etc.) are provided at http://www.unh.edu/premed-advising/exploring-health-professions. Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program website (http://www.prevet.unh.edu/). While many of the prerequisite courses required by professional schools are also requirements of the BMCB major, you should consult with your faculty adviser to create a plan of study that best prepares you for pursuing a career in one of these health professions.

Minor in Biochemistry, Molecular and Cellular Biology (BMCB)
Students who wish to develop focused competencies in biochemistry, molecular biology, and/or cell biology can complement their major academic program with a minor in biochemistry, molecular and cellular biology (BMCB). The intent to complete a minor in BMCB should be communicated by the end of the junior year. The general requirements for completion of a minor can be found in the minor section of the Undergraduate Catalog. Specific courses that fulfill the requirements for the BMCB minor can be found at http://colsa.unh.edu/mcbs/bmcb/biochemistry-molecular-and-cellular-biology-minor.

For additional information on the BMCB major or minor, contact the undergraduate program coordinator, Dr. Feixia Chu (feixia.chu@unh.edu).

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Biology (BIOL)


» [Click to view course offerings](http://www.biology.unh.edu/)

**Professor:** William E. Berndtson, John F. Burger, Donald S. Chandler, Thomas M. Davis, Larry G. Harris, Arthur C. Mathieson, Subhash C. Minocha, Christopher D. Neefus

**Affiliate Professor:** Rakesh Minocha

**Associate Professor:** Alan L. Baker, Patricia D. Bedker, Jessica A. Bolker, Anita S. Klein

**Assistant Professor:** Iago L. Hale, Carrie L. Hall, Sandra M. Rehan

**Lecturer:** Patricia M. Jarema

**Adjunct Associate Professor:** Janet R. Sullivan

The biology major is designed to provide a strong, broad background in biological sciences to students interested in education in the life sciences. The biology major integrates theoretical and practical (hands-on laboratory and field work) courses in different aspects of the biology of animals, microbes, and plants. The curriculum is designed to reflect the diversity of the biological systems in nature. It encompasses the study of structural and functional relationships of living organisms at the molecular, cellular, and organismal level; the interactions of the living systems with the environment and with each other; and the evolutionary relationships of various forms of life. The goal is to create a facilitative environment for those with a scholarly interest in the biological sciences, and to extend their understanding, awareness, and appreciation of the diversity of the biological sciences.

The major is aimed at promoting excellence in biological science education by involving undergraduate students in strong interaction with faculty both in the classroom and research laboratories, and encouraging the development of quality undergraduate programs in all aspects of biology.

The biology major prepares students for graduate work in the biological, medical, and agricultural sciences, and for job opportunities in industry (biomedical, pharmaceutical, agrochemical, environmental, and biotechnological) and governmental research, and secondary school teaching, or a general education about living organisms. Completion of the four-year undergraduate program plus a fifth-year internship will be necessary for biology teaching certification. Students who plan to enter medical, dental, or related professional schools are advised to confer with their faculty adviser to build the requirements for these programs into their academic majors.
Courses in the biology major are selected from departments that constitute the biological sciences community at UNH. The flexibility of the curriculum allows student choice of a wide selection of courses in various departments. Students in the major take a biology core curriculum involving introductory and upper-level science courses. They must also take seven additional courses in the biological sciences; three of these must be selected from course lists in three broad categories.

While students are advised to declare the biology major as incoming first-year students to assure adequate program planning, transfer into the program at a later stage is also possible. Since several of the other biological sciences majors share the same biology core curriculum, it is quite easy to change to or from other biological sciences majors.

**Academic Requirements**

To receive the B.S. degree in biology, students must complete 128 credit hours with a 2.0 cumulative grade-point average. Courses must include all UNH Discovery Program requirements, biology core curriculum requirements, plus seven additional courses from the biological sciences. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors. A minimum grade of C- is required in all biological science courses that are counted toward the requirements for a degree in biology. Students who expect to compete successfully for post-baccalaureate programs should attain a cumulative GPA of 3.0 or higher by the end of the sophomore year and maintain it at that level.

**Biology Core Curriculum**

The biology courses in the core curriculum constitute an integrated sequence of courses imparting basic skills and concepts of biology to expose students to the breadth of knowledge inherent in the biological sciences. The biology core allows a student to obtain a broad background in biology and related physical sciences and math.

**Biology Core Curriculum Courses**

- BIOL 400, Professional Perspectives on Biology
- BIOL 412, Introductory Biology: Evolution, Biodiversity, and Ecology
- BIOL 411, Introductory Biology: Molecular and Cellular
- BIOL 541, General Ecology
- BMS 503, General Microbiology
GEN 604, Principles of Genetics
CHEM 403 & 404, General Chemistry
CHEM 545/546, Organic Chemistry, and BMCB 658/659, General Biochemistry, or CHEM 651/653 and CHEM 652/654, Organic Chemistry  
MATH 424B, Calculus for Life Sciences, or MATH 425, Calculus I
BIOL 528, Applied Biostatistics, or BIOL 555, Experimental Design and Analysis Lab
PHYS 401 and 402, Introduction to Physics
ENGL 501, Introduction to Creative Nonfiction, or equivalent
EDUC 500, Exploring Teaching

Typically, students take BIOL 400; BIOL 412 & 411; CHEM 403-404; and MATH 424B in the first year, and then complete the remainder of their core requirements during the sophomore and junior years.

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1 BIOL 400 is required only for first-year biology majors.
2 The sequence CHEM 545/546-BMCD 658/659 is preferred to CHEM 651/653-652/654 for biology majors, except for those who are premedical or pre-health profession students.
3 CHEM 651/653 and 652/654 and ENGL 501 are required for premedical or affiliated professional programs.
4 EDUC 500 is required only for those preparing for teacher certification.

**Biology Electives**

In addition to the biology core curriculum, students must complete seven biology elective courses. Three of the seven courses are to be selected from courses listed in three categories/disciplines; the other four can come from the category lists or can be any other biological sciences course with approval of the student’s adviser. The seven selected courses should include at least one each from the three categories and must include one animal-identified course and one plant-identified course. A complete list of approved courses in each category/discipline is available from the student’s adviser, the Department of Biological Sciences office, and the biology website at biology.unh.edu. Corequisite lecture and lab courses count as one course. All UNH students must take four writing-intensive courses and one must be in their major.

**Note:** It is strongly recommended that students participate in an exchange semester at another university or in a field-oriented program or internship. There are many exchange opportunities available in which a full semester of credits toward the major may be earned. In addition, students should explore the courses at the Shoals Marine Laboratory (SML), which provides an excellent setting for several “field-oriented” courses during the summer. Often there is financial
support available for the SML programs. (See the SML website at https://marine.unh.edu/SML or the Cornell website at www.sml.cornell.edu for details.) It is further recommended that students explore possibilities of one or more semesters of independent investigation (research projects). For details, students should contact their adviser. Financial support is available for most of these programs.

One 600, 795, or 796 experience totaling three or more credits or any two 795-796 experiences of two credits each can fulfill one course requirement in any category with adviser approval. A Petition for Academic Variance approved by the chair of the Department of Biological Sciences is required to count 795-796 experiences for more than one major required course. Students should check the biology website (biology.unh.edu) and the UNH online catalog for updates and current course offerings.

**Pre-Health Professional Program**

Students who wish to pursue postgraduate degrees in the health care professions should visit the premedical advising office in Room 102, Hood House for additional information on requirements for specific professional schools. Call (603) 862-7740 or visit the program's webpage at www.unh.edu/premed-advising. The following elective courses will be helpful in preparing for admission to post-baccalaureate programs in the health professions and for their required aptitude examinations: BMS 702, ZOOL 518, ZOOL 625/626, BMCB 605, BMCB 751/752, ANSC 511/512.

**Biology Teacher Certification and General Science Certification**

Biology teacher certification for students preparing to teach high school biology may be obtained through the Department of Education’s five-year, undergraduate-graduate degree program. Students are required to take EDUC 500 (preferably in the sophomore year), earn a bachelor’s degree in one of the biological sciences, and complete a fifth year, which includes an internship and coursework leading to a master’s degree in education. General science certification for students preparing to teach science in middle and junior high schools can be obtained through the Department of Education’s general science certification program. For further information, see education, or contact the Department of Education’s teacher education coordinator.

**Biology Minor**

Students must take BIOL 411-412, or PBIO 412 and ZOOL 412 plus three additional courses in the biological sciences: either BIOL 541 or ZOOL 690 (both are writing intensive), and two courses dealing with organismal surveys: one must focus on animals and the other on plants. The minimum acceptable grade in these courses is a C-, and the average grade for these courses must be a C or better.
Students interested in a biology major or minor should contact Dr. Donald S. Chandler, Spaulding 266, 862-1735, Donald.Chandler@unh.edu.

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**Biomedical Science (BMS)**

» [http://www.biomedical.unh.edu/](http://www.biomedical.unh.edu/)

» Click to view course offerings

Professor: Thomas L. Foxall, Aaron B. Margolin, Thomas G. Pistole, Paul C. Tsang  
Associate Professor: David H. Townson  
Clinical Associate Professor: Mary Katherine Lockwood  
Clinical Assistant Professor: Meng Chen, Stephanie L. Clarke, Barry Corriereau, Michelle Fleetwood, Adele Marone, David B. Needle, Inga F. Sidor, Brian Stevens, Elise R. Sullivan  
Lecturer: Davida L. Margolin, Timothy P. Montminy, Joyce R. Stone

» Click to view faculty participating in the program [http://colsa.unh.edu/faculty/381]

Biomedical science lies at the interface between biology-based science and the application of medicine and veterinary medicine. With the complexity of 21st century human and animal health care, the biomedical sciences have become increasingly sophisticated and involve a wide variety of disciplines that study all aspects of life processes. The biomedical sciences have as primary objectives the development and application of bioscience to the diagnosis and prevention of disease, to the development of treatments and to the monitoring and promotion of health and wellness in both humans and animals.

The biomedical science (BMS) major at UNH encompasses three options: medical laboratory sciences (MLS), medical microbiology (MM), and medical and veterinary sciences (MVS). These options possess diverse curricula but are linked by their common interests in the disciplines of medical and veterinary sciences. Students are attracted to these options by a profound interest in human and animal physiology and diseases. Each of the options in the BMS degree is based on solid foundations in biology, chemistry, physics, and math, along with advanced courses in laboratory-based disciplines, mechanisms of disease induction, and therapy. For descriptions of each option and their curricular details, visit [www.biomedical.unh.edu](http://www.biomedical.unh.edu).

Biomedical science is a dynamic discipline with excellent long-term career prospects in
research, clinical practice, education, management, and laboratory-based disciplines. At UNH the BMS curriculum provides graduating students with the required and recommended courses for admission to graduate school and the professional schools of medicine, veterinary medicine, dentistry, and pharmacy, as well as to physician assistant and pathology assistant programs. With the current high demand for skilled biomedical scientists as research technicians in biotechnology companies, pharmaceutical companies, government agencies, forensics, academic research laboratories, and hospitals, BMS majors also enjoy excellent job prospects upon graduation. BMS graduates also have a knowledge base that is valuable in the fields of sales, marketing, regulatory affairs, technical writing, patent law, and scientific journalism. With additional courses in education, the B.S. in biomedical science also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the BMS curriculum have expertise in a variety of areas of biomedical science, including infectious diseases, veterinary pathology, virology, disease mechanisms, and laboratory medicine. The biomedical science faculty strongly encourage students to complement their academic courses with experiential learning opportunities through internships, field experience, and independent research projects conducted with biomedical research faculty on campus. Facilities include state-of-the-art research and teaching laboratories. The New Hampshire Veterinary Diagnostics Laboratory (NHVDL) provides unique opportunities for students interested in veterinary medicine and pathobiology to work alongside veterinary pathologists in the diagnostic laboratories.

**Biomedical Science: Medical Laboratory Sciences (MLS) Option**

The medical laboratory sciences (MLS) program at UNH is NAACLS accredited and follows accreditation requirements. Students in this option take six required MLS core courses, five major elective courses, five bioscience core courses, and four foundation courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). A grade of C- or above is required in BMS-MLS core courses within the major. For a detailed list of curriculum requirements, visit: https://colsa.unh.edu/mcbs/biomedical/major-requirements-bs-biomedical-science-option-medical-laboratory-science. In addition, all other University academic requirements for the Discovery Program and the University Writing Requirement must be completed.

**BMS-MLS Core Courses**

- Professional Perspectives in Biomedical Sciences, required of freshmen only (1 semester)
- Pathogenic Microbiology with lab (1 semester)
- Clinical Immunology and Serology with lab (1 semester)
Body Fluids with lab (1 semester)
Molecular Diagnostics (1 semester)
Mycology/Parasitology/Virology (1 semester)

BMS-MLS Major Electives
A total of five unique courses from a range of subject areas that includes hematology, medical biochemistry, phlebotomy, immunohematology, and case studies or clinical internships.

Bioscience Core Courses
Anatomy and Physiology with lab (2 semesters)
Microbes in Human Disease or General Microbiology with lab (1 semester)
Principles of Genetics (1 semester)
General Biochemistry with lab (1 semester)

Foundation Courses
General Chemistry with lab (2 semesters)
Organic Chemistry with lab (1 or 2 semesters depending on course selection)
Statistics (1 semester)

Biomedical Science: Medical Microbiology (MM) Option
Students in the medical microbiology (MM) option take four required MM core courses, five major elective courses, five bioscience core courses, and seven foundation courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). A grade of C- or above is required in offerings within the major. This includes BMS-MM core, BMS-MM major electives, bioscience core courses, and foundation courses. For a detailed list of curriculum requirements, visit: http://colsa.unh.edu/mcbs/biomedical/major-requirements-bs-biomedical-science-option-medical-microbiology. In addition, all other University academic requirements for the Discovery Program and the University Writing Requirement must be completed.

BMS-MM Core Courses
Professional Perspectives in Biomedical Sciences, required of freshmen only (1 semester)
Pathogenic Microbiology with lab (1 semester)
Immunology with lab (1 semester)
Virology with lab (1 semester)

BMS-MM Major Elective Courses
A total of five unique major elective courses is required. At least one course must be taken in each of the following subject areas: host-microbe interaction, molecular biology, and community. Two additional courses are taken from the entire set of approved major elective courses that include virology, molecular microbiology, genetics of prokaryotic microbes, and ethics and issues in biomedical science.

**Bioscience Core Courses**
General Biology with lab (2 semesters; or 1 semester General Biology and 1 semester Anatomy and Physiology [BMS 508])
General Microbiology with lab (1 semester)
Principles of Genetics (1 semester)
General Biochemistry with lab (1 semester)

**Foundation Courses**
General Chemistry with lab (2 semesters)
Organic Chemistry with lab (1 or 2 semesters depending on course selection)
Calculus (1 semester)
Biostatistics (1 semester)
Physics with lab (2 semesters)

**Biomedical Sciences: Medical and Veterinary Sciences (MVS) Option**
Students in the medical and veterinary sciences (MVS) option take three MVS core courses, seven MVS major elective courses, five bioscience core courses, and eight foundation courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). A grade of C- or above is required in all courses within the major. This includes BMS-MVS core, BMS-MVS major electives, bioscience core courses, and foundation courses. For a detailed list of curriculum requirements, visit:
http://colsa.unh.edu/mcbs/biomedical/major-requirements-bs-biomedical-science-option-medical-and-veterinary-sciences. In addition, all other university academic requirements for the **Discovery Program** and the **University Writing Requirement** must be completed.

**BMS-MVS Core Courses**
Professional Perspectives in Biomedical Sciences, required of freshmen only (1 semester)
Anatomy and Physiology with lab (2 semesters)

**BMS-MVS Major Elective Courses**
A total of seven unique major elective courses are required. At least two courses must be taken in each of the following subject areas: biomedical systems, pathobiology and disease, and health and environmental issues. One additional course is taken from the entire set of approved major elective courses that include dairy management, endocrinology, physiology, microbiology, cell biology, and public health.

**Bioscience Core Courses**
- General Biology with lab (2 semesters)
- General Microbiology with lab (1 semester)
- Principles of Genetics (1 semester)
- General Biochemistry with lab (1 semester)

**Foundation Courses**
- General Chemistry with lab (2 semesters)
- Organic Chemistry with lab (2 semesters)
- Calculus (1 semester)
- Biostatistics (1 semester)
- Physics with lab (2 semesters)

**Pre-Professional Health Programs**
Students interested in postgraduate careers in the health care professions should visit the Pre-Professional Health Programs Advising Office online ([www.unh.edu/premed-advising](http://www.unh.edu/premed-advising)) or in person (Hood House, Room 102). Requirements for specific types of professional schools (e.g., medical, dental, physician's assistant, pharmacy, etc.) are provided at [http://www.unh.edu/premed-advising/exploring-health-professions](http://www.unh.edu/premed-advising/exploring-health-professions). Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program website ([http://www.prevet.unh.edu/](http://www.prevet.unh.edu/)). While many of the prerequisite courses required by professional schools are also requirements of the biomedical science major, students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these health professions.

**Minor in Biomedical Science (BMS)**
Students who wish to develop focused competencies in the broad area of the biomedical sciences can complement their major academic program with a minor in biomedical science (BMS). The general requirements for completion of a minor can be found in the [minor section](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm?id=3&page=programs.html) of the Undergraduate Catalog. Courses that fulfill the requirements of the BMS minor and groups from which they must be selected can be found at [http://colsa.unh.edu/mcbs/biomedical/biomedical-science-minor](http://colsa.unh.edu/mcbs/biomedical/biomedical-science-minor). The intent to complete a minor in BMS should be communicated by the end of the junior year.
For additional information on the BMS major or minor, contact the Undergraduate Program Coordinator.

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Community and Environmental Planning (CEP)

» http://www.plan.unh.edu/

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Professor: Russell G. Congalton, John M. Halstead
Associate Professor: Kelly L. Cullen, Alberto B. Manalo, Robert A. Robertson
Assistant Professor: Catherine M. Ashcraft
Lecturer: Clayton R. Mitchell
Extension Associate Professor: Charles A. French
Principal Lecturer: Mary Adamo Friedman

The community and environmental planning (CEP) program is designed to provide students with the knowledge and skills that will equip them to be effective community planners. Both natural resource and human systems sustainability principles are embedded in all aspects of this program. Students will develop their capacities to integrate human and natural systems as they develop critical thinking and technical planning skills. They will have the ability to lead and facilitate citizens’ engagement in planning for the community’s future. They will be able to analyze community and environmental problems, and recommend viable alternative solutions designed to ensure that a desirable quality of life exists in the future.

- Students will have a strong background in the theory and practice of sustainable development.
- Students will have an explicit awareness of both the necessity of and means for protecting natural resource systems and the environmental services they provide to human communities.
- Students will have the ability to assess the consequences of proposed changes to the landscape at different scales, from the very local to regional, as well as to anticipate the consequences of the land use changes that will require community resources and regulatory tools.
- Students will understand how local governments function, and will have basic administrative and technical planning skills to support the development and implementation of sound community-level development and land use change decisions.
- Students will be clear communicators, able to foster and facilitate informed citizen
participation in planning processes that provide the links between the citizens of a community and their government and which serve to determine a common community vision.

- Students will be effective ethical collaborators, trained to foster interdisciplinary, multistakeholder approaches to planning.

The CEP core requirements include planning and decision making, sustainability principles, communications, law, governance, conflict resolution, environmental and social systems, economics, and statistics, as well as a community planning internship experience. Students are encouraged to undertake independent research. In addition to the core, students, in consultation with their adviser, design a focus area or minor in which they can develop specialty tools and field experiences geared toward entry-level jobs in the community and environmental planning fields. For example, elective courses in geographic information systems and remote sensing, watershed management, wetlands management, pollution control, forest management, sustainable agriculture, justice studies, environmental policy, social impact assessment, or tourism can form a focus area of expertise.

The program also provides a firm base for graduate study in a variety of areas such as regional planning, public administration, and environmental planning.

Students interested in contributing their energy and talents to mastering the challenges of community and environmental planning should consult with Mary Friedman, CEP program coordinator, Department of Natural Resources and the Environment, G62 James Hall, (603) 862-4456 or by e-mail: mary.friedman@unh.edu

**Required Core Courses**

CEP 415, Community Development Perspectives
CEP 508, Applied Community Development
CEP 614, Fundamentals of Planning
CEP 777, Topics in Community Planning (Capstone for the major)
CEP 794, Community and Environmental Planning Internship
CMN 500, Public Speaking
ENGL 401, First-Year Writing
ENGL 502, Professional and Technical Writing
EREC 411, Environmental and Resource Economics Perspectives
EREC 525, Statistical Methods and Applications, PSYC 402, Statistics in Psychology, or SOC 502, Statistics
EREC 627, Community Economics
ESCI 409, Geology and the Environment
PBIO 412, Introductory Botany
NR 435, Contemporary Conservation Issues and Environmental Awareness
NR 527, Forest Ecology, or BIOL 541, General Ecology
NR 658, Introduction to Geographic Information Systems
NR 718, Law of Natural Resources and Environment, or NR 602, Natural Resources and Environmental Policy
NR 724, Resolving Environmental Conflicts

Choose one of these
POLT 502, State and Local Government, or
POLT 508, Supreme Court and the Constitution, or
alternative approval by adviser

Choose one of these
SOC 530, Race and Ethnic Relations, or
SOC 540, Private Troubles, Public Issues: Contemporary Social Problems, or SOC 645, Class Status and Power, or SOC 660, Urban Sociology
ECON 669, Women and Economic Development, or
alternative approval by adviser

Living Green (choose two)
NR 507, Introduction to Energy Systems and Sustainable Energy, or ENE 520, Environmental Pollution and Prevention
NR 784, Sustainable Living, or NR 785, Systems Thinking for Sustainable Living
NR 786, Leadership for Sustainability
CEP 673, Green Real Estate

Electives (20 - 24 hours): focus area or a minor
These may include a second internship, directed research, independent study, community service and leadership, economics (EREC 606, Land Economics Perspectives; EREC 756, Rural and Regional Economic Development; ECON 707, Economic Growth and Environmental Quality); and/or other courses that help students add expertise to their CEP "toolbox."

Discovery Program Requirements
Writing Skills (ENGL 401)
Quantitative Reasoning (Statistics)
Inquiry Course
Sciences (three courses; one must be a lab course)
    Biological Sciences (PBIO 412)
    Environment, Technology, and Society (NR 435)
    Physical Sciences (ESCI 409)
Environmental and Resource Economics (EREC)

Professor: John M. Halstead, Theodore E. Howard
Associate Professor: Kelly L. Cullen, Alberto B. Manalo
Extension Associate Professor: Charles A. French
Principal Lecturer: Mary Adamo Friedman

This program offers training in environmental and resource economics, including public resource policy, resource management, natural resource and environmental economics, and community economics and finance. The curriculum emphasizes applied economics in the context of public policy. Training is also available in agricultural economics, including agribusiness, small business management, food marketing, agricultural policy, and world food supplies.

Students majoring in environmental and resource economics will normally concentrate in one of the following three areas: environmental and natural resource economics, agricultural economics, or community economics. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). In addition, students must satisfy University requirements, including those for the Discovery Program. Majors interested in the economic or business aspects of agriculture and natural resources will be expected to take courses in the biological sciences.

Students majoring in any of the social science, life science, and agriculture departments of the University may find it to their advantage to elect courses or a minor in environmental and
resource economics or agribusiness. By doing so, their basic training can be supplemented in a specific area of interest, such as resource development and natural resource policy for social science majors, farm management and agricultural marketing for agricultural majors, and community economics and finance for students interested in local government and development.

**Required Courses**

**All of the following**

ECON 401, Principles of Economics (Macro)

ECON 605, Intermediate Microeconomic Analysis

ECON 611, Intermediate Macroeconomic Analysis, or ECON 635, Money and Banking

EREC 411, Environmental and Resource Economics Perspectives, or equivalent

(EREC 411 cannot be used to satisfy the Social Science Discovery program requirement)

EREC 525, Statistical Methods and Applications

MATH 420, Finite Mathematics, or MATH 424B, Calculus for Life Sciences

**At least six of the following, of which two must be 700 level**

EREC 501, Agriculture and Natural Resource Product Marketing

EREC 572, Introduction to Natural Resource Economics

EREC 601, Agribusiness Economics and Management

EREC 606, Land Economics Perspectives: Uses, Policies, and Taxes

EREC 627, Community Economics

EREC 680, Agricultural and Food Policy

EREC 708, Environmental Economics

EREC 756, Rural and Regional Economic Development

NR 602, Natural Resources and Environmental Policy

NR 643, Economics of Forestry

TOUR 700, Marketing Communications Research: Methodological Foundations

CEP 614, Fundamentals of Planning

Students who major in environmental and resource economics are qualified for a wide variety of opportunities upon graduation. Private business, public institutions, and government agencies currently have a strong demand for specialists trained in natural resource development; land and water use policy; natural resource and small business management; agricultural, fisheries, and forestry marketing; and community development. In many cases, students may wish to improve their qualifications by pursuing more specialized graduate studies in one or more of the above areas.

**Departmental Honors**
Honors in environmental and resource economics will be awarded to students who complete 16 credits of honors courses in environmental and resource economics (including a minimum of four credits of a senior research project), and who maintain a minimum grade-point average of 3.4 in the major. Students interested in the environmental and resource economics honors program should contact the environmental and resource economics coordinator in James Hall for more information.

Students interested in a major or minor in environmental and resource economics should contact John M. Halstead, James Hall, (603) 862-3914.

» Click to view course offerings

Environmental Conservation and Sustainability

» http://www.envconservation.unh.edu/

» Click to view course offerings

Professor: John E. Carroll, Russell G. Congalton, Mark J. Ducey, Marianne Klauser Litvaitis, James T. Taylor
Associate Professor: Heidi Asbjornsen, Thomas D. Lee
Assistant Professor: Catherine M. Ashcraft
Lecturer: Clayton R. Mitchell, Jennifer L. Purrenhage
Principal Lecturer: Debra Straussfogel

Mission of the ECS Major
Graduates of the environmental conservation and sustainability major understand the complexity of social-ecological systems and meet environmental challenges in innovative ways. ECS students understand ecological principles and comprehend the connections between natural resource and social systems (history, economics, law, policy, international perspectives). They integrate scientific information and human values and articulate problems in ways that point to solutions leading to a sustainable future.

ECS graduates have the theoretical, methodological, technical, and practical skills necessary to solve complex problems. They work collaboratively and across disciplinary boundaries and at all scales from the local to the international. Their critical thinking and communication skills allow them to serve as liaisons among diverse interest groups and to design, implement, and facilitate policy and action toward a sustainable future.
ECS graduates are environmental citizens, sustainability advocates, and leaders for constructive change. They typically serve as policy analysts, sustainability officers, resource managers, journalists, scientists, and teachers in business, non-profit organizations, and government agencies, including the Peace Corps and AmeriCorps. Many ECS graduates attend graduate or professional programs following graduation.

**ECS Major Curriculum**

The ECS major is comprised of 15 core requirements providing integrative courses in both environmental conservation and sustainability, along with a foundation in biology, ecology, physical and social science, and the basic tools and skills applied to problem solving. These core requirements are typically fulfilled in the first two years. Beginning in their junior year, ECS students, in consultation with their advisers, create a seven course focus area based on an ecological system or natural resource of their choosing. The focus area provides advanced study in ecology and natural resources; social sciences; tools, skills, and/or natural history and should reflect the student’s interests and future goals. Additionally, each ECS student completes a practicum experience and a capstone option.

The ECS major provides the opportunity for students to gain a common foundation of knowledge and skills emphasizing integration and critical thinking, while allowing for sufficient flexibility to pursue their interests and passions within a large and complex field of study. The design of the curriculum will allow each student at least four, and as many as six, free electives, which they may fulfill as they choose. Many students pursue international experiences, such as the UNH EcoQuest program in New Zealand, add a minor or dual degree (such as the dual degree in international studies), and/or pursue research opportunities with our faculty or through another of UNH’s undergraduate research opportunity programs.

In addition to the ECS degree requirements (below), students must complete the University Discovery Program and the University Writing Requirements.

**ECS Major Requirements**

*Degree Core Requirements (15 Courses)*

*Foundational Courses (two required courses):*

NR 435, Contemporary Conservation Issues and Environmental Awareness (ETS)

NR 437, Principles of Sustainability
Natural Science

Biology (two required courses):
BIOL 412, Introductory Biology: Ecology, Evolution, and Biodiversity (BS DLAB, INQ)
NR 439, Environmental Biology

Ecological Principles (choose two from the following):
BIOL 541, General Ecology (WI)
NR 527, Forest Ecology
SAFS 502, Agroecology

Physical Science (choose one from the following):
NR 403, Introduction to Environmental Science (INQ)
NR 458, The Science of Where? (Summer, on-line, PS DLAB)
CHEM 403, General Chemistry (PS DLAB)
CHE 410, Energy and the Environment (PS)
ESCI 409, Geology and the Environment (PS DLAB)
ENE 520, Environmental Pollution (ETS, WI)
PHYS 401, Introduction to Physics (PS DLAB)

Social Science

Resource Economics (one required course):
EREC 411, Environmental and Resource Economics Perspectives (SS)

Environmental Ethics and Values (Choose one from the following):
NR 701, Ecological Sustainability and Values (WI)
NR 784, Sustainable Living: Global Perspectives
SOC 565, Environmental Ethics

Natural Resources Policy (one required course):
NR 602, Natural Resources and Environmental Policy, or
NR 662 Environmental Policy, Planning and Sustainability in New Zealand (WI)
(EcoQuest Students Only)

Essential Tools and Skills

Field Methods (one required course):
NR 415, Natural Resources Field Methods

Statistics (choose one from the following):
BIOL 528, Biostatistics
EREC 525, Statistical Methods and Applications

Geospatial Analysis (one required course):
NR 658, Introduction to GIS

Writing Skills (choose one from the following):
ENGL 502, Professional and Technical Writing (WI)
ENGL 503, Persuasive Writing (WI)
ENGL 521, Nature Writers (WI)

Presentation Skills (choose one from the following):
CMN 500, Public Speaking
THDA 520, Creative Drama
THDA 583, Introduction to Puppetry
THDA 622, Storytelling, Story Theater and Involvement Dramatics
THDA 624A, Theater for Young Audiences

Focus Area (seven courses):
Students create a focus area addressing an environmental issue, ecological system, or natural resource of their choice. The focus area is based upon at least one course in the ecology and natural resources category, along with a combination of courses in the social sciences; tools, skills, and natural history categories; and any additional courses from the ecology and natural resources category reflecting the student’s interests and future direction. Focus areas should be designed in close consultation with the adviser. (Note: Courses used to fulfill core requirements may not be used in the focus area.)

Ecology and Natural Resources (one to four courses):
Choose at least one (1) course from this category and up to three (3) additional courses.

No more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.

ESCI 405, Global Environmental Change
NR 433, Wildlife Ecology (BS DLAB)
NR 501, Studio Soils
NR 502, Forest Ecosystems and Environmental Change (ETS)
NR 504, Freshwater Resources (PS DLAB)
NR 603, Landscape Ecology
NR 625, Physiological Ecology
NR 640, Wildlife Population Ecology
NR 642, Introduction to Biogeography
NR 650, Principles of Conservation Biology
NR 660, Ecology and Biogeography of New Zealand (5 credits)
NR 661, Restoration Ecology and Ecosystems NZ
NR 663, Applied Directed Research NZ
NR 664, Conservation Genetics
NR 706, Soil Ecology
NR 711, Wetland Ecology and Management
NR 729, Silviculture
NR 730, Terrestrial Ecosystems
NR 734, Tropical Ecology
NR 744, Biogeochemistry
NR 751, Aquatic Ecosystems
NR 761, Environmental Soil Chemistry
NR 765, Community Ecology
NR 782, Monitoring Forest Health
NR 783, Forest Communities of NH
PBIO/ZOOL 717, Lake Ecology (General Limnology)
PBIO/ZOOL 725, Marine Ecology
PBIO 747, Aquatic Plants in Restoration, Management and Conservation
PBIO 760, Insect Pest Management
ZOOL 628, Marine Invertebrate Evolution and Ecology
ZOOL 708, Stream Ecology
ZOOL 726, Conservation Behavior
ZOOL 750, Biological Oceanography
ZOOL 772, Fisheries Biology
MEFB 571, Estuarine Ecology
MEFB 616, Tropical Coastal Plant Ecology
MEFB 674, Ecology and the Marine Environment
MEFB 702, Sustainable Marine Fisheries

Social Sciences (two to five courses):
Choose at least two (2) courses from this category and up to three (3) additional courses.
No more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.
CEP 415, Community Development Perspectives
NR 507, Introduction to Our Energy Systems and Sustainable Energy
NR 643, Economics of Forestry
NR 662, Environmental Policy, Planning and Sustainability in NZ (WI)
NR 701, Ecological Sustainability and Values (WI)
NR 718, Law of Natural Resources and the Environment
NR 720, International Environmental Politics and Policies for 21st Century (WI)
NR 724, Resolving Environmental Conflicts (WI)
NR 784, Sustainable Living – Global Perspectives
NR 787, Advanced Sustainable Energy
ANTH 680, Globalization, Development and Poverty (WI)
ANTH 695, Globalization and Population Health (WI)
CEP 508, Applied Community Development
CEP 614, Fundamentals of Planning (WI)
ECON 605, Intermediate Micro
ECON 645, International Economics
ECON 668, Economic Development (WI)
ECON 669, Women and Economic Development (WI)
ECON 706, Economics of Climate Change
ECON 707, Economic Growth and Environmental Quality
EREC 627, Community Economics
EREC 633, Economics of Travel and Tourism
EREC 680, Agricultural and Food Policy
EREC 708, Environmental Economics
EREC 711, Marine Resource Economics
EREC 756, Rural and Regional Economic Development (WI)
GEOG 673, Environmental Geography (WI)
HIST 618, American Environmental History
POLT 751, Comparative Environmental Politics and Policies (WI)
POLT 780, International Environmental Politics, Policy and Law (WI)
SOC 665, Environmental Sociology (WI)
SOC 730, Communities and the Environment

Advanced Tools & Skills and Natural History (choose one course):
NR 425, Field Dendrology
NR 655, Vertebrate Biology
NR 703, Watershed Water Quality Management
NR 707, Environmental Modeling
NR 712, Mammalogy
NR 713, Quantitative Ecology
NR 716, Wetlands Delineation
NR 719, Wetlands Restoration and Mitigation
NR 745, Forest Management
NR 749, Forest Inventory and Modeling
NR 757, Remote Sensing of the Environment
NR 759, Digital Image Processing for NR
NR 760, GIS in Natural Resources
NR 785, Systems Thinking for Sustainable Solutions
SOC 601, Methods of Social Research
PBIO/ZOOL 719, Field Studies in Lake Ecology
PBIO/ZOOL 732, Lake Management
PBIO 752, Mycology
ZOOL 542, Ornithology
ZOOL 712, Ichthyology
ZOOL 745, Biology and Diversity of Insects

**Senior Capstone Options:**
The ECS major capstone experience may be filled by any one (1) of the following options:

*Option 1*
NR 795, Critical Issues seminars (2cr)
**Two seminars must be scheduled.** At least one must be taken in the senior year

*Option 2*
NR 786, Sustainability Leadership (4cr)

*Option 3*
NR 663, (NZ Directed projects) *if taken in the senior year*
If NR 663 is taken in the junior year or earlier, then one Critical Issues seminar (2cr) or Leadership for Sustainability must be taken in the senior year to fulfill the capstone requirement.

*Option 4*
Directed projects fulfilling one of the following: McNair Research Theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, etc.) may be applied in
consultation with the adviser and ECS program coordinator.

NR 600, Work Experience (0 credits):
Each ECS major will engage in a practical experience reflecting their interests and goals. The choice of the experience will be made in conjunction with the adviser and may occur any time beginning with the sophomore year.

Electives (four to six courses):
Students may choose four to six courses as electives to complete their major, in consultation with their adviser. The number of possible electives will be a function of the degree to which the student chooses to maximize the use of Discovery courses as ECS core requirements.

Environmental Conservation and Sustainability Minor

- Two required courses: NR 435 and NR 437
- Three other courses: one course from each of the designated categories (2-4) below.
  - A grade of C or better in each of the 5 courses.
  - No more than 8 credits used to satisfy major requirements may be used for the minor
  - Credit/fail courses may not be used for the minor.

Required Courses
NR 435, Contemporary Conservation Issues & Environmental Awareness
NR 437, Principles of Sustainability

Choose one course from each of the following categories:

Ecology
BIOL 541, General Ecology
NR 433, Wildlife Ecology
NR 502, Forest Ecosystems and Environmental Change
NR 527, Forest Ecology
NR 660, Ecology and Biogeography of New Zealand

Social Science and Management
NR 507, Introduction to Our Energy System and Sustainable Energy
NR 662, Environmental Policy, Planning & Sustainability in New Zealand
NR 718, Law of Natural Resources and Environment
NR 720, International Environmental Politics & Policies for the 21st Century
NR 724, Resolving Environmental Conflicts
NR 731, Ecosystem Based Governance: Policies & Management Strategies
NR 786, Leadership for Sustainability
EREC 606, Land Economics Perspectives: Uses, Policies, and Taxes
EREC 627, Community Economics

**Advanced Topics in Conservation and Sustainability**
NR 603, Landscape Ecology
NR 650, Conservation Biology
NR 661, Restoration Ecology & Ecosystem Mgmt. in New Zealand
NR 711, Wetland Ecology and Management
NR 784, Sustainable Living
NR 785, Systems Thinking for Sustainable Solutions
NR 787, Advanced Topics in Sustainable Energy
MEFB 702, Sustainable Fisheries

Students interested in the ECS minor should contact Debra Straussfogel, Department of Natural Resources and the Environment, (603) 862-3923, debra.straussfogel@unh.edu.

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**Environmental Sciences ▼**

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*University Professor:* John D. Aber
*Professor:* Russell G. Congalton, Serita D. Frey, Kevin H. Gardner, Jennifer M. Jacobs, William H. McDowell, Scott V. Ollinger
*Associate Professor:* J. Matthew Davis, A. Stuart Grandy, Thomas D. Lee, Mary D. Stampone, Ruth K. Varner, Wilfred M. Wollheim
*Assistant Professor:* Anne Lightbody, Michael W. Palace

The College of Life Sciences and Agriculture (COLSA) and the College of Engineering and Physical Sciences (CEPS) jointly offer a bachelor of science degree in environmental sciences.
Environmental sciences is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of geographic information systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The program has 12 full-time faculty members, with major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include environmental consulting firms; educational facilities (e.g., science centers); environmental monitoring laboratories (e.g., water treatment plants, the Environmental Protection Agency); government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories; and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The program has three options: ecosystems, soils and watersheds, and hydrology. Choices for meeting foundation requirements for the major vary by option.

**Requirements**

In addition to the Discovery Program and University writing requirements, all students will take Introduction to Environmental Science (NR 403) and Professional Perspectives in Natural Resources (NR 400), plus one other elective introductory environmental science course. Foundation courses include introductions to biology, physics, chemistry, geology, calculus, and statistics.

<table>
<thead>
<tr>
<th></th>
<th>Ecosystems</th>
<th>Soil and Watersheds</th>
<th>Hydrology</th>
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<tbody>
<tr>
<td>Biology</td>
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<td>BIOL 412</td>
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<td>CHEM 403 or 405 or 411</td>
<td>CHEM 403 &amp; 404, or 405</td>
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<td>Physics</td>
<td></td>
<td>PHYS 401 or 407</td>
<td>PHYS 407 and 408</td>
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<tr>
<td>Calculus</td>
<td></td>
<td>MATH 424B or 425</td>
<td>MATH 425 and 426</td>
</tr>
</tbody>
</table>
Core courses include Techniques in Environmental Sciences (ESCI 534), Introduction to GIS (NR 658), Fate and Transport in the Environment (ESCI 654), Natural Resources and Environmental Policy (NR 602 or GEOG 673), and a capstone experience (NR 791 and an independent study or capstone course approved by their adviser and the program coordinator). Many students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement and capstone requirement if taken senior year.

**Students must complete additional courses, depending on option:**

### Ecosystems
- **Biology:** NR 439, Environmental Biology, or BIOL 411, Introductory Biology: Molecular and Cellular
- **General Ecology:** NR 527, Forest Ecology, or BIOL 541, General Ecology
- **Community/Population Ecology:** NR 765, Community Ecology, or NR 734, Tropical Ecology, or NR 640, Wildlife Population Ecology
- **Spatial Ecology:** NR 603, Landscape Ecology, or NR 642, Intro to Biogeography
- **Ecosystems:** NR 751, Aquatic Ecosystems, or NR 730, Terrestrial Ecosystems, or NR 711, Wetland Ecology and Management
- **Environmental Chemistry:** NR 761, Env. Soil Chemistry, or NR 744, Biogeochemistry, or ESCI 747, Aqueous Geochemistry, or ESCI 741, Geochemistry
- CHEM 404 General Chemistry II (if student took CHEM 403), or approved elective
- Three Approved Electives

### Hydrology
- **Landscape Evolution:** ESCI 561
- **Soils/Mineralogy:** NR 501 or ESCI 512
- **Surface Water Hydrology:** ESCI 705 or CIE 745
- **Groundwater Hydrology:** ESCI 710
- A course in quantitative analysis
- Two or three approved electives

### Soil and Watershed Management
- **Biology/Physics:** NR 439, Environmental Biology, or BIOL 411, Cellular and Molecular, or
PHYS 402 or PHYS 408
General Ecology: NR 527, Forest Ecology, or BIOL 541, General Ecology
Soils: NR 501, Studio Soils
Watersheds: NR 703, Watershed Water Quality Management
Ecosystems: NR 751, Aquatic Ecosystems, or NR 730, Terrestrial Ecosystems
Soils II: NR 761, Env. Soil Chemistry, or NR 744, Biogeochemistry, or NR 706, Soil Ecology
CHEM 404, General Chemistry II (if student took CHEM 403), or approved elective
Three approved electives

For a list of approved elective courses and for further information about the major, students may consult with the program coordinator: John Aber, John.Aber@unh.edu, (603) 862-3405

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Equine Studies ▼
» http://www.equine.unh.edu

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Professor: William E. Berndtson
Associate Professor: Elizabeth P. Boulton, Laurie Chapman-Bosco
Lecturer: Elizabeth O. Johnson, Christina Keim, Sarah H. Rigg

The equine studies degree program at UNH offers a unique and well-rounded program of study to students pursuing a career in the horse industry. All students receive a background in science and business, as well as equine-specific courses that incorporate outstanding opportunities for experiential learning. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors. Students then choose a specialization in one of three options:

Equine Industry and Management
This option combines business classes and hands-on equine classes, such as teaching training, stable management, and competition management for students interested in a traditional equine or equine business career.
Therapeutic Riding
This option includes classes in equine studies, therapeutic riding, non-profit organizations, and human development and special needs for students interested in a career in therapeutic riding. Students also test for NARHA instructor certification.

Equine Science
This option combines equine classes with a more intensive science curriculum, which includes genetics, reproduction, and nutrition. This program is suited for pre-veterinary students or those interested in graduate education or research.

In addition, courses for the Discovery Program and the University Writing Requirement must be completed.

Students interested in the equine studies major should contact Sarah Hamilton Rigg, Sarah.Rigg@unh.edu.

OPTION I: EQUINE INDUSTRY AND MANAGEMENT

Equine Industry and Management Core Courses

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<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
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<tbody>
<tr>
<td>AAS</td>
<td>437</td>
<td>Equine Handling and Care Techniques</td>
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<tr>
<td>AAS</td>
<td>546</td>
<td>Animal Business Applications</td>
</tr>
<tr>
<td>ANSC</td>
<td>402</td>
<td>Horsemanship at I-2 level or above (or ANSC 405BB Horsemanship Theory)</td>
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<tr>
<td>ANSC</td>
<td>411</td>
<td>Freshman Seminar in Equine Science</td>
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<tr>
<td>AAS</td>
<td>432</td>
<td>Intro to Forage and Grassland Management</td>
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<td>ANSC</td>
<td>504</td>
<td>Equine Science</td>
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<td>ANSC</td>
<td>511-512</td>
<td>Anatomy &amp; Physiology*</td>
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<tr>
<td>ANSC</td>
<td>565</td>
<td>Principles of Horse Trials Mgmt</td>
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<td>ANSC</td>
<td>600</td>
<td>Field Experience*</td>
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<tr>
<td>ANSC</td>
<td>609</td>
<td>Principles of Nutrition</td>
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<tr>
<td>ANSC</td>
<td>612</td>
<td>Genetics of Domestic Animals (or GEN 604 or ANSC 706)</td>
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<tr>
<td>ANSC</td>
<td>620</td>
<td>Equine Diseases</td>
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<tr>
<td>ANSC</td>
<td>796</td>
<td>Equine Seminar</td>
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<td>ANSC</td>
<td>724</td>
<td>Reproductive Management &amp; AI</td>
</tr>
<tr>
<td>ANSC</td>
<td>725</td>
<td>Equine Sports Medicine</td>
</tr>
</tbody>
</table>
Equine Industry and Management Electives

Four electives must be chosen by the student and approved by the student's faculty adviser. See curriculum requirements at http://www.equine.unh.edu/major-requirements.

OPTION II: THERAPEUTIC RIDING

Therapeutic Riding Core Courses

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<td>AAS</td>
<td>426</td>
<td>Equine Conformation &amp; Lameness</td>
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<td>Animal Business Applications</td>
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<td>AAS</td>
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<td>Applied Equine Management</td>
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<td>Freshman Seminar in Equine Science</td>
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<tr>
<td>ANSC</td>
<td>500</td>
<td>Methods of Therapeutic Riding</td>
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<td>Equine Science</td>
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<td>Principles of Horse Trials Management</td>
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<td>ANSC</td>
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<td>ANSC</td>
<td>643</td>
<td>Principles of Therapeutic Riding Instruction</td>
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</table>
ANSC  796  Equine Seminar  
ANSC  725  Equine Sports Medicine  
ANSC  797  Equine Capstone Experience  
BIOL  411-412  Intro Biology: Molecular/Cellular and Intro Biology: Evolution, Biodiversity & Ecology  
ENGL  501  Intro to Creative Non-fiction (or ENGL 419, 502 or 503 or ANSC 543)  
ERECC  411  Env. & Resource Economics Perspectives (or ECON 402)  
KIN  798  Special Topics  
BMS  507-508  Human Anatomy & Physiology  

*waived for TSAS equine management graduates

Therapeutic Riding Electives

Five electives must be chosen by the student and approved by the student’s faculty adviser. See curriculum requirements at [http://www.equine.unh.edu/major-requirements](http://www.equine.unh.edu/major-requirements).

OPTION III: EQUINE SCIENCE

Equine Science Core Courses

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<td>ANSC</td>
<td>411</td>
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<tr>
<td>ANSC</td>
<td>504</td>
<td>Equine Science</td>
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<tr>
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<tr>
<td>ANSC</td>
<td>609</td>
<td>Principles of Nutrition, (or NUTR 750)</td>
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<td>612</td>
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<tr>
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<td>Equine Diseases</td>
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<tr>
<td>ANSC</td>
<td>796</td>
<td>Equine Seminar</td>
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</table>
**Equine Science Electives**

Five electives must be chosen by the student and approved by the student’s faculty adviser. See curriculum requirements at [http://www.equine.unh.edu/major-requirements](http://www.equine.unh.edu/major-requirements).

**Diploma Program Providing Preparation for NARHA Certification**

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<tbody>
<tr>
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<td>504</td>
<td>Equine Science</td>
</tr>
<tr>
<td>or AAS</td>
<td>437</td>
<td>Equine Handling and Care Techniques</td>
</tr>
<tr>
<td>ANSC</td>
<td>402</td>
<td>Horsemanship</td>
</tr>
<tr>
<td>KIN</td>
<td>501</td>
<td>First Aid-Responding to Emergencies</td>
</tr>
<tr>
<td>ANSC</td>
<td>500</td>
<td>Methods of Therapeutic Riding</td>
</tr>
<tr>
<td>ANSC</td>
<td>795</td>
<td>Investigations</td>
</tr>
<tr>
<td></td>
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<td>a seminar on teaching therapeutic riding</td>
</tr>
</tbody>
</table>

**GPA Requirements for All Students in Equine Studies**

All students enrolled in the equine studies major will be required to receive a minimum grade of C- in all classes required for the major. Students failing to do this will need to retake the course.
in order to receive credit.

Honors-in-Major Requirements for B.S. in Equine Studies

The B.S. in equine studies (formerly called the B.S. in animal science: equine sciences) offers three academic options: equine industry and management; therapeutic riding; and equine science. The honors-in-major requirements for the B.S. in equine studies in each of these three options are as follows:

1. Students are required to maintain an overall 3.40 grade point average and a 3.40 in major coursework.

2. Students will complete a total of 16 credits including the honors senior thesis to meet equine studies B.S. honors-in-major requirements. Usually 8-12 credits come from coursework and 4-8 come from the completion of the honors senior thesis. Many courses required for the equine studies major can be designated as honors courses with the consent of the course instructor. In order to justify the honors designation, the instructor will likely implement additional assignments such as readings, writing, laboratory or field experiences, or classroom presentations. In order to receive credit for an honors designation, the student must achieve at least a B- grade in the course.

3. Students must choose two to three courses from the following courses and designate them as honors (8-12 credits) [link to honors form](http://www.unh.edu/registrar/regforms/honorsform.pdf):

   ANSC 504H, Equine Science
   ANSC 620H, Equine Diseases
   ANSC 640H, Principles of Riding Instruction
   ANSC 641H, Principles of Dressage Instruction
   ANSC 642H, Principles of Jumping Instruction
   ANSC 643H, Principles of Therapeutic Riding Instruction
   ANSC 724H, Reproductive Management and AI
   ANSC 725H, Equine Sports Medicine
   KIN 798H, Equine Facilitated Mental Health
   ANSC 512H, Anatomy and Physiology
   ANSC 612H, Genetics of Domestic Animals
   ANSC 620H, Equine Diseases
   ANSC 640H, Principles of Riding Instruction
   ANSC 643H, Principles of Therapeutic Riding Instruction
   ANSC 701H, Physiology of Reproduction
   BMS 718H, Mammalian Physiology
   ANSC 724H, Reproductive Management and AI
ANSC 725H, Equine Sports Medicine

Additional courses may be considered for equine studies honors-in-major requirements with the approval of the honors-in-major coordinator.

Instructors shall retain flexibility in implementing additional assignments that elevate the course’s educational content to justify honors designation, which will likely involve activities such as extra reading or writing assignments, laboratory or field experiences, or classroom presentations.

4. Students must complete ANSC 799, Honors Senior Thesis (4-8 credits required; 1-4 credits can be taken per semester; two semesters and a written thesis are required).

Thesis work must encompass two consecutive semesters of 1-4 credits each semester, and the student should expect to spend two to three hours per week for each hour of course credit. Students will receive a grade for the course. A “B” or better on the thesis is required for completion of honors in major.

Minor in Equine Studies

A minor in equine studies consists of a minimum of 20 credits of equine-related animal science (ANSC) courses. A maximum of eight credits may be taken at the 400 level. In addition, not more than eight credits may be from the TSAS Applied Animal Science program. ANSC 504, Equine Science, MUST be taken. Students must receive a minimum grade of C- in any course used for the minor. Students failing to do this will need to retake the course in order to receive credit. No courses taken on a pass (credit)/fail basis may count toward the minor. See http://www.equine.unh.edu/minor for a list of equine-related animal science courses. Students may petition equine faculty in their junior year to include a course that is not listed. Students who transfer from other institutions may petition the equine program faculty for course approval. Students who choose both ANSC 500 and ANSC 643 as two of their courses toward the minor in equine studies will be eligible for PATH International therapeutic riding instructor certification.

Students interested in the equine studies minor should contact Sarah Rigg, Sarah.Rigg@unh.edu.

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Forestry ▼

» http://www.forestry.unh.edu/

» Click to view course offerings

Professor: Russell G. Congalton, Mark J. Ducey, Scott V. Ollinger, Peter J. Pekins
Associate Professor: Heidi Asbjornsen, Thomas D. Lee
Assistant Professor: Jeffrey R. Garnas

Climate change, carbon storage, biodiversity, and ecosystem integrity in the context of sustainable human use of forests and associated resources are important scientific and social issues. The forestry program at the University of New Hampshire prepares its graduates with the scientific and managerial knowledge and skills to address these environmental and resource management problems at local, regional, and global levels.

Forestry is the art and science of managing and understanding the natural and human dimensions of forests and forest use. Forestry education at UNH focuses on sustainable management of forests for biodiversity, productivity, and health, based on a multidisciplinary approach. The program's goal is to provide a sound professional preparation, a broad general education, and the flexibility to cultivate special abilities and interests, leading to a bachelor of science in forestry degree (B.S.F.) accredited by the Society of American Foresters (SAF). The SAF is recognized by the Council on Postsecondary Accreditation and the U.S. Department of Education as the accrediting body for forestry in the United States. Students are encouraged to develop an area of concentration or to complete a minor in consultation with their academic adviser.

UNH forestry graduates manage forests to provide wildlife habitat and recreation opportunities, care for soil and water resources, protect and restore forest ecosystems, and assure a sustainable supply of forest products. They are employed by private industry, public agencies, public interest groups, education institutions, research organizations, and consulting firms. Many students enter graduate school for advanced study in forest biology or management while others have found challenging international opportunities.

Freshman Year
BIOL 528, Applied Biostatistics I, or equivalent
ENGL 401, First-Year Writing
MATH 424B, Calculus for Life Sciences, or MATH 420, Finite Mathematics
NR 400, Professional Perspectives in Natural Resources
NR 415, Field Methods in Natural Resources
NR 425, Field Dendrology
NR 433, Wildlife Ecology
NR 542, Forestland Measurement and Mapping
PBIO 412, Introductory Botany
Discovery elective (FPA, HP, HUM, or WC)

**Sophomore Year**
CHEM 403, General Chemistry
EREC 411, Environmental and Resource Economics Perspectives, or ECON 402, Principles of Economics (Micro)
NR 501, Studio Soils
NR 504, Freshwater Resources
NR 506, Forest Entomology
NR 527, Forest Ecology
NR 599, Work Experience
Oral Communications Skills Course
Discovery elective (FPA, HP, HUM, or WC)

**Junior Year**
NR 602, Natural Resources and Environmental Policy
NR 643, Economics of Forestry
NR 658, Introduction to Geographic Information Systems
FORT 579, Forest Fire Control and Use
NR 502, Forest Ecosystems and Environmental Change
NR 729, Silviculture
NR 757, Remote Sensing of the Environment
NR 782, Monitoring Forest Health, or PBIO 651, Plant Pathology
Discovery elective (FPA, HP, HUM, or WC)

**Senior Year**
NR 745, Forest Management (Capstone)
NR 749, Forest Inventory and Modeling
RMP 711, Recreation Resource Management
Discovery elective (FPA, HP, HUM, or WC)

All forestry majors must satisfy the B.S.F. requirements and all Discovery Program requirements. Students must satisfy the Inquiry requirement of the Discovery Program by completing an Inquiry or Inquiry-attribute course. Seniors must also satisfy the capstone experience requirement of the Discovery Program. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course (NR 745, Forest Management), created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student
activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

Students interested in the forestry program may consult with the program coordinator, Mark Ducey, (603) 862-4429.

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Genetics (GEN)

» http://www.genetics.unh.edu/

» Click to view course offerings

Professor: Thomas M. Davis, Subhash C. Minocha, W. Kelley Thomas, Louis S. Tisa
Associate Professor: John J. Collins, Vaughn S. Cooper, Estelle M. Hrabak, Anita S. Klein, Cheryl A. Whistler
Assistant Professor: Jeffrey T. Foster, Matthew D. MacManes, David C. Plachetzki
Research Assistant Professor: Kevin Culligan, Dennis E. Mathews

»Click to view faculty participating in the program.

Genetics and genomics are central to all aspects of the life sciences. Genetics is the branch of biology that deals with heredity, variation of genes among individuals in a population, and the expression and regulation of genes. Genomics focuses on determining the structure and function of genomes and includes the mapping of genes, high-throughput DNA sequencing, and investigating the molecular mechanisms by which genetic and environmental factors contribute to phenotypes. Every day, scientists are using the tools of genetics and genomics to make exciting discoveries in fields such as molecular medicine, cancer research, biodiversity, and sustainability.

A major in genetics provides a solid foundation in biology, biochemistry, microbiology, chemistry, physics, math, and cell biology. Students also take advanced courses in molecular genetics, bioinformatics, molecular evolution, genomics, and laboratory techniques. There are many opportunities for interested students to gain research experience through formal or informal research projects in faculty members' laboratories. A student majoring in genetics with an option in genomics receives additional training in genomics and computer programming for bioinformatics.

Students with degrees in genetics or genomics are well prepared to apply to graduate schools (e.g., for training as genetic counselors or researchers) and professional schools, or to pursue...
careers in biotechnology companies, forensics labs, hospitals, university research laboratories, and government agencies. Two additional courses are needed for application to professional programs (e.g., medical or dental school). Graduates may also be employed in fields such as management, sales, marketing, regulatory affairs, technical writing, or science journalism. With supplementary courses in education, graduates with a bachelor's degree in genetics or genomics can teach at the elementary, middle, or high school level.

The genetics faculty conduct research on diverse topics such as evolution, gene structure and function, host-microbe interactions, genome sequencing and analysis, heredity, and diversity in populations. Faculty research areas encompass microbial, plant, and animal genetics. Genetics faculty are committed to mentoring undergraduate students in independent research experiences in their laboratories, which provide students with exposure to and training in cutting-edge research technologies.

**Bachelor of Science in Genetics**

Students majoring in genetics take: i) four genetics core courses; ii) five major elective courses chosen from an extensive list; iii) six bioscience core courses; and iv) seven foundation courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, a created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other approved student activity). A minimum grade of C minus must be earned in all courses offered by the College of Life Sciences and Agriculture. In addition, coursework for the **Discovery Program** and the **University Writing Requirement** must be completed. For a detailed list of curriculum requirements, click here.

**Genetics Core Courses**

Professional Perspectives in Genetics (1 semester)
Genetics Lab (1 semester)
Molecular Genetics or Prokaryotic Genetics (1 semester)
Genomics and Bioinformatics (1 semester)

**Major Electives**

One course with a significant laboratory component

One course in population genetics or molecular evolution

Three upper-level courses in biochemistry, genetics, microbiology, or others, chosen from an approved list.

**Bioscience Core Courses**

Biology with lab (2 semesters)
Genetics (1 semester)
Microbiology with lab (1 semester)
Cell and Developmental Biology (1 semester)
Biochemistry with lab (1 semester)

**Foundation Courses**
General Chemistry with lab (2 semesters)
Organic Chemistry with lab (1 semester)
Calculus (1 semester)
Statistics (1 semester)
Physics with lab (2 semesters)

**Bachelor of Science in Genetics: Genomics Option**
Students majoring in genetics with the genomics option take: i) four genetics core courses; ii) five major elective courses; iii) six bioscience core courses; and iv) seven foundation courses.
One capstone experience, supervised and approved within the major, is required of all seniors.
The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other approved student activity). A minimum grade of C minus must be earned in all courses offered by the College of Life Sciences and Agriculture. In addition, courses for the [Discovery Program](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm) and the [University Writing Requirement](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm) must be completed. For a detailed list of curriculum requirements, click [here](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm).

**Genetics Core Courses**
Professional Perspectives in Genetics (1 semester)
Genetics Lab (1 semester)
Molecular Genetics or Prokaryotic Genetics (1 semester)
Genomics and Bioinformatics (1 semester)

**Major Electives**
Introduction to Perl Programming for Bioinformatics (1 semester)
Comparative Genomics (1 semester)
Population/Evolutionary Genetics (2 semesters)
One upper-level course in biochemistry, genetics, microbiology, or others, chosen from an approved list.

**Bioscience Core Courses**
Biology with lab (2 semesters)
Genetics (1 semester)
Microbiology with lab (1 semester)
Cell and Developmental Biology (1 semester)
Biochemistry with lab (1 semester)

**Foundation Courses**
General Chemistry with lab (2 semesters)
Organic Chemistry with lab (1 semester)
Calculus (1 semester)
Statistics (1 semester)
Physics with lab (2 semesters)

**Pre-Professional Health Programs**
Students interested in postgraduate careers in the health care professions should visit the Pre-Professional Health Programs Advising website or visit the office in person (Hood House, Room 102). Requirements for specific types of professional schools (e.g., medical, dental, physician’s assistant, pharmacy, etc.) are provided here. Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program. Many of the prerequisite courses required by professional schools are also requirements of the genetics major, but students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these health professions.

**Minor in Genetics (GEN)**
Students in other majors who wish to develop a focus in the area of genetics and genomics can complement their major academic program with a minor in genetics. The general requirements for completion of a minor and the courses that fulfill the minor requirements in genetics can be found at http://colsa.unh.edu/mcbs/genetics/minor-genetics. Students intending to complete a genetics minor should meet with the program coordinator, Professor Matthew MacManes (matthew.macmanes@unh.edu) as early as possible, but no later than the end of junior year.

For additional information on the genetics major, contact the genetics undergraduate program coordinator: Estelle Hrabak, estelle.hrabak@unh.edu.

» Click to view course offerings
Life Sciences and Agriculture (LSA)

» http://www.colsa.unh.edu/

» Click to view course offerings

Affiliate Professor: Stephen K. Crawford, George C. Hurtt, Jeffery S. Kahl, John A. McCracken, Ronald E. Rompalla
Affiliate Associate Professor: Andrew B. Cooper, Coeli M. Hoover, Herman A. Karl, Jianhua Li, Peter A. Maddison, Gary B. Smejkal, Kathy J. Soder, Arthur F. Stucchi
Affiliate Assistant Professor: Matthew J. Baber, John L. Campbell, Jennifer Dijkstra, Dean R. Elder, Christopher Longson, Bo R. Rueda, Deena J. Small, Nathan L. Smith, James A Sulikowski, Irina L. Trubetskova, Mariko Yamasaki

Marine, Estuarine, and Freshwater Biology (MEFB)

» http://www.mefb.unh.edu/

» Click to view course offerings

Research Professor: Christopher W. Glass, Raymond E. Grizzle, Stephen H. Jones, Michael P. Lesser, Frederick T. Short
Associate Professor: Alan L. Baker, Jessica A. Bolker, Anita S. Klein, Jonathan R. Pennock
Research Associate Professor: David M. Burdick, Gregg E. Moore
Research Assistant Professor: Elizabeth A. Fairchild
Clinical Assistant Professor: Inga F. Sidor
Extension Professor: Kenneth J. La Valley, Jeffrey A. Schloss
Extension Assistant Professor: Erik Chapman

The marine, estuarine, and freshwater biology (MEFB) B.S. program is designed to provide a broad background for undergraduates interested in marine, estuarine, and freshwater biology, aquaculture, and fisheries. The program integrates theoretical and practical (hands-on laboratory and field) courses. Students are encouraged to become involved in one or more of the numerous undergraduate research opportunities available in the marine, estuarine, and freshwater sciences.
UNH is located on a seacoast that provides an extraordinary diversity of marine and estuarine habitats. It is also only a short distance from mountain streams, rivers, marshes, bogs, ponds, and lakes. All of the habitats provide outstanding resources for field courses and research. The marine, estuarine, and freshwater faculty are spread across all three departments of the College of Life Sciences and Agriculture. UNH is a Sea Grant university and has an international reputation for teaching and research in aquatic sciences. UNH has aquaculture facilities, and coastal and estuarine research laboratories. In collaboration with Cornell, UNH jointly administers the summer undergraduate programs at the Shoals Marine Laboratory on Appledore Island, seven miles off the coast of New Hampshire and Maine.

**Academic Requirements**

To receive the B.S. degree in marine, estuarine, and freshwater biology, students must complete 128 credit hours with a 2.0 cumulative grade-point average. Courses must include all UNH Discovery Program requirements, the biological sciences core curriculum requirements, MEFB 401, MEFB 525, MEFB 527, PBIO/ZOOL 503, three flexible MEFB major requirement courses, and three MEFB electives. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors. A minimum grade of C- is required in all biological science courses that are counted toward the requirements for a degree in MEFB. Students who expect to compete successfully for post-baccalaureate programs should attain a cumulative GPA of 3.0 or higher by the end of the sophomore year and maintain it at that level.

**MEFB Core Curriculum**

The MEFB major uses a core curriculum similar to the biology B.S. core. It constitutes an integrated sequence of courses imparting basic knowledge of biology to expose students to the breadth of knowledge inherent in the biological sciences. The core allows a student to obtain a broad background in biology and related physical sciences and math, and prepares them for upper-level courses in marine, estuarine, and freshwater biology.

**Biological Sciences Core Curriculum Courses**

BIOL 412, Introductory Biology: Evolution, Biodiversity, and Ecology  
BIOL 411, Introductory Biology: Molecular and Cellular  
BIOL 541, General Ecology  
BMS 503, General Microbiology  
GEN 604, Principles of Genetics  
CHEM 403 & 404, General Chemistry
CHEM 545/546, Organic Chemistry  
BMCB 658/659, General Biochemistry  
MATH 424B, Calculus for Life Sciences, or 425, Calculus I  
BIOL 528, Applied Biostatistics I, or BIOL 555 Experimental Design and Analysis Lab  
PHYS 401 and 402, Introduction to Physics  

Typically, students take MEFB 401; BIOL 411 & 412; CHEM 403-404; and Calculus 424B in the first year, and then complete the remainder of their core requirements during the sophomore and junior years.

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**MEFB Requirement Courses**

In addition to the MEFB core curriculum, students must complete MEFB 401 (Marine, Estuarine, and Freshwater Seminar); PBIO/ZOOL 503 (Introduction to Marine Biology); MEFB 525 (Introduction to Aquatic Botany); and MEFB 527 (Aquatic Animal Diversity); plus one course selected from each of the three MEFB major requirement categories and three MEFB electives. A complete list of approved courses in each category is available from the student’s adviser, the Department of Biological Sciences office, and the MEFB website at [https://mefb.unh.edu/sites/mefb.unh.edu/files/MEFB-checklist-requirements.pdf](https://mefb.unh.edu/sites/mefb.unh.edu/files/MEFB-checklist-requirements.pdf). Corequisite lecture and lab courses count as one course. Courses listed in more than one category will satisfy requirements in only one category.

*Note:* It is strongly recommended that students participate in an exchange semester at another university or in a field-oriented program or internship. There are many exchange opportunities available in which a full semester of credits toward the major may be earned. In addition, students should explore the courses at the Shoals Marine Laboratory (SML), which provides an excellent setting for several “field-oriented” courses during the summer. Often there is financial support available for the SML programs (see the SML website for details [http://marine.unh.edu/sml/](http://marine.unh.edu/sml/) or the Cornell web site at [www.sml.cornell.edu](http://www.sml.cornell.edu)). It is further recommended that students explore possibilities of one or more semesters of independent investigation (research projects). For details, students should contact their adviser. Financial support is available for most of these programs.

One 600 or 795 experience totaling three or more credits or any two 795 experiences of two credits each can fulfill one course requirement in any category with adviser approval. A *Petition for Academic Variance* approved by the chair of the Department of Biological Sciences is required to count 795 experiences for more than one major required course. Students should check the MEFB website ([http://www.mefb.unh.edu/](http://www.mefb.unh.edu/)), and the UNH online catalog for updates and current course offerings.
Pre-health Professional Program
MEFB majors who wish to pursue postgraduate degrees in the health care professions should visit the premedical advising office in Room 102, Hood House for additional information on requirements for specific professional schools. Call (603) 862-7740 or visit the program’s web page at www.unh.edu/premed-advising. The following elective courses will be helpful in preparing for admission to post-baccalaureate programs in the health professions and for their required aptitude examinations: BMS 702, ZOOL 518, ZOOL 625/626, BMCB 605, BMCB 751/752, ANSC 511/512.

Students interested in the marine, estuarine, and freshwater biology (MEFB) B.S. major can contact the Department of Biological Sciences, (603) 862-3205.

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Natural Resources (NR)
» http://www.nre.unh.edu/

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Neuroscience and Behavior (NSB)
» http://neuroscience.unh.edu/

» Click to view course offerings

Professor: Robert C. Drugan, Thomas L. Foxall, Robert G. Mair, Stacia A. Sower, Winsor H. Watson III
Associate Professor: Brett M. Gibson, Jill A. McGaughy, William Wren Stine
Assistant Professor: Arturo Andrade, Sergios Charntikov, Daniel R. Howard, Sandra M. Rehan, Robert S. Ross
Lecturer: Leslie J. Curren

www.neuroscience.unh.edu/

The major in neuroscience and behavior (NSB) offers an interdisciplinary approach to human and non-human behavior, focusing on the evolution and adaptiveness of certain behaviors, as well as their underlying neural mechanisms. Students who have always been fascinated by how the brain functions will be well served by this major, as will those who love wild animals.
and wish to better understand their behavior. The B.S. in neuroscience and behavior is based on a solid foundation in biology and chemistry with some physics and statistics (foundation courses). These are followed by three of the following core courses: Animal Behavior, Drugs and Behavior, Genetics, Neurobiology and Behavior, and Psychobiology. Then students can pick four more electives focusing on an area of interest.

NSB students are encouraged to take advantage of research experiences in the laboratories of the psychology and biology faculty in the program. This provides valuable experience with cutting-edge equipment and techniques. Some students may share aspects of a larger project whereas others may be relatively independent and design their own project under supervision. In either case, important skills are gained by the discipline of gathering data, analyzing and interpreting it, and presenting it to a broader audience.

The curriculum provides most of the requirements and recommended courses for students seeking admission to graduate school and to professional schools in medicine and veterinary medicine. Students who might choose not to go on for advanced degrees are well prepared for employment as skilled technicians in research laboratories or, if their interests are in animal behavior, as field research assistants or animal trainers. With additional courses in education, the B.S. in NSB also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the NSB major combine a love of teaching and student mentoring with a passion for research. All NSB faculty have active research programs and encourage student participation. Research facilities that students can use include the aviary, the confocal imaging center, the Hubbard Center for Genomic Studies, and the many marine, freshwater, and estuarine laboratories associated with UNH programs. Students can also take summer courses at the Shoals Marine Laboratory.

**Bachelor of Science in Neuroscience and Behavior**

Students majoring in NSB are required to take foundation courses in basic science, core courses, and five electives from an extensive list of courses, including some offered by other departments including biochemistry, molecular and cellular biology, and natural resources. Finally, a capstone experience is required. This may be independent research, an advanced seminar, or other special student activity. It is meant to integrate prior experience and take the student to a new level in an area of special interest.

**NSB Foundation courses**

- NSB 400, First-year Introductory Seminar (1 credit)
- BIOL 411 & BIOL 412, Introductory Biology (2 semesters)
- CHEM 403 & CHEM 404, Introductory Chemistry (2 semesters)
CHEM 545/546, Organic Chemistry
BMCB 658/659, Biochemistry
PHYS 401, Physics
PSYC 402 or BIOL 528, Statistics
GEN 604, Principles of Genetics
NSB 500, Fundamentals of Neuroscience and Behavior I/NSB 501, Fundamentals of NSB I lab
NSB 502, Fundamentals of Neuroscience and Behavior II/NSB 503, Fundamentals of NSB II lab

Electives
Five NSB major electives

Capstone
2-8 credits

Students interested in the neuroscience and behavior major can contact the Department of Biological Sciences, (603) 862-3205.

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Nutrition (NUTR)
» http://www.nutrition.unh.edu/

» Click to view course offerings

Professor: Gale B. Carey, Joanne Curran-Celentano
Associate Professor: Colette H. Janson-Sand
Clinical Associate Professor: Joanne D. Burke, Mary Katherine Lockwood, Ruth A. Reilly
Clinical Assistant Professor: Maggie L. Dylewski, Kevin J. Pietro
Lecturer: Jesse Stabile Morrell
Extension Professor: Deborah Luppold, Catherine A. Violette

»http://www.nutrition.unh.edu/

»Click to view faculty participating in the program: [http://colsa.unh.edu/faculty/390]

Nutrition is the study of how nutrients and food components function at molecular, cellular, and whole-body levels to impact human health and disease. Students are grounded in fundamental sciences as they develop nutrition-specific competencies in nutrition and health, foods, nutritional assessment, wellness, life cycle nutrition, and/or metabolic biochemistry.
Students pursuing the B.S. degree in nutrition can choose from three areas of specialization: dietetics option, nutrition and wellness option, and nutritional sciences option. For descriptions of each option and their curricular details, visit www.nutrition.unh.edu.

The nutrition program prepares students for entry-level positions in health care, education, or the biotechnology industry, or entry into post-baccalaureate professional programs such as dietetic internship, medical school, dental school, or graduate school. Upon completion of the B.S. in nutrition, dietetics option, students are eligible to apply for a dietetic internship, a prerequisite for becoming a registered dietitian. The dietetics curriculum is accredited by the Academic Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND). Nutrition and wellness option students are prepared for jobs in agencies and businesses that have an emphasis on health and wellness, including schools, fitness centers, and non-profit and community organizations. Nutritional sciences option students most often enter the biomedical/biotechnology workplace or enroll in a post-graduate educational degree program (e.g., medical school, graduate school, dental school, etc.).

Nutrition faculty have expertise in obesity, diabetes, sports nutrition, food safety, food science, cardiovascular disease risk, and young adult health. Undergraduate students actively participate in ongoing research projects in these areas. The College Health and Nutrition Assessment Survey (CHANAS) is one resource that supports nutrition research at the University of New Hampshire.

**B.S. in Nutrition: Dietetics Option**

Students majoring in the dietetics option must take: (i) four nutrition core courses, (ii) thirteen courses in nutrition and other subject areas required by the option, (iii) three bioscience core courses and (iv) three foundation courses. One capstone experience is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through NUTR 780 (Critical Issues). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors. A minimum grade of C- must be earned in all NUTR courses required by the major. For a detailed list of curricular requirements, visit the dietetics homepage at http://colsa.unh.edu/mcbs/nutrition/dietetics-option. In addition, all other university academic requirements for the Discovery Program and the University Writing Requirement must be completed.

**Nutrition Core Courses**

- Nutrition in Health and Well-Being (1 semester)
- Nutritional Assessment (1 semester)
- Life Cycle Nutrition (1 semester)
Professional Perspectives on Nutrition (1 semester)

**Nutrition/Other Courses**
A total of 13 courses, as well as a capstone experience reading and writing about nutrition research, are required for this option:

Community Nutrition (1 semester)
Clinical Nutrition (1 semester)
Practical Applications in Medical Nutrition Therapy (1 semester)
Nutritional Biochemistry (1 semester)
Nutrition Education and Counseling (1 semester)
Food Science (1 semester)
Life Cycle Nutrition (1 semester)
U.S. Health Care Systems (1 semester)
Psychology or Sociology (1 semester)
Managerial Skills in Dietetics (1 semester)
Introduction to Food & Beverage Management (1 semester)
Managerial Accounting (1 semester)
Statistics course (1 semester)

**Bioscience Core Courses**
Microbiology with lab (1 semester)
Anatomy and Physiology with lab (2 semesters)

**Foundation Courses**
Introductory Chemistry for Life Sciences (1 semester)
Biological Chemistry (1 semester)
Statistics (1 semester)

**B.S. in Nutrition: Nutrition and Wellness Option**
Students choosing the nutrition and wellness option must take (i) four nutrition core courses, (ii) 11 courses in nutrition and other subject areas required by the option, (iii) three bioscience core courses, and (iv) foundation courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through NUTR 755, Treatment of Adult Obesity, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors. A minimum grade of C- must be earned in all NUTR courses required by the major. For a detailed list of curricular requirements, visit the nutrition and wellness homepage at http://colsa.unh.edu/mcbs/nutrition/nutrition-wellness-option. In addition, all other university
academic requirements for the Discovery Program and the University Writing Requirement must be completed.

**Nutrition Core Courses**
Nutrition in Health and Well-Being (1 semester)
Nutritional Assessment (1 semester)
Life Cycle Nutrition (1 semester)
Professional Perspectives on Nutrition (1 semester)

**Nutrition/Other Courses**
A total of 11 courses are required for this option:

Nutrition and Wellness (1 semester)
Nutrition for Exercise and Sport (1 semester)
Stressed Out (1 semester)
Physiology of Exercise or Current Issues in Teaching Health (1 semester)
Technical or Persuasive Writing (1 semester)
Nutrition Education & Counseling (1 semester)
Community Nutrition (1 semester)
Treatment of Adult Obesity (1 semester)
Introduction to Food & Beverage Management (1 semester)
U.S. Health Care Systems (1 semester)
Epidemiology & Community Medicine (1 semester)
Introduction to Sociology or Introduction to Psychology (1 semester)

**Bioscience Core Courses**
Microbiology with lab (1 semester)
Anatomy and Physiology with lab (2 semester)

**Foundation Courses**
Introductory Chemistry for Life Sciences (1 semester)
Biological Chemistry (1 semester)
Statistics (1 semester)

**B.S. in Nutrition: Nutritional Sciences Option**
Students choosing the nutritional sciences option must take: (i) four nutrition core courses; (ii) three nutritional science core courses; (iii) two nutrition elective courses and one other elective outside the major, specific to the career objectives of the student, in consultation with their adviser; (iv) seven bioscience core courses; and, (v) five foundation courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone
explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course (NUTR 751), created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors. A minimum grade of C- must be earned in all NUTR courses required by the major. For a detailed list of curricular requirements, visit the nutritional sciences homepage at http://colsa.unh.edu/mcbs/nutrition/nutritional-sciences-option. In addition, all other University academic requirements for the Discovery Program and the University Writing Requirement must be completed.

I. Nutrition Core Courses
Nutrition in Health and Well-Being (1 semester)
Nutritional Assessment (1 semester)
Life Cycle Nutrition (1 semester)
Professional Perspectives on Nutrition (1 semester)

II. Nutritional Science Core Courses
Nutritional Biochemistry (1 semester)
Nutritional Biochemistry of Micronutrients (1 semester) (capstone)
Introduction to Sociology or Introduction to Psychology (1 semester)

III. Nutrition/Other Major Electives
A total of three elective courses are required for this option. Two courses are chosen from a list of nutrition electives and a third course outside the major is chosen in consultation with the student's adviser, based on the student's career interests.

IV. Bioscience Core Courses
General Biology with lab (2 semester)
Genetics (1 semester)
Microbiology with lab (1 semester)
Biochemistry with lab (1 semester)
Anatomy & Physiology with lab (2 semester)

V. Foundation Courses
General Chemistry with lab (2 semester)
Organic Chemistry with lab (1 semester)
Statistics (1 semester)
Calculus (1 semester)
For additional information on the nutrition major, contact the Nutrition Undergraduate Program Coordinator.

**Pre-Professional Health Programs**

Students interested in postgraduate careers in the health care professions should visit the Pre-Professional Health Programs Advising Office online ([www.unh.edu/premed-advising](http://www.unh.edu/premed-advising)) or in person (Hood House, Room 102). Requirements for specific types of professional schools (e.g., medical, dental, physician's assistant, pharmacy, etc.) are provided at [http://www.unh.edu/premed-advising/exploring-health-professions](http://www.unh.edu/premed-advising/exploring-health-professions). Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program website ([http://www.prevet.unh.edu](http://www.prevet.unh.edu)). While many of the prerequisite courses required by professional schools are also requirements of the nutrition major, you should consult with your faculty adviser to create a plan of study that best prepares you for pursuing a career in one of these health professions.

**Minor in Nutrition (NUTR)**

The nutrition minor is particularly suited to students interested in pursuing professional careers related to human health and wellness. The general requirements for completion of a minor can be found in the [minors section](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm?id=3&page=programs.html) of the Undergraduate Catalog. Courses that fulfill the requirements of the nutrition minor can be found at [http://colsa.unh.edu/mcbs/nutrition/minor-nutrition](http://colsa.unh.edu/mcbs/nutrition/minor-nutrition). Students "declare" the nutrition minor by submitting the *Intent to Minor in Nutrition* form. Submission of the *Intent to Minor* form is required to gain registration preference in certain courses if space is available and by discretion of the instructor. This form should be completed and submitted to the minor supervisor as soon as students become interested in the minor, preferably prior to the start of their junior year. For additional information on the nutrition minor, contact the minor supervisor in nutrition, Jesse Stabile Morrell ([jesse.morrell@unh.edu](mailto:jesse.morrell@unh.edu)).

» [Click to view course offerings](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm?id=3&page=programs.html)

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**Sustainable Agriculture and Food Systems (SAFS)**

» [http://sustainableag.unh.edu/](http://sustainableag.unh.edu/)

» [Click to view course offerings](http://www.unh.edu/archive/undergrad-catalog/2016-2017/programs.cfm?id=3&page=programs.html)

Professor: David L. Berlinsky, William E. Berndtson, John E. Carroll, Andrew B. Conroy, Joanne Curran-Celentano, Thomas M. Davis, Jon M. Wraith

Associate Professor: Andre F. Brito, A. Stuart Grandy, Alberto B. Manalo

Assistant Professor: Todd C. Guerdat, Iago L. Hale, Richard G. Smith
Clinical Associate Professor: Joanne D. Burke
Lecturer: Andrew B. Ogden
Extension Professor: Alan T. Eaton, Catherine A. Neal, Rebecca Grube Sideman, Cheryl A. Smith

The sustainable agriculture and food systems (SAFS) program offers a flexible curriculum to students seeking to acquire integrated knowledge and experiences related to modern agricultural and food systems and/or preparing for varied careers in these fields. It draws upon the diverse course offerings by the three academic departments in the College of Life Sciences and Agriculture and the Thompson School of Applied Science as well as from other colleges at UNH.

Students in this program will obtain knowledge in a variety of topics including sustainable agricultural practices, the promotion of healthy eating through sustainable food production and food policies, the science and management of working landscapes, locally produced foods, and value-added agricultural products. SAFS graduates will be prepared to pursue careers in a wide range of fields including, but not limited to, integrated agriculture; the production of food, fiber, and agricultural services; management and marketing of agricultural operations; management of working lands and landscapes; agriculture/food/nutrition/natural resources-related research; policy-making; and other current and emerging professions.

The program offers both a bachelor of science (B.S.) degree and a bachelor of arts (B.A.) degree. The B.A. degree will be particularly useful to those interested in having more flexibility to take courses from a variety of disciplines or pursuing a dual degree, second major, or minor. The B.S. degree will best serve those seeking a strong foundation in scientific and technical knowledge and/or who envision pursuing an advanced degree.

Foundation Requirements
All students pursuing either a B.A. or B.S. in SAFS are required to earn 38 credits of foundation courses, which will provide them with fundamental knowledge in disciplines relevant to agricultural production and management. Most of these courses are offered by departments in the College of Life Sciences and Agriculture. The specific courses that meet foundation requirements are as follows:

SAFS 405, Sustainable Agriculture and Food Production
CHEM 411, Introductory Chemistry for Life Sciences, or equivalent
SAFS 502, Agroecology
NUTR 405, Food and Society
ANSC 421, Animal Agriculture Today
EREC 411, Environmental and Resource Economics Perspectives
PBIO 421, Introductory Horticulture  
NR 501, Studio Soils  
BIOL 528, Applied Biostatistics I

Other Requirements for B.A. Students

Student-Designed Emphasis Area: Earn 20 credits to complete the emphasis area requirement. Students may select a cohesive group of courses from the List of Approved Program Electives, or may use a group of courses transferred from a completed two-year degree program such as the Thompson School of Applied Sciences. Students will define their emphasis area and submit it to the SAFS program advisory committee for approval prior to the start of their fifth semester or third year.

Program Electives: Complete 20 credits of courses found in the List of Approved Program Elective Courses.

Senior Capstone Experience: Earn at least four credits in a course approved and supervised by the SAFS Program. Capstone experiences may include formal coursework, pre-approved honors theses or mentored research projects, or other special student activities accepted by the SAFS program.

Of the emphasis and program elective courses, at least 16 credits (not counting the capstone) must be earned at the 600 or 700 level. Furthermore, at least four credits must qualify as experiential.

Other Requirements for B.S. Students

B.S. students must meet the Student-Designed Emphasis Area, Program Electives, and Senior Capstone Experience requirements described above for B.A. students. In addition, they must satisfy the Core Science Courses requirement by completing 12 credits of science courses chosen from the List of Approved Core Science Courses.

Of the core science emphasis and program elective courses, at least 20 credits (not counting the capstone) must be earned at the 600 or 700 level. Moreover, at least four credits must qualify as experiential.

The List of Approved Program Elective Courses, which includes those classified as Experiential, and List of Approved Core Science Courses may be obtained from the program director.

University Requirements

In addition to meeting the SAFS major requirements, students must satisfy all University requirements including those that pertain to the minimum number of credits, grade-point
average, writing-intensive courses, the Discovery Program, and foreign language (only for B.A. students).

Students interested in the sustainable agriculture and food systems program should contact Becky Sideman at (603) 862-3203 or becky.sideman@unh.edu.

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Tourism (TOUR)

» Click to view course offerings

Wildlife and Conservation Biology

» http://www.wildlife.unh.edu/

» Click to view course offerings

Professor: Marianne Klauser Litvaitis, Peter J. Pekins, James T. Taylor
Associate Professor: Thomas D. Lee
Assistant Professor: Adrienne I. Kovach, Rebecca J Rowe
Extension Associate Professor: Matthew D. Tarr

The wildlife and conservation biology program is for students interested in conservation, ecology, and management of wildlife (animals and plants) and their habitats. Coursework provides a solid foundation in biological sciences, chemistry, math, and the natural history and identification of species native to New England. Students are also introduced to the role of public policy in managing natural resources. While enrolled in the program, students are encouraged to participate in ongoing field and laboratory research being conducted by faculty and graduate students, in addition to obtaining relevant work experience during summers. Upon completion of the degree, students are prepared for employment by state and federal agencies, and non-governmental organizations working as biologists, conservation law officers, and educators. The four-year program also provides a solid foundation for graduate school.

**Freshman Year**

NR 400, Professional Perspectives in Natural Resources
BIOL 411, Introductory Biology: Molecular and Cellular
BIOL 412, Introductory Biology: Evolution, Biodiversity and Ecology
ENGL 401, First-Year Writing
ERECS 411, Environmental and Resource Economics Perspectives  
MATH 424B, Calculus for Life Sciences, or MATH 420, Finite Mathematics  
NR 415, Natural Resources Field Methods  
NR 425, Field Dendrology, or PBIO 566, Systematic Botany  
NR 433, Wildlife Ecology  
Discovery electives

**Sophomore Year**  
BIOL 528, Applied Biostatistics I  
CHEM 411, General Chemistry, and BMCB 501, Biological Chemistry  
ENGL 501, Introduction to Creative Nonfiction, or ENGL 502, Professional and Technical Writing, or ENGL 503, Persuasive Writing, or CMN 500, Public Speaking  
NR 527, Forest Ecology, or BIOL 541, General Ecology  
NR 640, Wildlife Population Ecology  
NR 655, Vertebrate Biology, or NR 712, Mammalogy, or ZOOL 542, Ornithology, or ZOOL 710, Ichthyology  
Discovery electives

**Junior Year**  
NR 602, Natural Resources and Environmental Policy  
NR 650, Conservation Biology  
NR 658, Introduction to Geographic Information Systems  
NR 615, Wildlife Habitats, or NR 603, Landscape Ecology  
NR 664, Conservation Genetics, or ZOOL 690, Evolution  
NR 625, Physiological Ecology, or ZOOL 625, Animal Physiology, or ZOOL 613, Animal Behavior  
Discovery electives

**Senior Year**  
Capstone course  
NR 642, Biogeography, or NR 765, Community Ecology, or NR 603, Landscape Ecology  
Electives  
Discovery electives

Course choices for electives and the capstone requirement are provided in the detailed curricular guidelines available from the Department of Natural Resources and the Environment. Do not double count elective courses with courses taken for specific requirements.

Students interested in the wildlife and conservation biology major may consult with the program coordinator, Rebecca Rowe: rebecca.rowe@unh.edu, (603) 862-2810
General Science Certification
See Department of Education and COLSA/Degrees.

» Click to view course offerings

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Zoology (ZOOL)▼

» http://www.zoology.unh.edu/

» Click to view course offerings

Research Professor: Raymond E. Grizzle
Associate Professor: Jessica A. Bolker
Affiliate Associate Professor: Richard Langan
Research Assistant Professor: Elizabeth A. Fairchild
Affiliate Assistant Professor: Dwight D. Trueblood, Barry J. Wicklow

The zoology majors (B.S. and B.A.) build on the common background of the biology core curriculum (two semesters of introductory biology, ecology, and genetics), with an additional six (B.A.) or seven (B.S.) courses that include morphology; physiology; three choices between courses in development, evolution, and animal survey; and one (B.A.) or two (B.S.) electives in a biological science. The B.A. also has a foreign language requirement. Zoology majors are required to achieve a 2.0 average and a minimum of C- in each biological science course. The zoology majors also require passing grades in chemistry (two semesters for the B.A. and four for the B.S.), physics (one semester for the B.A. and two for the B.S.), and mathematics (calculus or biostatistics for the B.A. and both courses for the B.S.). Students will have opportunities in these majors to specialize in areas of their own interest, such as completing a minor in animal behavior.

The University's location and facilities provide unique opportunities for the study of aquatic and terrestrial animals due to its access to the seacoast and the lakes region of New Hampshire, the White Mountains National Forest, and the presence of two coastal marine laboratories, as well as estuarine and freshwater facilities. There is a strong teaching and research emphasis on ecological and physiological processes in aquatic animals and ecosystems. Major strengths of the program are the hands-on approach to teaching and emphasis on involving undergraduates in research.

For a detailed list of curriculum requirements, go to the zoology homepage
at www.zoology.unh.edu.

In addition, courses for the Discovery Program and the University Writing Requirement must be completed.

**New England Regional Student Program**

The bachelor’s degree in zoology is one of the specialized curricula recognized by the New England Board of Higher Education and participates in the New England Regional Student Program. Under this program, students from the state of Massachusetts pay the UNH in-state tuition rate plus 75 percent.

Students who are interested in a zoology major should contact James Haney, Department of Biological Sciences, (603) 862-2105.

**General Science Certification**

See Department of Education and COLSA/Degrees.

» Click to view course offerings

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Introduction

The Peter T. Paul College of Business and Economics (Paul College) prepares students for future careers in management, public service, research, and education. The liberal arts are the basic foundation of the curriculum, and management of change in a global economy is the major emphasis. Each department and program has its unique disciplinary tradition and the simultaneous commitment to broad educational excellence in critical thought, verbal and written communications, quantitative skills, computer literacy, and ethical reasoning. International awareness and cross-cultural understanding are essential components of the educational experience of Paul College students. The educational process encourages the integration of practice and theory through student interaction with business, public agencies, and faculty research.

The Paul College's undergraduate curricula combine a breadth of liberal education with specifics of professional education in business administration, economics, and hospitality management. Undergraduates enrolled in Paul College programs take a substantial part of their coursework, normally more than 50 percent, in other colleges in the University in order to fulfill the Discovery Program requirements. Beyond those requirements, students are encouraged to elect additional courses in the arts, the behavioral and social sciences, the humanities, mathematics, and the natural sciences. Thus, students who complete the Paul College programs in business administration, economics, and hospitality management are prepared for employment and graduate study in these and adjacent fields.

The Paul College offers minors in business administration, economics, and hospitality management. Within the limits of its resources, the Paul College also serves the needs of
undergraduates elsewhere in the University for whom selected courses in business administration, economics, or hospitality management are desirable complements to their primary course of study. To the extent that space is available after majors have enrolled, a limited number of Paul College courses are open to nonmajors who have the prerequisite preparation.

A maximum of 32 credits in courses offered by the Peter T. Paul College of Business and Economics may be taken by non-Paul College students.

**Degree Requirements**

The Paul College offers a bachelor of arts degree program in economics and bachelor of science degree programs in business administration, economics, and hospitality management. The degrees in business administration and hospitality management are accredited by the Association to Advance Collegiate Schools of Business (AACSB). Students who desire a professional career in public accounting are advised to follow the five-year program leading to a bachelor of science in business administration and a master of science in accounting degree. (See **Accounting Program of Study** for details.) Application for admission to this highly selective program is made in the senior year.

Course listings for business administration are found under accounting and finance (ACFI), business administration (ADMN), decision sciences (DS), management (MGT), and marketing (MKTG). Candidates for a degree must satisfy all of the University Discovery Program requirements for graduation as well as the particular requirements of their individual major programs. In addition, candidates must complete a math course (MATH 420, 424A, or equivalent) and an ethics course (PHIL 430 or equivalent). Economics majors must also satisfy specific requirements associated with the bachelor of arts degree (see Degree Requirements). No Paul College course may be taken on a pass/fail basis by a student majoring in business administration, economics, or hospitality management.

Prior to attaining junior rank, students will be considered “provisional Paul” students. A minimum overall GPA of 2.3 at UNH must be maintained by all Paul students in order to remain in the College. If the minimum overall GPA drops below 2.3 during the provisional period, the student will be placed on Paul College probation for one (1) semester. Failure to achieve a minimum overall GPA of 2.3 after the probationary semester will require the student to change to a major outside Paul College.

In order to graduate, students must achieve a grade-point average of at least 2.3 (2.0 for the B.A. in economics) in the major courses and a minimum grade of C- (for ADMN 403, students
must obtain credit) in each major course. Any Paul College major required course (including ADMN 403) in which a grade below C- is obtained must be repeated. No more than two Paul College courses may be repeated and each course may be repeated at most one time.

Modifications tend to occur in major programs during the four-year period of a student's undergraduate career. Students are expected to conform to these changes. Students transferring into the Paul College from other universities must have business, economics, and hospitality management courses reviewed and approved by the faculty through the Paul College Undergraduate Programs Office to be considered for major requirements. Transfer credit is normally granted only for 400- and 500-level courses, and normally only when the transferring institution is AACSB-accredited.

For information concerning advanced degrees, see the Graduate Catalog.

**Advising System**

Undergraduate advising in the Paul College is carried out jointly by academic advisers and the faculty. The academic advisers are based in the Paul College Undergraduate Programs and Advising Office, where student academic records are kept. The advisers assist students in program planning, preregistration, understanding and meeting general academic requirements, and general academic and career decision making. In addition, the advisers coordinate study abroad and domestic exchange and honors programs. The faculty draw on their own experience, expertise, and interests in helping students with course, program, and career selection.

The peer advising system, established in 1984, was created for the purpose of introducing first-year students to the college experience. Students complete a one-credit, credit/fail course each semester (PAUL 405/406, Freshman Academic Experience I/II) led by selected upper-class students under the direction of the Undergraduate Programs and Advising Office. The courses' goals are to familiarize students with their major, college, and University; to introduce students to the nature of academic knowledge, academic standards, and academic/personal management skills essential for success in the University; to provide discussion of a common topic or book; to support students in their personal growth; to develop personal responsibility; and to encourage first-year students to use the advising services on campus.

Undergraduates are encouraged to develop an advisory relationship with one or more faculty members with whom they have mutual interests. All students are urged to seek as much assistance as they need from appropriate sources, but are reminded that theirs is the ultimate responsibility for knowing and meeting the various academic requirements for a degree.
Independent Study/Internship

Juniors or seniors in high academic standing in the Paul College may elect the internship or independent study course for variable credit. For either course, the student must secure a faculty sponsor in the area of interest and submit a written proposal prior to the start of the semester in which the project is to be undertaken. Independent study normally involves research, while internships are usually undertaken with cooperation of an off-campus organization and involve a non-routine but practical application of skills and concepts acquired in a student’s program.

Independent studies and internships require considerable self-direction and self-monitoring on the part of the student, who must be in high academic standing. Careful prior review of requirements with the undergraduate adviser and faculty sponsor is necessary. Students may earn no more than 16 credits combined in internships, independent studies, field experience, and supervised student teaching experience.

The Washington internship, a semester of supervised work experience in Washington, D.C., is open to any major.

International Programs

The Paul College encourages qualified students to participate in programs of international work and study. The Paul College has international opportunities in Budapest, Hungary; and Ascoli-Piceno, Italy (part of the EcoGastronomy dual major).

Students may also elect to take a dual major in international affairs, offered in conjunction with the program for international perspectives or a dual major in EcoGastronomy.

Information on other international programs can be obtained from the sponsoring department or the Center for International Education, Hood House, Room 204. Paul College students are highly encouraged to study abroad at schools accredited by the AACSB (Association to Advance Collegiate Schools of Business) and/or EQUIS (European Quality Improvement System).

Five-Year Programs

Four-One Program: B.S.-M.S.A.

The American Institute of Certified Public Accountants (AICPA), the national association of professional accountants, mandated that five years of university education be required for national certified public accountant (CPA) certification as of the year 2000. Most states have
approved similar requirements for licensing/certification. The Paul College offers a five-year program designed for students who desire a professional accounting career. The program leads to the joint awarding of a bachelor of science in business administration and a master of science in accounting degree. Application for admission to this highly selective program is made in the senior year. Details are provided in the Programs of Study sections of this catalog and the Graduate Catalog.

Paul College Minors and Courses for Nonmajors

Minors
The Paul College faculty has developed a group of courses for nonmajors, which, when combined with certain other courses, can constitute a minor in business administration, economics, or hospitality management. A list of minor requirements is available at the Paul College Undergraduate Programs and Advising Office, Suite 101, Paul College.

Nonmajors
The Paul College also offers courses for nonmajors. Students interested in these courses should contact the Paul College Undergraduate Programs and Advising Office.

Paul College Honors Program

The Paul College Honors Program is designed to provide high achieving students with an enhanced academic experience. Students in the University Honors Program or current students in Paul College have the opportunity to apply to the Program at the beginning of the second semester sophomore year. The application process is competitive and based upon grade point average, extra-curricular experiences, and student interests.

The Program consists of the following elements:

Designation and Designation Workshop—Students pick a course to designate as honors and work with the professor to create a special honors project related to the course. The Designation Workshop brings all honors students together to share, build upon, and ultimately present their designation work.

Consulting Project—Designed to broaden perspective and build a bridge to the real world, the Honors Experience matches students with small businesses across New Hampshire. With the help of the Small Business Development Center, we will identify real-world projects and give students a chance to apply their learning.

Research Seminar—The Research Seminar is dedicated to preparing students to write their honors thesis. The thesis process is broken into steps, and students complete a thesis proposal. Students will attend and discuss faculty research presented at the Paul Scholars
Thesis—The culminating experience of Paul Honors is the thesis. Students apply what they have learned and undertake their own research with the help of a faculty mentor.
Undergraduate Course Catalog 2016-2017
Peter T. Paul College of Business and Economics

» [http://paulcollege.unh.edu](http://paulcollege.unh.edu)

**Bachelor of Arts**

**Economics**

Global Trade and Finance
Money and Financial Markets
Public Policy and Sustainability

**Bachelor of Science**

**Business Administration**

Accounting
Entrepreneurial Studies
Finance
Information Systems and Business Analytics
International Business and Economics
Management
Marketing
Student-designed

**Economics**

**Hospitality Management**
The Peter T. Paul College of Business and Economics and the College of Life Sciences and Agriculture offer undergraduate students the opportunity to pursue a dual major in EcoGastronomy. The dual major requires completion of the EcoGastronomy program and any other major.

The EcoGastronomy program prepares students for professions within our rapidly evolving food community—from farm to fork to nutrition and health outcomes—where ever-greater integration of agriculture, food, and nutrition requires a broad perspective and a specific blend of skills and knowledge. The dual major in EcoGastronomy is international by providing a context for studying "gastronomy" in Ascoli-Piceno, Italy.

**Required Core Courses**

ECOG 401, Introduction to EcoGastronomy
SAFS or PBIO 405, Organic and Sustainable Food Production
HGMT 403, Food and Beverage Management
NUTR 400, Nutrition Health and Well Being
ECOG 685, EcoGastronomy Study Abroad
ECOG 701, Senior EcoGastronomy Capstone. Satisfies the capstone requirement of the Discovery Program for the EcoGastronomy major.

**One Elective**

Four credits, upper level, to be selected from the following: ANSC 602, 694, 698; CEP 720; EDUC 630; EREC 680; HIST 618, 666; HGMT 570, 771; MGT 732; NR 602, 620, 665, 701, 720, 784, 785, 797; NUTR 720; PBIO 650, 652, 760; SAFS 679; SOC 665; TOUR 705; ZOOL 610/611, 772.

**International Experience**

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most
likely during their junior year. Students will study in Ascoli Piceno, Italy, (fall semester) or at the
Burgundy School of Business in Dijon, France (spring semester).

Dual majors will complete a series of upper-level core courses such as history of cuisine and
gastronomy, history of food, aesthetics, food law, food technology processes, cross-cultural
comparisons, and language.

**Portfolio**

Students will be required to submit a portfolio annually to the director, and a cumulative
portfolio to the instructor of their capstone course for final assessment.

The courses in the dual major program are multidisciplinary, taught by faculty from different
departments in the University. They are designed to integrate UNH strengths in sustainable
agriculture, hospitality management, and nutrition to offer a unique academic program
emphasizing the interdisciplinary, international, and experiential knowledge that connects all
three fields. The program is experiential by requiring students to work in the field growing
food, in the kitchen preparing food, and developing the skills associated with both. They will
also experience the local food cultures and get firsthand experience on the issues of food
security locally, regionally, and globally.

Students who wish to declare a dual major in EcoGastronomy must have a cumulative grade-
point average of 2.5; have declared, or be prepared to declare, a disciplinary major;
and complete the Introduction to EcoGastronomy course (ECOG 401) with a grade of C or
better.

ECOG 401 is prerequisite for study abroad, ECOG 685. All required classes and the elective
are a pre/corequisite for the senior EcoGastronomy capstone course, ECOG 701. Exceptions
are possible with a late declaration of the dual major. All foreign experiences must be pre-
approved by the EcoGastronomy director.

The completion of the dual major requires no additional credits for graduation beyond the 128
required of all UNH students. All coursework required for EcoGastronomy must be completed
with a grade C or better. For information, contact the dual major in EcoGastronomy, PCBE
370Z, (603) 862-3327, ecog.info@unh.edu.
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Peter T. Paul College of Business and Economics

Accounting and Finance (ACFI)

Chairperson: Stephen J. Ciccone
Professor: Ahmad Etebari, David John Hasseldine
Associate Professor: Stephen J. Ciccone, Yixin Liu, Mihail K. Miletkov, Catherine A. Plante, Wenjuan Xie, Le Xu
Assistant Professor: Cristina Bailey, May Xiaoyan Bao, Allen Hartt, Huimin Li, Linda G. Ragland
Lecturer: Scott R. Berube CPA, John D. Colliander, Caitlin A. DeSoye, Richard Kilbride, William F. Knowles CPA, Kevin W. McLaughlin

Accounting and finance are fundamental academic disciplines in business schools. Accounting provides the basic language of businesses and the underlying structure for information systems. Finance provides important knowledge about asset management, capital markets, and risk strategies. This department coordinates the options in accounting and finance and is responsible for the master of science in accounting.

Business Administration (ADMN)

Professor: Ahmad Etebari, Thomas Gruen, David John Hasseldine, Daniel E. Innis, Peter J.
The business administration program provides training for individuals interested in managerial or administrative careers in business or in public or private institutions. The Peter T. Paul College's program in business administration is accredited by the Association to Advance Collegiate Schools of Business (AACSB) and is separate from the business program at the UNH-Manchester campus.

Since most graduates of the program embark on business careers, the program emphasis is in that direction. However, the skills acquired through the business program are readily applicable to the problems faced by not-for-profit institutions such as hospitals, school systems, government departments, and other socially oriented organizations, and the program's objectives have been broadened to include all types of administration.

The curriculum offers professional education in the basic theories, principles, concepts, and analytical tools used by successful modern administrators, combining them with an introduction to the functional areas of management. Additionally, students develop expertise in a particular area of business by earning an option within the business administration degree program. At the same time, typical students achieve a well-rounded education by selecting courses in the liberal arts and the sciences from other colleges and schools in the University.

The business administration program comprises ten 4-credit business administration courses (ADMN prefix) representing foundational business knowledge and skills, one 1-credit business administration course to develop and demonstrate proficiency with computer applications, two 4-credit economics courses (ECON prefix), one 400-level course in mathematics (MATH 420, 424A or equivalent), and one ethics course (PHIL 430 or equivalent). All of these required courses are generally completed in the first five semesters of enrollment at Paul, leaving the final three semesters to complete the option. University Discovery Program requirements and other non-Paul classes are generally taken throughout a student's time at UNH.

ADMN 703, Strategic Management: Decision Making, is the capstone course for the business administration program and satisfies the capstone requirement of the University Discovery
Program. Students satisfy the Inquiry requirement of the Discovery Program before the end of the sophomore year by completing an Inquiry or Inquiry-attribute course within the Paul College, or a course offered by another college at the University.

While taking the ten core business administration courses, a student will gain an introduction to all of the major areas of business. Using this knowledge, students decide upon an area of business in which they desire to concentrate. Within the business degree program, students must declare an option by February 15th of their sophomore year. Students are encouraged to discuss their interests with several faculty members and an academic adviser in this decision-making process. The options currently offered in the business administration program are listed here. Due to the dynamic nature of the business world, the portfolio of options offered may change from time to time. Students are expected to stay abreast of these changes through Paul College Undergraduate Programs and Advising Office.

Options in the Business Administration Program

Accounting
Entrepreneurial Studies
Finance
Information Systems and Business Analytics
International Business and Economics
Management
Marketing
Student-Designed

Options comprise a minimum of four courses, but requirements do vary by option. Due to the specialized nature of some career fields, course requirements are greater in some options than others.

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters students cannot take more than two major courses in a single semester. The options have different requirements, which are provided later. However, a detailed schedule of study for each option is not provided here. Students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations regarding scheduling of courses in the option areas and the suggested plan of study.

Freshman: Fall

ADMN 400, Introduction to Business
ADMN 403, Computing Essentials for Business (1 credit, credit/fail grading)  
PAUL 405, Freshman Academic Experience I (1 credit, credit/fail grading)  
ECON 401, Macro Economics, or 402, Micro Economics  
MATH 420, Finite Math, or 424A, Calculus for Social Sciences, or PHIL 430, Ethics and Society

**Freshman: Spring**  
PAUL 406, Freshman Academic Experience II (1 credit, credit/fail grading)  
ADMN 410, Management Information Systems  
ECON 401 or 402  
ENGL 401  
MATH 420, Finite Math, or 424A, Calculus for Social Sciences, or PHIL 430, Ethics and Society

**Sophomore: Fall**  
ADMN 420, Business Statistics  
ADMN 502, Financial Accounting

**Sophomore: Spring**  
Students declare an option during this semester.  
ADMN 503, Managerial Accounting

*One of the following courses*  
ADMN 570, Introduction to Financial Management  
ADMN 575, Behavior in Organizations  
ADMN 585, Marketing

**Junior Year**  
Take the remaining courses from the Sophomore spring list (ADMN 570, 575, 585) and ADMN 580, Quantitative Decision Making  
Courses in option area

**Senior Year**  
Courses in option area  
ADMN 703, Strategic Management: Decision-Making  (This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program.)

*Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.*
The **Option in Accounting** provides students with opportunities in a variety of fields, including internal audit, external audit, tax preparation and planning, and consulting. Demand for accountants has been consistently strong. The goal of the accounting option is to prepare students for a career in accounting and the qualifications to obtain certifications, such as certified public accountant (CPA), certified management accountant (CMA), and certified internal auditor (CIA). The accounting option also prepares students to enter the M.S. in accounting program offered by Paul. Obtaining a master’s degree is a necessary requirement for taking the CPA exam in most states, including Massachusetts and Maine, and became a requirement to be certified in New Hampshire in 2014.

**Required**

ACFI 621, Intermediate Financial Accounting I  
ACFI 622, Intermediate Financial Accounting II  
ACFI 723, Advanced Managerial Concepts and Applications  
ACFI 724, Auditing  
ACFI 726, Taxation and Management Strategy  
MGT 647, Business Law I

*In addition, one course chosen from the following:*

ACFI 725, Financial Statement Analysis  
ACFI 750, Internship in Accounting  
ACFI 752, Independent Study in Accounting  
ACFI 799, Honors Thesis in Accounting

The **Option in Entrepreneurial Studies** is designed for students who intend to start a business, work for a new venture, or become involved in a new venture creation within an established organization. The option fosters an entrepreneurial culture throughout the program and the priority is real-world learning in the innovative environment of entrepreneurial ventures. The focus is on innovation and creativity with the goal of exposing students to all the facets of running an innovative business. The program includes active student participation, a seminar format, and several guest speakers. Each student participates in a senior project and an internship at an entrepreneurial company.

**Required**

MKTG 763, Market and Opportunities Analysis, or MKTG 764, New Product Development  
DS 741, Private Equity/Venture Capital  
DS/MGT 742, Internship in Entrepreneurial and Management Practice  
MGT 732, Exploration in Entrepreneurial Management
The **Option in Finance** provides students with the knowledge and analytical skills necessary to make informed financial decisions for themselves and their organizations. Business students interested in numbers, quantitative analysis, problem solving, utilizing creativity, and practical applications will appreciate this option. Opportunities exist in a variety of fields, including commercial and investment banking, insurance, corporate finance, money management, venture capital, risk management, and real estate.

The job outlook for finance students is strong, and starting and mid-career salaries are typically among the highest of all majors at a university. Many premier jobs in business, such as hedge fund manager, investment banker, and CFO, are in finance.

The goal of the finance option is to provide students with general exposure to the field while allowing them to specialize in one of three tracks: analytics and quantitative finance, financial analyst, and real estate. Tracks are not required; please inquire with the finance option coordinator for details.

**Required**

- ACFI 701, Financial Policy
- ACFI 702, Investments Analysis

*In addition, two of the following:*

- ACFI 703, International Financial Management
- ACFI 704, Derivative Securities and Markets
- ACFI 705, Management of Financial Institutions
- ACFI 720, (topics) Equity Analysis and Firm Valuation
- ACFI 720, (topics) Financial Modeling and Analytics
- ACFI 720, (topics) Real Estate Finance
- ACFI 720W, (topics) Financial Scandals

Other approved 700-level finance or topics courses

The **Option in Information Systems and Business Analytics** will appeal to students who wish to learn how to take advantage of contemporary technologies to solve complex business problems. The option prepares students for a career in a wide range of industries by helping them master the fundamentals of information systems, as well as the ability to implement solutions or provide leading-edge, analytics-based solutions to real business problems.

Experiential learning is emphasized in all courses and includes real-life corporate project experience. This unique combination of skills is in short supply, and the employment outlook is outstanding.
Required: Two required courses, plus three courses within an emphasis.
DS 773, Managing Information across the Enterprise
DS 775, Corporate Project Experience

*Information Systems Emphasis*
DS 562, Business Applications Development, or CS 405, Visual Basic
DS 774, Business Strategies and Solutions
DS 766, 768, 798, Topics (with approval), or other approved course

*Business Analytics Emphasis*
DS 766, Business Analytics and Spreadsheet Modeling
DS 768, Forecasting Analytics
DS 562, 774, DS 798 (with approval) or other approved course

The Option in International Business and Economics offers an interdisciplinary course of study, providing strong business training for students pursuing careers at organizations with an international focus, particularly in multinational corporations, international banks, and government agencies. It achieves this by combining general business training with in-depth knowledge in economics, finance, and management. Students are strongly encouraged to round out their education with either an internship at an international organization or by studying abroad for one semester.

**Required**
ECON 645, International Economics

*Three of the following (students should consult with their academic adviser and/or the faculty option coordinator in their selection of these courses according to their interests):*
ACFI 703, International Financial Management
MGT 755, International Management
MKTG 760, International Marketing
ECON 611, Intermediate Macroeconomics
ECON 746, International Finance
A pre-approved course in International Business

*One of the following:*
One of the remaining courses from list above
4-credit graded internship at an international organization
One-semester study abroad experience that involves at least one approved international business or economics course and that results in at least 12 academic credits being transferred back to UNH.
ACFI 704, Derivative Securities and Markets
ECON 668, Economic Development
ECON 745, International Trade
ECON 747, Multinational Enterprises

The **Option in Management** provides students with opportunities to develop a substantial foundation in the principles of managing the human, organizational, technical, and financial resources of organizations to enhance strategic competitiveness. Courses emphasize critical thinking, problem-solving, planning, interpersonal skills related to ethical leadership in the global economy, managing innovation and technology, organizational change and sustainability, and international and cross-cultural issues in organizations. The option emphasizes the generalist’s mindset in concert with a specialist’s functional understanding of the firm. Future career paths include an array of management, supervisory, entrepreneurial, human resources, and other positions in for-profit and non-profit organizations. The option is also recommended for students considering graduate education in management or law.

**Required**
MGT 614, Organizational Leadership and Structure
MGT 701, Business, Government, and Society

In addition, two 600- or 700-level MGT courses. Current offerings, which may change from year to year, include:
MGT 647, Business Law I (or MGT 648, Business Law II; MGT option students can count at most one Business Law course toward the MGT option.)
MGT 713, Leadership Assessment and Development
MGT 732, Exploration in Entrepreneurial Management
MGT 755, International Management
MGT 798, Topics in Management (topics will change from year to year)

The **Option in Marketing** focuses on how to develop, establish, and maintain products and services of high value for customers as well as how to deliver and communicate them. The option addresses key linkages critical to effective customer and product management, from understanding customer needs and problems to delivering appropriate solutions and services. It further examines decision choices facing managers concerning market selection, entry timing, positional advantage to be pursued, targeting, and executional approaches. Students can earn an option in marketing by successfully completing the requirements in the following table. Students are required to minimally take the following courses:

**Required**
MKTG 752, Marketing Research  
MKTG 753, Consumer/Buyer Behavior  
MKTG 762, Marketing Workshop  
MKTG 763, Market Opportunity Analysis  
At least two additional 700-level marketing (MKTG) courses. Offerings will vary from semester to semester.

For additional courses, students are encouraged to meet with department faculty or with the Academic Advising Office for help in choosing a career track and additional courses.

A Student-Designed Option in Business Administration is available for those students whose interests are not fully satisfied by any of the other currently available options in business administration. Students desiring a self-designed option must submit the application to the faculty coordinator. After the faculty coordinator’s approval, the proposal must receive approval from the Paul College dean’s office.

Students applying for this option will normally be expected to have a grade point average of at least 3.0.

The student-designed option in business administration shall consist of at least five Paul College courses, at least three of which shall be from the business administration departments (currently accounting and finance, decision sciences, management, and marketing).

Paul College Honors Program  
The Paul College Honors Program is designed to provide high achieving students with an enhanced academic experience. Students in the University Honors Program or current students in Paul College have the opportunity to apply to the program at the beginning of the second semester sophomore year. The application process is competitive and based upon grade point average, extra-curricular experiences, and student interests.

The program consists of the following elements:

Designation and Designation Workshop—Students pick a course to designate as honors and work with the professor to create a special honors project related to the course. The Designation Workshop brings all honors students together to share, build upon, and ultimately present their designation work.

Consulting Project—Designed to broaden perspective and build a bridge to the real world, the Honors Experience matches students with small businesses across New Hampshire. With the help of the Small Business Development Center, we will identify real-world projects and give
students a chance to apply their learning.

**Research Seminar**—The Research Seminar is dedicated to preparing students to write their honors thesis. The thesis process is broken into steps and students complete a thesis proposal. Students will attend and discuss faculty research presented at the Paul Scholars series.

**Thesis**—The culminating experience of Paul Honors is the thesis. Students apply what they have learned and undertake their own research with the help of a faculty mentor.

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**Decision Sciences (DS)**

» [https://paulcollege.unh.edu/departments/decision-sciences](https://paulcollege.unh.edu/departments/decision-sciences)

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*Chairperson:* Roger B. Grinde  
*Professor:* Christine M. Shea, Barry Shore, Jeffrey E. Sohl  
*Associate Professor:* Eleanne Solorzano Dowd, Roger B. Grinde, Kholekile L. Gwebu, Jing Wang  
*Assistant Professor:* Tevfik Aktekin, Melda Ormeci Matoglu  
*Lecturer:* Philip Boyle, Maryann Clark, Russell Miles, Daniel Silverman

Data-driven decision expertise is critical for the survival and growth of modern enterprises. It is at the heart of business analytics. The Decision Sciences Department brings together faculty with special expertise in decision support systems, enterprise information systems and enterprise integration, management science, business statistics, operations/technology management, operations research, and manufacturing strategy. This department coordinates the options in information systems and business analytics, and entrepreneurial studies.

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**Economics (ECON)**

» [https://paulcollege.unh.edu/departments/economics](https://paulcollege.unh.edu/departments/economics)

» **Click to view course offerings**

*Professor:* Karen Smith Conway, Bruce T. Elmslie, Richard W. England, Michael D. Goldberg,
Economics is the study of how societies organize themselves to produce goods and services and to distribute those products among the members of society. In the modern world, a combination of market forces, public policies, and social customs perform these basic economic tasks. Economists use concepts, models, and data to analyze efficiency of resource use, fairness of economic outcomes, and development of global and national economies. The economics programs are designed to introduce students to the tools of economic analysis and to show students how they can use those tools to analyze and better understand real-world situations.

Undergraduate training in economics is an excellent background for a variety of careers, including banking and financial services, journalism, international business, public service, the diplomatic corps, entrepreneurial ventures, and government administration. An undergraduate major in economics is also excellent preparation for those interested in graduate work in law, business administration, and international relations.

Graduate work in economics can lead to careers in college teaching, research in public and private agencies, and business consulting. Those interested in studying economics at the graduate level should ask their economics professors what undergraduate coursework is appropriate and which graduate schools would be suitable.

Courses in economics are open to nonmajors on a space-available basis. Students majoring in other programs have found that certain economics courses are useful supplements to their own majors and a help in gaining employment. For example, political science majors can profit from studying public economics, economic development, and international economics. Mathematics and engineering students might elect to study econometrics and intermediate microeconomics. Environmental conservation majors could choose to study ecological or energy economics. For more information on economics electives, please consult the Paul College Undergraduate Programs Office (Paul Suite 101) or the chairperson of the economics department.

The department offers the choice of a B.A. degree or a B.S. degree in economics. The B.A. degree is designed to offer students maximum flexibility in designing a program of study. Students are encouraged to take a wide variety of courses, double major, and take advantage of study abroad programs. The B.S. degree differs from the B.A. degree in that it requires more
quantitative and data analysis courses but does not require a foreign language. It provides
more structure and direction than the B.A. degree and is more professionally focused. Students
earning either the B.A. or the B.S. degree in economics may not use any of ECON 401, ECON
402, EREC 411, ECN 411, or ECN 412 to satisfy Discovery Program requirements.

B.A. economics majors must complete eight courses in economics plus ADMN 420 with a
grade of at least C- (1.67) in each course and an average grade of 2.0 or better in the major
courses. These courses must include ECON 401, ECON 402, ECON 605, ECON 611, and
ECON 774. ECON 774 is the capstone course for the B.A. major and satisfies the capstone
requirement of the University Discovery Program. In addition, majors must complete a math
course (MATH 420, 424A, or equivalent) and an ethics course (PHIL 430 or equivalent).
Coursework in accounting is recommended but not required. B.A. economics majors may
choose to focus their major electives to satisfy the requirements of one of the three options
defined by the Department of Economics.

B.S. economics majors must complete nine courses in economics with a grade of at least C-
(1.67) in each course and an average grade of 2.3 or better in the major courses. These
courses must include ECON 401, ECON 402, ECON 605, ECON 611, ECON 726, and ECON
775. In addition, majors must complete MATH 424A and ADMN 403, 410, 420, 502, 503, and
an ethics course (PHIL 430 or equivalent). ECON 775, Applied Research Skills for Economists,
is the capstone course for the B.S. major and satisfies the capstone requirement of the
University Discovery Program.

Major credit toward ECON 605 and/or 611 will be awarded to transfer students only if
equivalent courses have been taken at the junior level or above. Transfer students must take at
least five of their economics courses at UNH. All economics-related courses taken at other
institutions must be approved by the economics department in order for them to count toward
the major.

Students may petition to substitute one business administration course for an economics
elective if the course is at the 600 level or above and if a grade of C- or better is earned.
Students may earn no more than 16 credits in internships, independent studies, field
experience, and supervised student teaching experience. All economics majors must satisfy
the bachelor of arts or bachelor of science degree requirements, and all Discovery Program
requirements. Students satisfy the Inquiry requirement of the Discovery Program before the
end of their sophomore year by completing an Inquiry or Inquiry-attribute course within the Paul
College, or another course offered by another college at the University.

The economics department offers three specialized options within the B.A. degree. By selecting
economics electives from an approved list, a student majoring in economics within the B.A. degree can graduate with an option in money and financial markets, global trade and finance, or public policy and sustainability.

The **Option in Money and Financial Markets** (B.A. degree) explores the complex and interdependent nature of money and financial markets. Students will develop institutional knowledge and analytical skills to understand the role of the financial system in society, fluctuations and risk in asset markets, including those for bonds, stocks, and currency, and how financial derivatives, such as futures, options, and swaps contracts, can be used to hedge risk.

Students will also study the conduct and implications of monetary policy, exploring the merits of quantitative easing, macroprudential policy aimed at reducing systemic risk, and other key issues involving the role of the state in the financial system. By training one’s mind to identify and think through problems, the economics B.A. degree provides a powerful platform for launching careers in almost all walks of life. However, the option is designed for students wanting careers in the financial services sector, including commercial and investment banking, financial trading, security analysis, portfolio management, and financial advising, and in the government sector, especially at the Federal Reserve System, Securities and Exchange Commission (SEC), and the U.S. departments of Treasury, Commerce, and State. The option is also recommended for students considering graduate education in finance, economics, and law.

**Option Requirements** (Note: Some courses may have prerequisites that are not part of the option.)

1. ECON 635, Money and Banking, and ACFI 703*, International Financial Management
2. One course from among ECON 736, ECON 746, ACFI 702*, ACFI 705*
3. One other 600-level or 700-level course

* Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree.

The **Option in Global Trade and Finance** (B.A. degree) studies the global trade and financial systems and their importance for understanding macroeconomics and business activity, foreign direct investments and other international capital flows, globalization, economic growth and development, international financial markets, and currency fluctuations and risk. Students will learn about the role of the World Trade Organization (WTO), the International Monetary Fund (IMF), and other institutions undergirding the global economy. Students will develop institutional knowledge and analytical skills to study some of the most hotly debated issues of our day, including free-trade policies such as the North American Free Trade Agreement (NAFTA) and
WTO, global financial crises, Basel III and other financial reforms, European monetary union, and international policy coordination. By training one’s mind to identify and think through problems, the economics B.A. degree provides a powerful platform for launching careers in almost all walks of life. However, the option is designed for students wanting careers at international organizations such as the IMF, WTO, World Bank, and Organization for Economic Cooperation and Development (OECD). This option also prepares students for careers in the financial services sector, including commercial and investment banking, financial trading, security analysis, portfolio management, and financial advising, and in the government sector, especially at the Federal Reserve System, U.S. Trade Administration, and U.S. State Department. The option is also recommended for students considering graduate education in economics, business, and law.

**Option Requirements** (Note: Some courses may have prerequisites that are not part of the option.)

1. ECON 645, International Economics
2. One of the following: ECON 745, International Trade, or ECON 746, International Finance
3. One course from among ECON 635, ECON 736, ECON 745, ECON 746, ECON 747, ECON 768, ACFI 703*, POLT 546*, POLT 553*, POLT 561*, POLT 780*, GEOG 582*
4. One other 600-level or 700-level course

*Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree.

The **Option in Public Policy and Sustainability** (B.A. degree) examines the factors that influence economic, social, and environmental outcomes, such as unemployment, poverty, economic inequality, health disparities, technological innovation, and pollution. Students will develop the institutional knowledge and theoretical perspective to understand the impact that decisions of individuals, firms, communities, and governments have on such outcomes. Students will analyze the impact of specific government policies and potential reforms, theoretically and empirically. By training one’s mind to identify and think through problems, the economics B.A. degree provides a powerful platform for launching careers in almost all walks of life. However, this option is designed for students seeking careers in policy analysis and research positions at government agencies; think tanks such as RAND Corporation, Urban Institute, and Mathematica Policy Research; consulting firms such as Abt Associates; and non-governmental organizations. The option is recommended for students considering education in policy analysis and management.

**Option Requirements** (Note: Some courses may have prerequisites that are not part of the
option.)

1. Two of the following: ECON 641, Public Economics; ECON 656, Labor Economics; ECON 707, Economic Growth and Environmental Quality; EREC 708*, Environmental Economics

2. One course from among ECON 641, ECON 642, ECON 656, ECON 707, EREC 572*, EREC 606*, EREC 627*, ECON 680*, EREC 708*, EREC 756*, GEOG 582*, HMP 746*, HMP 748*, POLT 553*, POLT 780*

3. One other 600-level or 700-level course

*Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree.

A suggested plan of study for B.A. economics majors follows:

**Freshman Year**
- ECON 401, Principles of Economics (Macro)
- ECON 402, Principles of Economics (Micro)
- MATH 420 or MATH 424A
- ADMN 403, Computing Essentials for Business (1 credit, credit/fail grading)
- ADMN 405, Freshman Academic Experience I (1 credit, credit/fail grading)
- ADMN 406, Freshman Academic Experience II (1 credit, credit/fail grading)

**Sophomore Year**
- ADMN 420, Business Statistics
- ECON 605, Intermediate Microeconomic Analysis
- ECON 611, Intermediate Macroeconomic Analysis

**Junior and Senior Years**
- Economics electives (at least 4)
- B.A. economics capstone requirement (ECON 774, Senior Economics Seminar. The capstone must be completed during the senior year.)

A suggested plan of study for B.S. economics majors follows:

**Freshman Year**
- ECON 401, Principles of Economics (Macro)
- ECON 402, Principles of Economics (Micro)
- MATH 424A
- ADMN 403, Computer Essentials for Business (1 credit, credit/fail grading)
- ADMN 405, Freshman Academic Experience I (1 credit, credit/fail grading)
- ADMN 406, Freshman Academic Experience II (1 credit, credit/fail grading)
ADMN 410, Management Information Systems

**Sophomore Year**
ADMN 420, Business Statistics
ADMN 502, Introductory Financial Accounting
ADMN 503, Managerial Accounting
ECON 605, Intermediate Microeconomic Analysis
ECON 611, Intermediate Macroeconomic Analysis

**Junior and Senior Years**
ECON 726, Introduction to Econometrics
ECON 775, Applied Research Skills for Economists (This is the capstone course for the B.S. economics program, and satisfies the capstone requirement of the Discovery Program). This course must be taken in the senior year.
Economics electives (at least three)

A minor in economics consisting of five courses is also available. At least three of these courses must be taken at UNH. For more on the minor and options within the major, consult the Paul College Undergraduate Programs Office.

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**Hospitality Management (HMGT)**

» [https://paulcollege.unh.edu/undergraduate-programs/bs-hospitality-management](https://paulcollege.unh.edu/undergraduate-programs/bs-hospitality-management)

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*Chairperson:* Nelson A. Barber  
*Professor:* Clayton W. Barrows, Daniel E. Innis  
*Associate Professor:* E. Hachemi Aliouche, Nelson A. Barber, Valentini Kalargyrou  
*Assistant Professor:* Daniel A. Remar, Anupama Sukhu  
*Lecturer:* Carl E. Lindblade, Daniel R. Winans

The program in hospitality management is an integral part of the offerings of the Peter T. Paul College. It is one of only a few programs worldwide accredited by the Association to Advance Collegiate Schools of Business (AACSB).

Levering this business school connection, the hospitality management program at UNH will provide a world-class education, personal attention and support, and real-world and...
international experience, setting students apart from the competition and ensuring they are well prepared for a successful and meaningful career.

The hospitality management program develops graduates to be senior executives 15 to 20 years from graduation. This is accomplished through personal attention and support, a balanced foundation where students design one-third of their curriculum, training on cutting-edge industry-specific software and technology, career development, mentoring and placement, and the network connection of seasoned alumni in top industry positions. Graduates have accepted management positions in lodging and resorts, food service beverage, event planning and design, software companies, tourism, travel and recreation, among the many potential opportunities.

An important aspect of the program is the required professional development, which includes practical work experiences, career development, mentoring, and placement, preparing students to be more competitive in the job market and for a successful and rewarding career. Employers look for individuals with relevant industry experience, and this is provided through the required 800 hours of an approved work experience, including a 400-hour professional internship.

The hospitality management program offers a wide range of international education options to study abroad. We have partnered with business schools in countries such as Spain, Australia, Croatia, United Kingdom, and Italy.

The hospitality management program curriculum comprises foundation courses in hospitality management, business administration courses, and a number of University Discovery Program courses. A wide range of elective courses complement the foundation courses.

To graduate, students must obtain a 2.3 grade-point average in all major required courses and a minimum grade of C- in each major course. Students may earn up to 6 total credits in internships, independent studies, field experience, and supervised student teaching experiences.

A typical plan of study is as follows, showing the requirements of the program. Students complete 16-18 credits per semester, which includes major requirements, electives for the major, Discovery Program requirements, and free electives offered across the college and university.

**Freshman Year**

HMGT 401, Introduction to the Hospitality Industry

HMGT 404, Professional Development I (1 credit, credit/fail grading)

HMGT 405, Introduction to Food and Service Management

ADMN 405, Freshman Academic Experience I (1 credit, credit/fail grading)
ADMN 406, Freshman Academic Experience II (1 credit, credit/fail grading)
ADMN 403, Computing Essentials for Business (1 credit, credit/fail grading)
ECON 401, Principles of Economics (Macro)
ECON 402, Principles of Economics (Micro)
MATH 420, Finite Mathematics or MATH 424A, Calculus for the Social Sciences
PHIL 430, Ethics and Society

Sophomore Year
HMGT 504, Professional Development II (2 credits)
HMGT 554, Lodging Operations Management
ADMN 420, Business Statistics
ADMN 502, Financial Accounting
HMGT 618, Uniform Systems for the Hospitality Industry

Junior Year
HMGT 600, Hospitality Marketing Management
HMGT 604, Professional Development III (2 credits)
HMGT 625, Hospitality and Employment Law
HMGT 635, Hospitality Human Resource Management
HMGT 661, Event Design, Planning and Management
ADMN 575, Behavior in Organizations
Hospitality Management Electives

Senior Year
HMGT 655, Hospitality Finance and Development
HMGT 667, Advanced Food and Beverage Operations Management
HMGT 703, Strategic Management in the Hospitality Industry (Capstone)
Hospitality Management Electives
Note: In addition to the foundation courses above, three elective courses in hospitality management are required for completion of the hospitality management curriculum. Specializations using these electives are available as follows:

Four Specializations (using HMGT and free electives):
- Food and Beverage Management (faculty coordinator Professor Daniel Remar, Daniel.Remar@unh.edu)
- Lodging and Resort Management (faculty coordinator Professor Anupama Sukhu, Anupama.Sukhu@unh.edu)
- Event Management (faculty coordinator Professor Carl Lindblade,
A minor in hospitality management comprises five courses.
HMGT 401, Introduction to the Hospitality Industry
HMGT 405, Introduction to Food and Service Management
HMGT 554, Lodging Operations Management
HMGT 635, Hospitality Human Resource Management
ADMN 502, Financial Accounting [non-business majors can take ACFI 501]

» Click to view course offerings

Management (MGT)
» https://paulcollege.unh.edu/departments/management

» Click to view course offerings

Chairperson: Anthony T. Pescosolido
Professor: Peter J. Lane, Michael J. Merenda
Associate Professor: Carole K. Barnett, Vanessa Urch Druskat, Devkamal Dutta, N. Paul Harvey Ill, Jun Li, Anthony T. Pescosolido
Assistant Professor: Rachel L. Campagna, Jianhong Chen, Andrew G. Earle, Jennifer L. Franczak, Michael Robert Kukenberger
Clinical Associate Professor: Fiona Sara Wilson
Lecturer: Robert A. Gough Jr., William A. Hassey, Leroy Mizusawa, Pascal Orliac, George L Roth

The study of management focuses on how organizations develop, craft, and implement winning strategies, structures, systems, and values in global markets. Courses emphasize the organization’s stakeholders and the accompanying social, political, legal, economic, and...
technical dynamics of worldwide markets. The department’s goal is the development of effective, socially responsible, and ethical leaders through innovative teaching, research, and service. Courses cover such topics as leadership, decision-making, ethics, innovation, organizational learning, entrepreneurship, knowledge and human resource management, governmental policy making, and global competitiveness. The department’s approach to teaching involves educational methods that promote experimental learning, self-awareness, theoretical mastery, case studies, and managing oneself. A major emphasis is on action learning through group projects, business plan preparation, and the case method.

» [Click to view course offerings]

Marketing (MKTG)

» [https://paulcollege.unh.edu/departments/marketing]

» [Click to view course offerings]

Chairperson: Thomas Gruen

Associate Professor: Ludwig A. Bstieler, Bruce E. Pfeiffer, M. Billur Talay, Goksel Yalcinkaya

Assistant Professor: Shuili Du, Lin Guo, Matthew S. O'Hern

Lecturer: Audrey Ashton-Savage, Diane Devine, Peter F. Masucci

The marketing department is dedicated to preparing students for 21st century marketing careers by:

- offering students a strong marketing foundation and a career track that will make them attractive to employers upon graduation and provide the basis for lifelong marketing learning;
- interacting with students in ways that encourage individual curiosity, interest, and expression;
- engaging in leading-edge scholarly research and integrating that research into the marketing curriculum.

Concentrating in marketing provides students with a wide array of career paths, including advertising, sales, retailing, market analysis, public relations, marketing research, product or brand management, sales forecasting, competitive analysis, strategic marketing planning, media planning, and several others. Accordingly, the department offers tracks beyond the set of core courses required of all marketing students to help students prepare for such careers. The department coordinates the marketing option.

» [Click to view course offerings]
Introduction

The Thompson School of Applied Science (TSAS), established in 1895, is an academic unit of the College of Life Sciences and Agriculture (COLSA) offering the associate in applied science degree in seven program areas. Curricula comprise a balance of professional, science-related, and general education courses that prepare students to meet the specific demands of a technical or applied profession, continuing education, and the general demands of life.

Imagine a classroom where you will learn—where you will work. The Thompson School of Applied Science offers dedicated professional faculty who deliver a career-relevant education for students who want an associate degree; students who value a college education that combines hands-on experiences and academic knowledge in a small learning environment within the campus of the University of New Hampshire.

Thompson School faculty and staff are committed to educate, train, and retain students to be entrepreneurs, to be solid in their knowledge, to be competent in acquired skills and to be aware of the communities they impact. This is accomplished through the development of mentorships with faculty and advisers, business and industry partnerships, unique programs of study with relevant facilities, and excellent job placement.

Thompson School of Applied Science Overview

Faculty members at the Thompson School have significant work experience in industry and business; extensive and up-to-date knowledge of their specialties; ongoing contacts with practicing professionals; dedication to students and to excellence in teaching; and a commitment to practical, science-based education. They work closely with students, providing academic advising, career counseling, and special assistance, even outside the classroom, when needed.

Located at the western entrance to campus, the Thompson School's classrooms, laboratories,
and working enterprises are designed for career-related experiences.

Barton Hall contains an animal science lab, a food preparation lab, a state-of-the-art grooming facility, a veterinary technology clinical lab, several classrooms (two of which are high-tech learning labs), faculty offices, and a student lounge.

Cole Hall includes a 150-seat lecture auditorium, a commercial kitchen and restaurant, a student study and lounge area, a computer laboratory (which serves as a GIS lab), classrooms, and administrative offices.

Putnam Hall houses two multipurpose geospatial computer labs used for courses in geographic information systems (GIS), computer-aided design (CAD), and building information modeling (BIM); a surveying and mapping lab; an agricultural mechanization shop (welding, engines, and building science); forestry and multiuse classrooms; staff and faculty offices.

More detailed information on our various program areas and concentrations follow.

- Whether the concentration is dairy, equine, or small animals, students in **applied animal science** utilize professional facilities both on and off campus. On-campus facilities include the **Thomas P. Fairchild Dairy Teaching and Research Center, UNH's Organic Dairy Research Farm, UNH's equine facilities**, and the **Thompson School Grooming Shop**. Our small animal care program partners with the **New Hampshire SPCA (Stratham, N.H.)** and **Cocheco Valley Humane Society (Dover, N.H.)**.

- **Civil technology** students have a variety of experiential classroom experiences available to them, including materials testing, residential wiring, field surveying, high-precision and mapping-grade GPS, laser scanning, welding, and many others. Unique to civil technology are two exclusive state-of-the-art computer labs with ample access. These labs feature the most up-to-date software for computer aided design (CAD), geographic information systems (GIS), building information modeling, 3D architectural design (BIM/Revit), project management, civil design, surveying and mapping, and point-cloud modeling.

- **Culinary arts and nutrition** students are engaged in a carefully designed curriculum combining theory with more than 700 hours of practical application of culinary techniques in modern production kitchens located on UNH's campus. Students also are required to complete a summer work experience of a minimum of 400 hours at a pre-approved establishment between their first and second years of study. The program is accredited by the **American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC)**.

- **Forest technology** students integrate all aspects of forest management as they complete projects on more than **3,000 acres of University land**. Using the school's sawmill and harvesting equipment, they contribute to the sustainable management of
UNH lands. In the classroom and the forest, they develop skills and techniques critical to the future ecological and economic health and management of the natural resources of the state and region. Students are expected to enhance class work with an extensive work experience requirement. The curriculum is accredited by the Society of American Foresters (the first two-year program in the U.S. to complete the accreditation process).

- **Horticultural technology** students have the use of the Thompson School horticultural facilities (glass- and poly-covered greenhouses used for propagation and cultivation of a wide selection of ornamental plant material), refrigerated compartments, display gardens (public and private), and the campus arboretum as well as a wide variety of landscaping tools and equipment. Students design, install, and maintain landscaping components on the grounds of the University and with local organizations and homeowners in surrounding communities.

- Students can customize their own agricultural course of study in the integrated agriculture management program. Possibilities for study include: sustainable agriculture, organic production, local foods, farmers markets, slow food, community-supported agriculture, business, and nutrition, as well as soil, water, and forest conservation. As a cross-curricular program, integrated agriculture management shares extensive facilities with several UNH programs. These include greenhouse and hoop-house complexes, pasture and crop lands, multiple-use demonstration forest lands, "forever wild" College Woods, two dairies (one organic), equine and small animal facilities, a large-scale composting operation, computer labs for GIS and CAD, the campus landscape plant collections, and horticultural research farms for fruit, vegetables, and ornamentals. Most of these facilities are on campus or within walking or campus shuttle distance.

- **Veterinary technology** students have the unique opportunity to work with both small and large animals at UNH and have access to professional facilities both on and off campus. On-campus facilities include the Thomas P. Fairchild Dairy Teaching and Research Center, UNH's Organic Dairy Research Farm, UNH's equine facilities, and the Thompson School Grooming Shop. The program also partners with the New Hampshire SPCA (Stratham, N.H.) and Cocheco Valley Humane Society (Dover, N.H.). The program is accredited by the AVMA. Students who graduate from an accredited program are eligible to take the Veterinary Technician National Exam (VTNE) to become a credentialed veterinary technician.

**Associate in Applied Science**

To graduate with an associate in applied science degree, a student must complete specified coursework in general education, technical concentration, and general electives (see the
following section), with an overall grade-point average of no less than 2.0. In addition, students must earn the minimum number of total credits required for their degree, no fewer than 64.

**General Education**

In addition to curriculum-specific coursework, the associate in applied science degree includes a general education component designed to educate and to enlighten students about the world around them. General education courses develop each student's ability to think and communicate effectively; to better understand the many social, cultural, and environmental issues and challenges of the world; to become problem solvers; and to make positive contributions to society. This is achieved through a combination of coursework in the sciences, including mathematics, arts and humanities, and the social sciences. A minimum of 20 credits are dedicated to this component of the degree.

In this area, a student must complete:

- courses in the sciences, including mathematics (minimum of three credit hours) and technology;
- courses in arts and humanities, to include COM 209, Expository Writing and Reading;
- courses in the social sciences, to include either SSCI 201, Human Relations, or SSCI 202, Social Issues.

The remaining eight to nine credits (at least two additional courses) of the minimum 20 needed to fulfill the general education component of the associate in applied science degree must be taken from two of the three named areas. A maximum of eight credits may be double counted as a required course within the student's program area.

**Specific Requirements for General Education for the Associate of Applied Science Degree at the Thompson School:**

**Arts & Humanities, including communication**
- COM 209    4 credits

**Social Sciences**
- SSCI 20X    4 credits

**Science, including math and technology**
- Math 202, Math 203, or higher    3 credits

**Technical Concentration**

These are courses designed to develop the necessary scientific knowledge, technical skills, and practical experience required for employment in a professional discipline. Each student must complete all technical courses specified in the selected program of study.
See the following Programs of Study sections for course requirements and descriptions.

**General Electives**

This component of the degree program allows the individual to pursue courses of personal or professional interest. In this area, a student may choose a number of courses in each program of study specified as electives. These may be chosen from courses offered by the Thompson School or from other selected University undergraduate courses with adviser and administrative approval.
Undergraduate Course Catalog 2016-2017
Thompson School of Applied Science
» https://colsa.unh.edu/tsas

Associate in Applied Science

Applied Animal Science

Dairy Management
Equine Management
Small Animal Care

Applied Business Management

Business Management

Civil Technology

Architectural Technology
Construction Management
Surveying and Mapping

Community Leadership

Culinary Arts and Nutrition

Culinary Arts

Forest Technology

Forest Technician

Horticultural Technology

Landscape Operations
Ornamental Horticulture

Integrated Agriculture Management
Full-Time and Part-Time Programs

The associate in applied science degree at the Thompson School may be completed by pursuing either a full-time or part-time program of study. Most students enroll in the full-time program. This allows completion of a program of study in four semesters (the traditional two-year period). The sequence of required courses and semester schedules for each program are listed throughout this catalog.

Some students who are unable to attend on a full-time, two-year schedule or who wish to spread the financial investment of a college education over a longer period of time elect the option of part-time study. This allows students to work toward completion of the degree over an extended period, typically two calendar years to five academic years. The schedule may be shortened or lengthened to meet the needs of the individual student. For further information, please contact the Thompson School at (603) 862-1025.

Admissions

The Thompson School welcomes applications from both recent high school graduates and adult students.

Admission to an associate in applied science degree program is based upon successful completion of a secondary school program of college preparatory coursework or its equivalent. Primary consideration is given to the candidate's academic record, as demonstrated by secondary school course selections and achievement, recommendation, and the results of the SAT and/or ACT exam. Consideration is also given to the applicant's personal motivation, demonstrated interest in a career field, and leadership roles.

For most programs, candidates must, at a minimum, present a solid college preparatory program that includes at least four years of English, two years of mathematics (Algebra I,
Geometry, and/or Algebra II), two years of science (biology with a lab, being one of them), and three years of social science. The majority of students are admitted with three years of both college-prep mathematics and science. Some programs have more specific requirements, which are included in the appropriate sections of this catalog.

For an adult student who graduated from high school several years ago, the Office of Admissions will consider not only his or her academic record but also accomplishments since high school. Important factors include professional work and advancement and motivation to succeed in Thompson School courses. In addition, applicants will be considered on the basis of any available test scores such as General Education Development (GED), SAT or ACT, and College Level Examination Program (CLEP) exams; letters of reference; previous college study; and military record (if applicable). Adult students who have been out of high school for a number of years may request that the Office of Admissions waive the SAT requirement.

How to Apply

Most first-year and transfer applicants to UNH's Thompson School of Applied Science must submit the Common Application to be considered for admission. Veterans, non-traditional students, and N.H. community college transfer students have a slightly different application process.

Although UNH will accept the paper-version of the application, students are strongly encouraged to submit the application electronically through the Common Application website, www.commonapp.org, as this expedites the process (99 percent of students submit their applications electronically). These same options are available to students applying from countries other than the United States.

The electronic version of the Common Application may be submitted from September through April 1. The Early Action due date is November 15. Notice of admission to the Thompson School will normally be sent within 30 days following receipt of all required information. Housing may not be guaranteed if applicant is received after February 1. When applying from April 2 through July 15, the PDF (paper) application must be submitted.

Please note that priority due dates for students requesting UNH residential housing are February 1 for the fall semester and November 1 for the spring semester. Housing assignments are handled on a space-available basis. The UNH financial aid due date is March 1 for the following academic year.
Campus Visits

Prospective students are encouraged to participate in an interview at the Thompson School, attend an open house, and/or take a tour of the Thompson School and the rest of the UNH campus. Interviews are recommended but not required. An open house/prospective student day is held in the fall. To attend this event or to arrange your visit, please contact the Thompson School at (603) 862-1025 or visit our website at https://colsa.unh.edu/tsas.

Expenses, Financial Aid, and Scholarships

Costs for students include tuition, fees, room and board, books and supplies, and personal and travel expenses. These costs are the same for any student enrolled at the University of New Hampshire (see Fees and Expenses), and students majoring at the Thompson School have access to the same student services. (See also Campus Life, Programs and Services for Students, and Health Services.) Required curriculum and lab fees for Thompson School programs are listed with each program area.

Information about scholarships, loans, and work-study is located at http://financialaid.unh.edu/ or by calling (603) 862-3600. A Free Application for Federal Student Aid (FAFSA) MUST be processed by the Financial Aid Office by March 1 of each year for a student to be considered for several scholarships for the following academic year. (See also Financial Aid.)

The Thompson School, one of four divisions of the College of Life Sciences and Agriculture (COLSA), informs students of scholarship opportunities, which are primarily for second-year students.

New England Regional Student Program

The Thompson School at UNH participates in the New England Regional Student Program of the New England Board of Higher Education, through which each state university system in New England offers a number of regional curricula to students from other New England states. Under this program, students pay in-state tuition plus 75 percent. See the following table for Thompson School programs that are eligible in 2016-2017. Eligibility under this program may vary from year to year, so it is suggested that you obtain further information by contacting the
New England Board of Higher Education, 45 Temple Place, Boston, MA 02111; (617) 357-9620. You may also contact the UNH Office of Admissions for more information.

### Associate Degree Program

**Applied Animal Science**
- Dairy Management
  - Available to Residents of MA, ME, RI, VT
- Equine Management
  - Available to Residents of MA, ME, RI, VT
- Small Animal Care
  - Available to Residents of MA, ME, RI, VT

**Civil Technology**
- Architectural Technology
  - Available to Residents of CT, RI
- Construction Management
  - Available to Residents of CT, RI
- Surveying and Mapping
  - Available to Residents of CT, RI

**Culinary Arts and Nutrition**
- Culinary Arts
  - Available to Residents of MA, RI, VT

**Forest Technology**
- Forest Technician
  - Available to Residents of CT, MA, RI, VT

**Horticultural Technology**
- Landscape Operations
  - Available to Residents of RI
- Ornamental Horticulture
  - Available to Residents of RI

**Integrated Agriculture Management**
- Available to Residents of CT, ME, MA, RI, VT

### Transfer Opportunities

UNH invites Thompson School graduates to continue their education at the University. Many of the associate degree programs offered by the School have baccalaureate degree counterparts. Specifically, these counterparts include civil engineering, forestry, sustainable agriculture and food systems, equine management, nutritional sciences, and hospitality management. Many other baccalaureate majors also are available. A final cumulative grade-point average of at least 2.5 is required for transfer to most programs; some UNH baccalaureate programs require a higher cumulative grade-point average. Successful completion of a baccalaureate degree usually requires a minimum of two years of additional study at the University. Other colleges
and universities, especially those within the University System of New Hampshire, also welcome graduates from the Thompson School.

## Subject Abbreviations

The following abbreviations are used to identify courses that are part of Thompson School of Applied Science subject areas.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Subject Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>Agricultural Mechanization</td>
</tr>
<tr>
<td>AAS</td>
<td>Applied Animal Science</td>
</tr>
<tr>
<td>ABM</td>
<td>Applied Business Management</td>
</tr>
<tr>
<td>ANSC</td>
<td>Animal and Nutritional Science</td>
</tr>
<tr>
<td>CAN</td>
<td>Culinary Arts and Nutrition</td>
</tr>
<tr>
<td>CEP</td>
<td>Community and Environmental Planning</td>
</tr>
<tr>
<td>CT</td>
<td>Civil Technology</td>
</tr>
<tr>
<td>COM</td>
<td>TSAS Communication</td>
</tr>
<tr>
<td>CSL</td>
<td>Community Leadership</td>
</tr>
<tr>
<td>CD</td>
<td>Community Development</td>
</tr>
<tr>
<td>FORT</td>
<td>Forest Technology</td>
</tr>
<tr>
<td>HT</td>
<td>Horticultural Technology</td>
</tr>
<tr>
<td>IAG</td>
<td>Integrated Agriculture Management</td>
</tr>
<tr>
<td>MTH</td>
<td>TSAS Mathematics</td>
</tr>
<tr>
<td>NR</td>
<td>Natural Resources</td>
</tr>
<tr>
<td>NUTR</td>
<td>Nutrition</td>
</tr>
<tr>
<td>PBIO</td>
<td>Plant Biology</td>
</tr>
<tr>
<td>SSCI</td>
<td>TSAS Social Science</td>
</tr>
<tr>
<td>THDA</td>
<td>Theatre and Dance</td>
</tr>
<tr>
<td>TSAS</td>
<td>Thompson School Applied Science</td>
</tr>
<tr>
<td>VTEC</td>
<td>Veterinary Technology</td>
</tr>
<tr>
<td>ZOOL</td>
<td>Zoology</td>
</tr>
</tbody>
</table>
Agricultural Mechanization (AM)

» Click to view course offerings

Description

Courses offered under agricultural mechanization (AM) include welding and fabrication, internal combustion engines, and construction-related courses. These courses appeal to a wide variety of UNH students (both two- and four-year); several are required courses in civil technology concentrations and flexible concentration courses in the integrated agriculture management program.

Applied Animal Science (AAS)

» http://colsa.unh.edu/tsas/aas

» Click to view course offerings

Professor: Laurie Chapman-Bosco, Andrew B. Conroy
Lecturer: Sarah Proctor

The supporting applied animal science faculty is Allison Powers, technical specialist instructor, with a focus in small animal care.

Applied animal science (AAS) provides students with hands-on practical skills combined with knowledge and understanding of the latest technology. The core program offers a solid background in anatomy, physiology, nutrition, health, and animal breeding. In addition, students choose a concentration in equine management, dairy management, or small animal care. Each concentration also allows for choices of elective courses in other areas.
Practical learning experience is provided at the UNH equine facilities, consisting of the Tirrell Horse Barn; W.C. Skoglund indoor riding arena, a lighted outdoor riding arena; a USEA-recognized combined training competition course for beginner novice through preliminary riders; and three regulation-size dressage competition arenas plus the Thomas P. Fairchild Dairy Teaching and Research Center and the UNH Organic Dairy Farm. The Thompson School also operates its own grooming shop and biology laboratories. The curriculum has a number of animal-related educational partnerships that include the New Hampshire SPCA in Stratham, N.H., the Cochecho Valley Humane Society in Dover, N.H., and field trips to numerous animal-related businesses.

Admissions Requirements

Applicants to the applied animal science program area must present college preparatory English and at least two years of satisfactory work in both college preparatory mathematics and science (one of the sciences being biology, with a lab). One year of laboratory college preparatory chemistry is highly recommended.

Curriculum Fee

Applied animal science, all concentrations: $680*

*This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. There may be additional fees for uniforms, specific high-cost courses, and/or professional equipment. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester’s Time and Room Schedule. All fees are subject to change.

Applied Animal Science Curriculum Standards

Applied animal science (AAS) students must maintain a minimum 2.0 cumulative grade-point average in AAS classes after two semesters (minimum 26 credits) to take additional AAS classes. Students with AAS averages lower than 2.0 must repeat classes with lower grades and raise their average to the required 2.0 before taking additional AAS classes. Students must have a minimum cumulative 2.0 grade-point average in AAS classes to qualify for graduation from the program.

Dairy Management
To work in the highly technical, rapidly changing field of dairy management, students must become well versed in the many aspects of dairy farm operation and management. In the dairy management concentration, students put into practice immediately many of the skills learned in the classroom. Students learn to balance rations, identify and treat diseases, work safely with cattle, and gain many other skills. Working at the University’s dairy farm, a modern and well-equipped teaching and research center, students collaborate to manage the CREAM (Cooperative for Real Education in Agriculture) herd. Students frequently study at the UNH Organic Dairy Research Farm.

Students learn the business of farming through field exercises in land management, forage production, financial management, and computer use on a dairy farm as well as through continued practical experience with cattle. The program prepares students to work both on the farm and in related businesses.

Thompson School dairy management is in a unique position with the baccalaureate animal science major. Students may start with the Thompson School program, obtain their associate in applied science (A.A.S.) degree then transfer to a four-year major and obtain a B.S. in two to two-and-a-half additional years with a full-time course of study. This allows students to receive two degrees in as little as four years or obtain their A.A.S. degree and work in the field to later return for a B.S. Students wishing to follow this course of action need to work closely with their adviser and maintain a grade of C or better in key applied animal science courses.

**Career Opportunities:**

Herd manager, agricultural sales and/or service employee, farm manager, artificial insemination (AI) technician, crop manager, farm owner, or farm-business owner.

**Dairy Management Program of Study**

### First Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS</td>
<td>425</td>
<td>Introduction to Dairy Herd Management</td>
<td>4</td>
</tr>
<tr>
<td>AAS</td>
<td>428</td>
<td>Anatomy and Physiology of Domestic Animals</td>
<td>3</td>
</tr>
<tr>
<td>AAS</td>
<td>428A</td>
<td>Anatomy and Physiology Lab for AAS</td>
<td>1</td>
</tr>
<tr>
<td>AAS</td>
<td>431</td>
<td>Introduction to Animal Science</td>
<td>4</td>
</tr>
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</table>
# Undergraduate Course Catalog

<table>
<thead>
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<th>Title</th>
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<tbody>
<tr>
<td>AAS</td>
<td>423</td>
<td>Dairy Selection</td>
<td>2</td>
</tr>
<tr>
<td>AAS</td>
<td>434</td>
<td>Equipment and Facilities Management</td>
<td>3</td>
</tr>
<tr>
<td>AAS</td>
<td>439</td>
<td>Fundamentals of Animal Health</td>
<td>2</td>
</tr>
<tr>
<td>AAS</td>
<td>439A</td>
<td>Fundamentals of Animal Health - Lab</td>
<td>1</td>
</tr>
<tr>
<td>ABM</td>
<td>404A</td>
<td>Introduction to Business I</td>
<td>2</td>
</tr>
<tr>
<td>COM</td>
<td>210 OR 212</td>
<td>Public Speaking or Writing in the Workplace</td>
<td>3</td>
</tr>
<tr>
<td>MTH</td>
<td>202</td>
<td>College Algebra</td>
<td>3</td>
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## First Year, Spring Semester

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<tr>
<td>AAS</td>
<td>432</td>
<td>Introduction to Forage and Grassland Management</td>
<td>3</td>
</tr>
<tr>
<td>AAS</td>
<td>535</td>
<td>Animal Nutrition</td>
<td>3</td>
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<tr>
<td>AAS</td>
<td>546</td>
<td>Animal Business Applications</td>
<td>4</td>
</tr>
<tr>
<td>AAS</td>
<td>575</td>
<td>CREAM (Cooperative for Real Education in Agricultural Management)</td>
<td>4</td>
</tr>
<tr>
<td>AAS</td>
<td>597</td>
<td>Work Experience</td>
<td>0</td>
</tr>
<tr>
<td>SSCI</td>
<td>201</td>
<td>Human Relations</td>
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## Second Year, Fall Semester

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<tr>
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<tr>
<td>AAS</td>
<td>540</td>
<td>Animal Breeding</td>
<td>3</td>
</tr>
<tr>
<td>AAS</td>
<td>574</td>
<td>Dairy Cattle Disease Seminar</td>
<td>2</td>
</tr>
<tr>
<td>AAS</td>
<td>575</td>
<td>CREAM Program (full year course)</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>2__</td>
<td>Social Science Course</td>
<td>2 - 4</td>
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## Second Year, Spring Semester

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS</td>
<td>2__</td>
<td>Elective(s)</td>
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</tr>
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</table>

## Equine Management

http://colsa.unh.edu/tsas/aas/equine-management
The equine industry in New England encompasses many different types of facilities and disciplines. Students in the equine management concentration combine courses utilizing the most recent technical information with related practical experience. They gain hands-on experience in bandaging, selection, ration-balancing by computer, fitting and care of equipment, and farm and barn analysis. They also acquire decision-making and managerial skills through the organization and running of a combined test competition each spring. Graduates have a solid foundation to pursue either employment or additional educational opportunities upon completion of the program.

The riding focus at UNH is balance seat with schooling in dressage, cross country, and stadium jumping. Thompson School students in horsemanship classes ride in the UNH program and have the opportunity to try out for the award-winning Intercollegiate Horse Show Association (IHSA) or Intercollegiate Dressage Association (IDA) teams.

Students who plan to continue their college education in a four-year major are encouraged to express their interest to their adviser. Together, student and adviser can develop a sequence of courses that will assist with the transition from the two-year to four-year degree program.

Career Opportunities (directly out of the associate degree program):

Horse and farm manager, sales (tack shops, grain stores), horse show manager, veterinary assistant/equine practice, or riding instructor (with additional studies).

Equine Management Program of Study

First Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>AAS</td>
<td>428</td>
<td>Anatomy and Physiology of Domestic Animals</td>
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<td>431</td>
<td>Introduction to Animal Science</td>
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<td>AAS</td>
<td>437</td>
<td>Equine Handling and Care Techniques</td>
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<tr>
<td>ANSC</td>
<td>411</td>
<td>ANSC Introduction to Equine Science</td>
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<tr>
<td>COM</td>
<td>209</td>
<td>Expository Writing and Reading</td>
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First Year, Spring Semester

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AAS  426  Equine Conformation and Lameness  4
AAS  434  Equipment and Facilities Management  3
AAS  436  Equine Show Preparation and Competition  1
AAS  439  Fundamentals of Animal Health  2
AAS  439A  Fundamentals of Animal Health - Lab  1
ABM  404A  Introduction to Business I  2
COM  212  Writing in the Workplace  3
MTH  202  College Algebra  3

Second Year, Fall Semester

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<td>Management</td>
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<td>535</td>
<td>Animal Nutrition</td>
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<td>Equine handling/Longeing</td>
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<td>546</td>
<td>Animal Business Applications</td>
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<td>547</td>
<td>Applied Equine Management</td>
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<td>AAS</td>
<td>597</td>
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<tr>
<td>SSCI</td>
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<td>Human Relations</td>
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Second Year, Spring Semester

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<td>Equine Health Management</td>
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<td>553</td>
<td>Equine Competition Management</td>
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<td>ANSC</td>
<td>402</td>
<td>ANSC: Horsemanship</td>
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<td>SSCI</td>
<td>403</td>
<td>Environmental Issues &amp; Society</td>
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* AAS 548 in development

Additional course options (when offered)

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<td>Equine Field Operations</td>
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<td>495</td>
<td>Special Topics: Animal Business Concepts</td>
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Total: 67 credits

**Small Animal Care**

[http://colsa.unh.edu/tsas/aas/small-animal-care](http://colsa.unh.edu/tsas/aas/small-animal-care)

Animal companionship provides millions of people with an oasis in a hectic, impersonal world. Pet owners consistently seek quality services for pets that are often considered members of the family. The small animal care concentration prepares students to work in companion animal care positions of all types.

In their first year, students gain experience in breed types, behavior, genetics, restraint, and training of dogs and cats. Students also master laboratory procedures such as fecal examination and heartworm testing. In addition, students learn the basics of grooming, nutrition, first aid, disease prevention, medication administration, and toxicology. During their second year, students spend four hours a week at the [New Hampshire SPCA](http://newhampshirespca.org) or [Cocheco Valley Humane Society](http://cochecovalleymhs.org) performing all aspects of animal care while they continue with their academic coursework.

Small animal care is very flexible with recommended elective courses. Second-year students choose classes based on their career goals. Career tracks include veterinary hospital employment, employment in the humane/animal control fields, employment or ownership within the boarding/grooming/day care industry, or positions in training and behavior.

**Career Opportunities:**

Pet store manager, pet groomer, kennel manager, dog trainer, veterinary assistant, laboratory animal caregiver, animal care and control technician, animal-assisted activities/therapy volunteer and/or coordinator, animal shelter or rescue facility manager.

**Small Animal Care Program of Study**
### First Year, Fall Semester

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<td>Anatomy and Physiology of Domestic Animals</td>
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<td>430</td>
<td>Small Animal Breeds and Behavior</td>
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<td>431</td>
<td>Introduction to Animal Science</td>
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<td>COM</td>
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<td>Expository Writing and Reading</td>
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### First Year, Spring Semester

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<td>Fundamentals of Animal Health</td>
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<td>Fundamentals of Animal Health - Lab</td>
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<td>Clinical Animal Nursing Techniques I</td>
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<td>Introduction to Business I</td>
<td>2</td>
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<td>COM</td>
<td>210</td>
<td>Public Speaking OR</td>
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<td>COM</td>
<td>212</td>
<td>Writing in the Workplace</td>
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<td>MTH</td>
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<td>College Algebra</td>
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<td>Animal Nutrition</td>
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<td>Animal Business Applications</td>
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<td>Animal Breeding</td>
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<td>AAS</td>
<td>421</td>
<td>Large Animal Behavior and Handling</td>
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<td>Small Animal Grooming II</td>
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<tr>
<td>AAS</td>
<td>436</td>
<td>Equine Show Preparation and Competition</td>
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<td>AAS</td>
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<td>Equine Management Techniques</td>
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<td>AAS</td>
<td>525</td>
<td>Canine Learning Theory and Application</td>
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<td>AAS</td>
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<td>Small Animal Diseases</td>
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<td>AAS</td>
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<td>Animal Population Medicine and Management</td>
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<td>AAS</td>
<td>563</td>
<td>Small Animal Grooming III</td>
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<td>CSL Courses (for students interested in working with non-profit organizations)</td>
<td>Var</td>
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</tbody>
</table>

Total: 64 - 69 credits

» [Click to view course offerings](#)

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**Applied Business Management (ABM)**

» [http://colsa.unh.edu/tsas/abm](http://colsa.unh.edu/tsas/abm)

» [Click to view course offerings](#)

*Lecturer: John MacMillan*

The applied business management (ABM) program is no longer accepting new students into the program area. A limited number of ABM courses will continue to be offered to supplement other programs with business knowledge and skills required by agricultural-related enterprises.
Civil Technology (CT)

Professor: Kenneth L. Flesher
Lecturer: Scott D Boudreau

Civil technology is a dynamic educational opportunity offering skill-based learning through class instruction, extensive laboratory experience, and fieldwork, as well as opportunities to develop a strong portfolio. Students choose from one of the following concentrations: architectural technology, construction management, or surveying and mapping.

The cornerstone of the educational experience is instruction in computer-aided design (CAD) and parametric modeling using the Thompson School’s state-of-the-art CAD/BIM (building information management) labs. Students in surveying use the latest GPS and surveying equipment, and students studying geographical information systems (GIS) use the new GIS Instructional Lab. Additional coursework covers building science, construction contracting, materials, soils, and methodologies of professional practice in the concentrations.

Admissions Requirements

Applicants to the architectural technology, construction management, and surveying and mapping concentrations must present college preparatory English and at least two years of satisfactory work in college preparatory mathematics.

Curriculum Fee

Civil technology, all concentrations: $99*

*This one-time curriculum fee is required to cover lab materials and specialized equipment maintenance that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.
Architectural Technology

In the architectural technology concentration, students expand on the broad construction-related base of the civil technology curriculum. Faculty who are experienced, registered architects and engineers introduce students to the technical skills used in the architectural profession, including computer-aided design (CAD), parametric modeling, and building-science-related technologies. Course content includes engineering-based as well as design-based disciplines. The courses, when coupled with recommended electives, provide students with a substantial knowledge base for architecture-related careers. While some graduates continue their studies in accredited baccalaureate programs and become registered architects, most find work in technical support positions within the design and construction industries in either private companies or public/government entities.

Career Opportunities:

Architectural technician, CAD/BIM designer, public-works operations, land-development planner, facilities management, engineering aide, or construction supervisor.

Architectural Technology Program of Study

First Year, Fall Semester

<table>
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<tr>
<th>Abbreviation</th>
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<th>Title</th>
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<tbody>
<tr>
<td>CT</td>
<td>423</td>
<td>Introduction to Surveying and Mapping</td>
<td>3</td>
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<td>CT</td>
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<td>Surveying and Mapping Lab</td>
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<tr>
<td>CT</td>
<td>427</td>
<td>2D Computer Aided Design</td>
<td>4</td>
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<tr>
<td>MTH</td>
<td>203</td>
<td>Algebra and Trigonometry</td>
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<tr>
<td>TSAS</td>
<td>405A &amp; B</td>
<td>Computers in the Workplace I and II</td>
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First Year, Spring Semester

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<td>Building Science/Residential Construction</td>
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<td>428</td>
<td>3D Design, Modeling &amp; Visualization</td>
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<tr>
<td>CT</td>
<td>432</td>
<td>Applied Environmental Technology</td>
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Second Year, Fall Semester

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<td>Expository Writing and Reading</td>
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<td>CT</td>
<td>483</td>
<td>Mechanical &amp; Electrical Systems</td>
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<tr>
<td>CT</td>
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<td>Statics and Materials</td>
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Elective Course Options (when offered)

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<td>Contemporary Conservation Issues and</td>
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<td>Other courses by approval</td>
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Total: Minimum 64 credits

Construction Management

In the construction management concentration, students prepare for careers in land development, construction contracting and management, and land-use planning. Students learn not only how to build well but how to build wisely. They study construction and its related
technologies, dealing with material selection and design, and design of foundation and drainage systems. They also examine environmental and land development issues by studying residential and commercial septic and waste disposal systems, recycling, and effective energy management. Some graduates elect to continue their education in bachelor of science programs in civil engineering or community development.

Graduates of the construction management concentration find employment in a variety of building industry-related positions.

**Career Opportunities:**

Construction supervisor, project manager, cost estimator, public-works employee, contractor, code-enforcement officer, construction-material tester, land-development planning employee, site evaluator for building components, construction product manufacturer, product representative, or DOT engineering technician.

**Construction Management Program of Study**

**First Year, Fall Semester**

<table>
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**First Year, Spring Semester**

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Second Year, Fall Semester

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Second Year, Spring Semester

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<td>575</td>
<td>Building Science/Residential Construction</td>
<td>4</td>
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<tr>
<td>CT</td>
<td>538</td>
<td>Construction Contracting</td>
<td>4</td>
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<tr>
<td>CT</td>
<td>554</td>
<td>Soils and Foundations</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
<td>4</td>
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Elective Course Options (when offered)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>451</td>
<td>Welding and Fabrication Technology</td>
<td>4</td>
</tr>
<tr>
<td>CEP</td>
<td>672</td>
<td>Fundamentals of Real Estate</td>
<td>3</td>
</tr>
<tr>
<td>NR</td>
<td>435</td>
<td>Contemporary Conservation Issues and Environmental Awareness</td>
<td>4</td>
</tr>
<tr>
<td>NR</td>
<td>621</td>
<td>Field Descriptions of Soils</td>
<td>3</td>
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<tr>
<td>THDA</td>
<td>459</td>
<td>Stagecraft</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other courses by approval</td>
<td>VAR</td>
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</table>

Total: Minimum 65 credits

Surveying and Mapping

As land values increase and the need to use our natural resources efficiently while protecting our environment becomes more critical, the role of surveyors is expanding. The surveying and mapping concentration contains a core sequence of six courses (from Introductory Surveying to the Legal Aspects of Surveying) that continuously challenge students to improve their technical knowledge, computer skills, and field competency. Using electronic field measuring equipment,
computers to create and plot maps, satellite positioning technology, and laser scanning, the
surveyors and mappers of today are at the forefront of acquiring, analyzing, and managing land
information.

Career Opportunities:

Licensed land surveyor, DOT engineering technician, GIS technician, land-development
planner, construction surveyor, or GPS technician.

Surveying and Mapping Program of Study

First Year, Fall Semester

<table>
<thead>
<tr>
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<th>Course Number</th>
<th>Title</th>
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</tr>
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<tbody>
<tr>
<td>CT</td>
<td>423</td>
<td>Introduction to Surveying and Mapping</td>
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<tr>
<td>CT</td>
<td>425</td>
<td>Surveying and Mapping Lab</td>
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<tr>
<td>CT</td>
<td>427</td>
<td>2D Computer Aided Design</td>
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<td>MTH</td>
<td>203</td>
<td>Algebra and Trigonometry</td>
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<tr>
<td>TSAS</td>
<td>405A &amp; B</td>
<td>Computers in the Workplace I and II</td>
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First Year, Spring Semester

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<tbody>
<tr>
<td>COM</td>
<td>212</td>
<td>Writing in the Workplace</td>
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<td>CT</td>
<td>428</td>
<td>3D Design, Modeling &amp; Visualization</td>
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<tr>
<td>CT</td>
<td>432</td>
<td>Applied Environmental Technology</td>
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<td>CT</td>
<td>442</td>
<td>Construction Surveying</td>
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<td>Elective (Chosen in conjunction with CT Advisor)</td>
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Second Year, Fall Semester

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<tr>
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<td>Expository Writing and Reading</td>
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<td>541</td>
<td>Legal Aspects of Surveying</td>
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<tr>
<td>CT</td>
<td>543</td>
<td>Advanced Surveying and Mapping</td>
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<tr>
<td>CT</td>
<td>557</td>
<td>Land Design and Regulations</td>
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### Second Year, Spring Semester

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<tr>
<td>CT</td>
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<td>GIS Apps in Sustainability</td>
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<td>CT</td>
<td>538</td>
<td>Construction Contracting</td>
<td>4</td>
</tr>
<tr>
<td>CT</td>
<td>548</td>
<td>Advanced Surveying Computations</td>
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</tr>
<tr>
<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
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### Elective Course Options (when offered)

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<tr>
<th>Abbreviation</th>
<th>Course Number</th>
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<tr>
<td></td>
<td></td>
<td>Other courses by approval</td>
<td>VAR</td>
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</tbody>
</table>

Total: 64 credits

» Click to view course offerings

Community Leadership (CSL)

» [http://colsa.unh.edu/tsas/colead](http://colsa.unh.edu/tsas/colead)

» Click to view course offerings

Professor: Timothy E. Barretto

The community leadership program (CSL) is no longer accepting students for admission to the program area. A limited number of courses will be offered as requested by several baccalaureate majors.

» Click to view course offerings
Culinary Arts and Nutrition (CAN)

» http://colsa.unh.edu/tsas/can

» Click to view course offerings

Professor: Charles A. Caramihalis, Nancy M. Johnson
Senior Lecturer: Julienne M Guyette

The culinary arts and nutrition (CAN) program offers a concentration in culinary arts, which is accredited by the American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC).

Admissions Requirements

Applicants to culinary arts and food and beverage management must present college preparatory English and a minimum of two years of satisfactory work in college preparatory mathematics.

Curriculum Fee

Culinary arts and nutrition, culinary arts: $571*

*This one-time curriculum fee is required to cover lab materials, "Chef Whites," knives, and specialized equipment maintenance that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

Culinary Arts

http://colsa.unh.edu/tsas/can/culinary-arts

Students who complete the requirements for the culinary arts concentration are prepared for a variety of positions as entry-level chefs in the hospitality industry. In a program that combines classroom work with practical experience, students learn and explore career opportunities, menu development, cost control, food safety, baking, nutrition, management skills, and general
education. Through a unique partnership with University Hospitality Services, students complete rotations in state-of-the-art production kitchens on campus at Holloway Commons. These rotations provide opportunities to develop proficiency in contemporary and classical culinary techniques and cooking methods related to a la carte, banquet, and quantity food production and service. The culinary arts concentration is annually reviewed by its own advisory committee of industry professionals, program faculty, and chef-instructors who revise the curriculum to meet changing industry needs. The culinary arts program is accredited by the American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC).

Career Opportunities:

Chef in restaurants, hotels, private clubs, theme parks, catering and banquet facilities, destination resorts, cruise ships, corporate chains, and health care facilities.

Culinary Arts Program of Study

First Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CAN</td>
<td>401</td>
<td>Food Preparation Fundamentals</td>
<td>2</td>
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<tr>
<td>CAN</td>
<td>403</td>
<td>Culinary Skill Development</td>
<td>4</td>
</tr>
<tr>
<td>CAN</td>
<td>407</td>
<td>ServSafe Sanitation</td>
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<tr>
<td>COM</td>
<td>209</td>
<td>Expository Writing and Reading</td>
<td>4</td>
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<tr>
<td>MTH</td>
<td>202</td>
<td>College Algebra</td>
<td>3</td>
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<td>TSAS</td>
<td>405A</td>
<td>Computers in the Workplace I</td>
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First Year, Spring Semester

<table>
<thead>
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<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CAN</td>
<td>404</td>
<td>Baking and Pastry Products</td>
<td>4</td>
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<tr>
<td>CAN</td>
<td>422</td>
<td>Cuisine and Culture</td>
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<td>CAN</td>
<td>426</td>
<td>Dining Room Practicum</td>
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<tr>
<td>CAN</td>
<td>443</td>
<td>Quantity Food Production and Display Cooking</td>
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<tr>
<td>COM</td>
<td>210</td>
<td>Public Speaking</td>
<td>3</td>
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</table>
## Second Year, Fall Semester

<table>
<thead>
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<th>Abbreviation</th>
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<th>Title</th>
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<tbody>
<tr>
<td>CAN</td>
<td>506</td>
<td>Food and Beverage Cost Control</td>
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<td>CAN</td>
<td>525</td>
<td>American Regional Cuisine</td>
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<tr>
<td>CAN</td>
<td>528</td>
<td>Culinary Nutrition</td>
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<tr>
<td>CAN</td>
<td>597</td>
<td>Culinary Arts Internship (invitation only) OR</td>
<td>5</td>
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<tr>
<td></td>
<td></td>
<td>Electives AND CAN 598 (below)</td>
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<tr>
<td>CAN</td>
<td>598</td>
<td>Work Experience</td>
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## Second Year, Spring Semester

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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CAN</td>
<td>512</td>
<td>Hospitality Human Resource Management</td>
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<td>CAN</td>
<td>535</td>
<td>International Cuisine</td>
<td>5</td>
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<tr>
<td>CAN</td>
<td>544</td>
<td>Catering and Garde Manger</td>
<td>4</td>
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<tr>
<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
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Total: 64 credits

### Approved Electives (when offered)

<table>
<thead>
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<th>Title</th>
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<tbody>
<tr>
<td>ABM</td>
<td>405</td>
<td>Small Business Accounting Principles</td>
<td>4</td>
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<tr>
<td>COM</td>
<td>212</td>
<td>Writing in the Workplace</td>
<td>3</td>
</tr>
<tr>
<td>CSL</td>
<td>401</td>
<td>Introduction to Community Service &amp; Leadership</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>403</td>
<td>Environmental Issues and Society</td>
<td>2</td>
</tr>
</tbody>
</table>

» [Click to view course offerings](#)

^ back to top

### Forest Technology (FORT)

» [http://colsa.unh.edu/tsas/fort.edu/fort](http://colsa.unh.edu/tsas/fort.edu/fort)

» [Click to view course offerings](#)
Students in the forest technology (FORT) program are uniquely prepared for careers in forest industries and natural resource management in New Hampshire and New England. Classroom lecture is supported by practical field work in each of the subject areas. The curriculum is accredited by the Society of American Foresters (the first two-year program in the U.S. to complete the accreditation application process) and reviewed by an advisory committee representing the full spectrum of forestry organizations in the region. There is a strong emphasis on leadership, safety, communication skills, accuracy of field work, data collection, and professional presentation. Unique facilities for teaching and learning include centrally located classroom and shop facilities; 3,000+ acres of University-owned forest land; a new sawmill and Forest Industries Training Center (FITC); logging equipment; technologically advanced navigation, data collection, and analysis equipment; and a faculty with vast field experience in the subject areas dedicated to teaching.

Admissions Requirements

Applicants to the forest technology program area must present college preparatory English and at least two years of satisfactory work in both college preparatory mathematics and science (one science being biology, with a lab).

Curriculum Fee

Forest technology: $715*

*This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

Forest Technician

Forest technicians help plan, direct, and operate forestry enterprises. Students in the forest technician concentration experience a breadth and depth of instruction. They are exposed to the theory and practice of planting, thinning, and other silvicultural operations, including harvesting supervision. They learn how to design, lay out, and construct roads and trails; how to map and survey property; how to manage woodlands to improve timber quality and wildlife habitat; how to inventory natural resources and develop a plan for their future management; how to identify and deal with forest health issues; and how to conserve soil, water, and other natural resources. Graduates work in wood products-related industries, in public forestland...
management agencies, with forestry consulting firms, urban tree care companies, and with a range of conservation organizations. Graduates can become licensed in New Hampshire to practice forestry on private lands.

**Career Opportunities:**

Forestry consultant, forest fire control and use technician, mapping technician, geographic information systems/global positioning systems (GIS/GPS) technician, timber and log buyer, log scaler, lumber grader, sawmill technician, arborist, urban tree care specialist, timber cruiser/forest inventory technician, or forestry equipment/products sales representative.

**Forest Technician Program of Study**

**First Year, Fall Semester**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>209</td>
<td>Expository Writing and Reading</td>
<td>4</td>
</tr>
<tr>
<td>FORT</td>
<td>461</td>
<td>Dendrology</td>
<td>3</td>
</tr>
<tr>
<td>FORT</td>
<td>463</td>
<td>Forest Ecology</td>
<td>3</td>
</tr>
<tr>
<td>FORT</td>
<td>465</td>
<td>Forest Orientation Seminar</td>
<td>1</td>
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<tr>
<td>MTH</td>
<td>203</td>
<td>Algebra and Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>TSAS</td>
<td>405A</td>
<td>Computers in the Workplace I</td>
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**First Year, Spring Semester**

<table>
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<tr>
<td>FORT</td>
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<td>Forest Mapping</td>
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<td>FORT</td>
<td>466</td>
<td>Forest Surveying</td>
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<td>FORT</td>
<td>470</td>
<td>Applied Silviculture</td>
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<td>FORT</td>
<td>475</td>
<td>Forestry Field Practices</td>
<td>1</td>
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<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
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**Second Year, Fall Semester**

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<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>COM</td>
<td>210</td>
<td>Public Speaking</td>
<td>3</td>
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</tbody>
</table>
FORT  569  Wildlife Ecology and Conservation  3
FORT  572  Mensuration  4
FORT  577  Forest Harvesting Systems  4
FORT  581  Remote Sensing and GIS for Foresters  3
FORT  597  Forestry Work Experience  0
FORT  564  Arboriculture  3

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ABM</td>
<td>404A &amp; B</td>
<td>Introduction to Business I &amp; II</td>
<td>4</td>
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<td>FORT</td>
<td>567</td>
<td>Leadership, Supervision and Safety</td>
<td>2</td>
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<tr>
<td>FORT</td>
<td>573</td>
<td>Management Operations and Analysis</td>
<td>3</td>
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<tr>
<td>FORT</td>
<td>574</td>
<td>Industrial Forest Management Tour</td>
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<tr>
<td>FORT</td>
<td>576</td>
<td>Forest Products</td>
<td>4</td>
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<tr>
<td>FORT</td>
<td>578</td>
<td>Forest Insects and Diseases</td>
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<tr>
<td>FORT</td>
<td>579</td>
<td>Forest Fire Control and Use</td>
<td>2</td>
</tr>
</tbody>
</table>

Total: 65 - 69 credits

» Click to view course offerings

Horticultural Technology (HT)

» Click to view course offerings

Associate Professor: Rene J. Gingras, Dana M. Sansom

Horticultural technology (HT) students study applied plant science, preparing for environmentally attuned careers in "the green industry." Rigorous first-year foundation courses in plant materials, plant growth and development, and soils support second-year concentrations in landscape operations or ornamental horticulture. Courses unique to the program include "pond-less" water features, lighting design/installation, rain harvesting, and hydroponics/aquaponics. Employment opportunities in these areas continue to be excellent. Graduates enter a rapidly expanding job market in ornamental plant production, nursery and
garden center management, fruit and vegetable production, parks and grounds management, and landscape design, construction, and maintenance. Many recent graduates have established their own horticulture enterprises, and others continue their education toward a four-year degree in areas such as environmental horticulture, greenhouse production, or landscape architecture. Another option that is available to Thompson School students is to remain at the Thompson School for a third year to complete courses related to horticultural businesses.

Admissions Requirements

Applicants to the horticultural technology program area must present college preparatory English and at least two years of satisfactory work in both college preparatory mathematics and science (one science being biology, with a lab).

Curriculum Fee

Horticultural technology, both concentrations: $807*

*This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester’s Time and Room Schedule. All fees are subject to change.

Landscape Operations

Landscape horticulture has been projected to be one of the fastest growing service industries of the coming decade. It is a field that also offers unparalleled aesthetic satisfaction and meaningful reward. To succeed in the landscape industry increasingly requires a degree of technical and scientific expertise, as well as creativity, artistry, and problem-solving skills. Students in the landscape operation concentration gain a solid foundation by completing core requirements in the fundamentals of plant growth and development, soils, plant identification, pruning, and plant health care. They then complete a series of landscape maintenance, construction, design, and business courses. This combination prepares them to become successful members of the landscape industry. In their classes, students meld theory and practice, and then apply what they learn in weekly lab periods and on-site visits to area operations.

Career Opportunities:
Landscape designer, landscape construction specialist, garden center/nursery sales, or maintenance/management for golf courses, schools and parks, private and public grounds.

**Landscape Operations Program of Study**

### First Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>209</td>
<td>Expository Writing and Reading</td>
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<tr>
<td>HT</td>
<td>401</td>
<td>Freshman Seminar</td>
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<td>HT</td>
<td>405</td>
<td>Plants, People and Place</td>
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<td>HT</td>
<td>407</td>
<td>Plant Structure and Function</td>
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<td>HT</td>
<td>415</td>
<td>Soils and Land Use (Half-term I)</td>
<td>2</td>
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<tr>
<td>SSCI</td>
<td>403</td>
<td>Environment and Society</td>
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<tr>
<td>TSAS</td>
<td>405A</td>
<td>Computers in the Workplace I</td>
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### First Year, Spring Semester

<table>
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<tr>
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<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FORT</td>
<td>578</td>
<td>Forest Insects and Diseases</td>
<td>2</td>
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<tr>
<td>HT</td>
<td>416</td>
<td>Soils and Plant Nutrition (1/2 term)</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>456</td>
<td>Horticultural Pruning</td>
<td>2</td>
</tr>
<tr>
<td>MTH</td>
<td>202</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>SSCI</td>
<td>201</td>
<td>Human Relations OR SSCI 202 (below)</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
<td>4</td>
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<td></td>
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<td>Approved Elective Courses</td>
<td>2 - 5</td>
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### Second Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>210</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>HT</td>
<td>551</td>
<td>Introduction to Design Communication</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>557</td>
<td>Woody Landscape Plants</td>
<td>3</td>
</tr>
<tr>
<td>HT</td>
<td>561</td>
<td>Grounds Maintenance</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>563</td>
<td>Landscape Construction</td>
<td>4</td>
</tr>
<tr>
<td>HT</td>
<td>597</td>
<td>Horticultural Work Experience</td>
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</table>
### Second Year, Spring Semester

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABM</td>
<td>404A &amp; B</td>
<td>Introduction to Business I &amp; II</td>
<td>4</td>
</tr>
<tr>
<td>HT</td>
<td>458</td>
<td>Herbaceous Ornamental Plants</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>570</td>
<td>Grounds Management</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>572</td>
<td>Landscape Design Studio</td>
<td>4</td>
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<tr>
<td></td>
<td></td>
<td>Approved elective credits</td>
<td>4 - 8</td>
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</table>

Total: 66 - 72 credits

### Recommended Landscape HT Electives (when offered)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>451</td>
<td>Welding/Fabrication Technology</td>
<td>4</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AM</td>
<td>462</td>
<td>Internal Combustion Engines II</td>
<td>4</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>FORT</td>
<td>564</td>
<td>Arboriculture</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>450</td>
<td>Flower Show Design and Construction</td>
<td>1</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>454</td>
<td>Irrigation Design</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>553</td>
<td>&quot;Pond-less&quot; Water Feature Design and Installation</td>
<td>2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HT</td>
<td>554</td>
<td>Sustainable Irrigation &amp; Rain Harvesting</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>555</td>
<td>Landscape Lighting Design and Installation</td>
<td>2</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>566</td>
<td>Sustainable Planting Design</td>
<td>2</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>585</td>
<td>Fruit and Vegetable Production</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Students may also propose an independent study or field operation project to focus on a topic not included in the above list.

### Ornamental Horticulture

Students who prefer to be generalists in horticultural technology may opt for the ornamental
horticulture concentration. Students gain the broadest possible background in horticultural technology, which is attractive to employers in all specialty areas. To succeed in ornamental horticulture, students require a degree of technical and scientific expertise as well as creativity and problem-solving skills. They first complete core requirements in the fundamentals of plant growth and development, soils, plant propagation, plant identification, and plant health care. Then students work closely with a faculty adviser to choose approved elective coursework to round out their program of study. In their classes, students meld theory and practice, and then apply what they learn in weekly lab periods and on-site visits to area operations.

Career Opportunities:

Owner/manager of a garden center, nursery, flower shop, or fruit and vegetable business; wholesale/retail plant producer; research/botanical garden technician; or floral designer.

Ornamental Horticulture Program of Study

First Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>209</td>
<td>Expository Writing and Reading</td>
<td>4</td>
</tr>
<tr>
<td>HT</td>
<td>401</td>
<td>Freshman Seminar</td>
<td>1</td>
</tr>
<tr>
<td>HT</td>
<td>405</td>
<td>Plants, People and Place</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>407</td>
<td>Plant Structure and Function</td>
<td>4</td>
</tr>
<tr>
<td>HT</td>
<td>415</td>
<td>Soils and Land Use (1/2 term)</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>427</td>
<td>Horticulture Facilities Management</td>
<td>2</td>
</tr>
<tr>
<td>TSAS</td>
<td>405A</td>
<td>Computers in the Workplace I</td>
<td>2</td>
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</table>

First Year, Spring Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORT</td>
<td>578</td>
<td>Forest Insects and Diseases</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>428</td>
<td>Horticulture Facilities Management</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>404</td>
<td>Plant Propagation</td>
<td>4</td>
</tr>
<tr>
<td>HT</td>
<td>416</td>
<td>Soils and Plant Nutrition (1/2 semester)</td>
<td>2</td>
</tr>
<tr>
<td>MTH</td>
<td>202</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>SSCI</td>
<td>403</td>
<td>Environment and Society</td>
<td>2</td>
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</table>
### Second Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>210</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>HT</td>
<td>529</td>
<td>Horticulture Facilities Management</td>
<td>1</td>
</tr>
<tr>
<td>HT</td>
<td>575</td>
<td>Floral Crop Production</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>585</td>
<td>Fruit and Vegetable Production</td>
<td>3</td>
</tr>
<tr>
<td>HT</td>
<td>597</td>
<td>Horticultural Work Experience</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approved Elective Credits</td>
<td>4 - 8</td>
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</table>

### Second Year, Spring Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABM</td>
<td>404A &amp; B</td>
<td>Introduction to Business I &amp; II</td>
<td>4</td>
</tr>
<tr>
<td>HT</td>
<td>458</td>
<td>Herbaceous Ornamental Plants</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>530</td>
<td>Horticulture Facilities Management</td>
<td>1</td>
</tr>
<tr>
<td>HT</td>
<td>576</td>
<td>Bedding Plant Production</td>
<td>2</td>
</tr>
<tr>
<td>SSCI</td>
<td>201</td>
<td>Human Relations OR</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approved Elective Credits</td>
<td>3 - 7</td>
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</table>

Total: 66 - 72 credits

### Recommended Ornamental HT Electives (when offered)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>451</td>
<td>Welding/Fabrication Technology</td>
<td>4</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AM</td>
<td>462</td>
<td>Internal Combustion Engines II</td>
<td>4</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>FORT</td>
<td>564</td>
<td>Arboriculture</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>450</td>
<td>Flower Show Design and Construction</td>
<td>1</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>454</td>
<td>Irrigation Design</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>456</td>
<td>Horticultural Pruning</td>
<td>2</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>551</td>
<td>Introduction to Design Communication</td>
<td>2</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HT</td>
<td>557</td>
<td>Woody Landscape Plants</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Students may also propose an independent study or field operation project to focus on a topic not included in the above list.

» Click to view course offerings

Integrated Agriculture Management (IAG)
» http://colsa.unh.edu/tsas/iag.edu/iag

» Click to view course offerings

Professor: Andrew B. Conroy

The course of study in integrated agriculture management addresses the critical importance of understanding the relationships among agriculture, forestry, business management and marketing, nutrition, food systems, the environment, and community. We live in a world where everything is connected. No one piece can be managed without some understanding of the other pieces and their connections. We also live in a world in which diversification—whether in biology or in business—is a necessary ingredient for rapid adaptation and continued survival.

Integrated agriculture management (IAG) guides students to examine ecological and cultural relationships, and to assemble a collection of coursework in a focus area while attending the Thompson School. The IAG program is truly interdisciplinary, drawing upon diverse course offerings across several of the academic programs at the Thompson School.

First-year students in IAG take a core of courses covering the basics of soils, plants, and animals. This provides a strong foundation for second-year study, during which the student may either specialize in one or two areas or take courses across the breadth of programs in horticultural technology, applied animal science, forest technology, civil technology, and culinary arts and nutrition. Working closely with a faculty adviser, and benefitting from a wide array of flexible concentration courses, the student in integrated agriculture management
designs the path of study that aligns with his or her particular talents and interests.

Graduates of IAG will be able to choose from a large number of opportunities across an array of fields, including sustainable agriculture, fruit and vegetable production, livestock production, community-supported agriculture (CSA), value-added agricultural products, sustainable forest management, soil/water/forest conservation, cooperative extension, organic certification, and diversified farm management, or in more specific areas such as greenhouse production, sustainable landscape construction and maintenance, forest technician, dairy management, and others. A number of current students plan to return to family farms with new information and insight to help determine the future of their lands and enterprises as the world changes.

Graduates are also encouraged to consider transferring into the growing baccalaureate program in sustainable agriculture and food systems.

Admissions Requirements

Applicants to integrated agriculture management must present at least two years each of satisfactory work in college preparatory mathematics and sciences. One of the science courses should be biology with a lab.

Curriculum Fee

Integrated agriculture management: $807*

*This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the program. The curriculum fee covers the entire two-year course of study. There may be additional fees for uniforms, specific high-cost courses, and/or professional equipment. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

Career Opportunities

- Working on diversified farms where forestry, horticulture, and/or livestock and dairy might be a component
- Working for non-profit farm and forest education centers
- Managing New England farms based on dairy, horticulture, livestock, forestry, etc.
- Technicians working in pest control for commercial greenhouses, dairy and livestock
farms, or forest operations
- Technicians for the Natural Resource Conservation Service
- Marketing farm products for New England farmers
- Operating community-supported agriculture (CSA) and farm stands
- Producing unique, local and/or organic products for direct marketing to consumers
- Partnering with horticultural growers and dairy producers to create high-end market opportunities

**Integrated Agriculture Management Program of Study**

The curriculum checklist (or roadmap to the degree) that follows is the recommended sequence of courses for IAG students. However, the sequence of when courses are taken can be modified in consultation with the student's faculty adviser.

### First Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS</td>
<td>425</td>
<td>Introduction to Dairy Herd Management OR</td>
<td>4</td>
</tr>
<tr>
<td>AAS</td>
<td>431</td>
<td>Introduction to Animal Science</td>
<td>4</td>
</tr>
<tr>
<td>FORT</td>
<td>461</td>
<td>Dendrology OR HT 405 (below)</td>
<td>3</td>
</tr>
<tr>
<td>HT</td>
<td>405</td>
<td>Plants, People, Place</td>
<td>2</td>
</tr>
<tr>
<td>HT</td>
<td>585</td>
<td>Fruit and Vegetable Production</td>
<td>3</td>
</tr>
<tr>
<td>COM</td>
<td>209</td>
<td>Expository Writing and Reading</td>
<td>4</td>
</tr>
<tr>
<td></td>
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<td>* Flexible Concentration Course</td>
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### First Year, Spring Semester

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<th>Title</th>
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<tbody>
<tr>
<td>CT</td>
<td>446</td>
<td>GIS Apps in Sustainability</td>
<td>4</td>
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<tr>
<td>IAG</td>
<td>408</td>
<td>Foundations for Living Sustainably in New England</td>
<td>4</td>
</tr>
<tr>
<td>COM</td>
<td>210</td>
<td>Public Speaking or COM 212 (below)</td>
<td>3</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Course Number</td>
<td>Title</td>
<td>Credits</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
<td>-------------------------------------------------</td>
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<tr>
<td>COM</td>
<td>212</td>
<td>Writing in the Workplace</td>
<td>3</td>
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<td>MTH</td>
<td>202</td>
<td>College Algebra</td>
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<tr>
<td>*</td>
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<td>Flexible Concentration Course</td>
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Second Year, Fall Semester

<table>
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<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS</td>
<td>432</td>
<td>Introduction to Forage and Grassland Management</td>
<td>3</td>
</tr>
<tr>
<td>HT</td>
<td>415</td>
<td>Soils and Land Use</td>
<td>2</td>
</tr>
<tr>
<td>IAG</td>
<td>597</td>
<td>Integrated Agriculture Management Work Experience</td>
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</table>

General Education Courses

<table>
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<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSCI</td>
<td>201</td>
<td>Human Relations OR</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
<td>4</td>
</tr>
<tr>
<td>*</td>
<td></td>
<td>Flexible Concentration Courses</td>
<td>8 total</td>
</tr>
</tbody>
</table>

Total: 68 - 71 credits

*Flexible Concentration Courses: Students select 20 credits from approved courses in the following program areas: horticultural technology, applied animal science, forest technology, civil technology, culinary arts and nutrition, technical practices, or applied business management by working with their faculty adviser.
TSAS Communication (COM)

Lecturer: Filip Thurston

Thompson School students are required, as part of general education requirements, to complete a minimum of 4 credits in the area of communication. All students take COM 209, Expository Writing and Reading. Some concentrations require an additional, specific 3-credit course, which is listed under the respective program of study.

TSAS Courses (TSAS)

The TSAS departmental or school course designation is used for courses required by multiple program areas within the Thompson School or to "pilot" a proposed course within a specific program area. TSAS 405, Computers in the Workplace, may be used to fulfill credit requirements within the science, math, and technology general education area.

TSAS Mathematics (MTH)

Lecturer: Stephanie Vander Els-Davis

Mathematic courses fall under the science, math, and technology general education category. Placement in a recommended 3-credit math course is based on a math assessment administered during new student orientation. Either MTH 202, College Algebra, or MTH 203, Algebra and Trigonometry, is required for graduation. Check program of study listings for specific requirements/options for the various program areas. During orientation, if a student is placed in MTH 201, Elementary-Intermediate Algebra, the student may use this course as an elective; it does not fulfill a science/math/technology general education requirement.
General Education Mathematics Requirement

A math assessment is administered as part of the new student intake process, which is used to make a recommendation regarding a math class that is challenging but not overwhelming to the student. MTH 201, Elementary-Intermediate Algebra, may be recommended to some students. However, this class may NOT be used to fulfill the Thompson School mathematics requirement. Course credits may be used as elective credits; only MTH 202, College Algebra, or a higher math course may be used to fulfill the mathematics graduation requirement.

Students are encouraged to ensure their math skills are at acceptable college levels by using available on-line resources before attending their respective new student orientation.

» Click to view course offerings

TSAS Social Science (SSCI)▼

Associate Professor: Regina A. Smick-Attisano

Thompson School students are required to complete a minimum of 4 credits in the social science general education category. The courses used to fulfill this requirement are SSCI 201, Human Relations, or SSCI 202, Social Issues. Some program areas require a specific second SSCI course. See programs of study listings for specific course information or a list of course options.

» Click to view course offerings

Veterinary Technology (VTEC)▼

Lecturer: Sarah Proctor DVM

Program Mission Statement:
The program provides veterinary technology students with a broad understanding of veterinary medicine and the role of animals in society. Students are instructed in the methods and
knowledge of veterinary technology such that they become veterinary technicians who are strong advocates for animals, capable of compassionate and accurate animal care; professional in their actions and judgments; and have a desire for lifelong learning and self-improvement.

The primary goal of the veterinary technology program is to provide students with exceptional technical and clinical reasoning skills and knowledge in veterinary technology such that graduates will be immediate and valuable members of a veterinary medical team. Additionally, the program aims to develop a firm foundation in both farm animal and companion animal veterinary practices. Courses in the program cover basic sciences, veterinary nursing, and veterinary practice management, with a strong focus on hands-on practical knowledge throughout the curriculum. Students gain basic knowledge and skills for the major domestic animal species (dog, cat, horse, and cow). Students have the opportunity to focus their studies on a given species through a variety of elective course offerings within the applied animal science program. Integration of knowledge in communication, veterinary ethical and legal issues, veterinary practice management, clinical reasoning skills, and hands-on technical skills allow students to become complete veterinary technicians, capable of providing high-quality, compassionate, and expert care to animals both small and large.

Practical learning experience is provided at the UNH equine facilities and the Thomas P. Fairchild Dairy Teaching and Research Center and the UNH Organic Dairy Research Farm. The Thompson School also operates its own grooming shop. The program has a number of animal-related educational partnerships, including those with the New Hampshire SPCA in Stratham, N.H., and the Cochecho Valley Humane Society in Dover, N.H. The veterinary technology curriculum also includes a service learning course where students provide wellness services to local pets in need.

The program is accredited by the AVMA. Students who graduate from an accredited program are eligible to take the Veterinary Technician National Exam (VTNE) and pursue credentialing.

Admissions Requirements

Applicants to veterinary technology must present four years of college preparatory English, a minimum of three years of social sciences, a minimum of two years of satisfactory work in college preparatory mathematics (three years is strongly suggested, through Algebra 2), and three years of college prep sciences. Two of the three should be college preparatory biology and chemistry with labs. It is recommended that applicants have some experience with animals in a professional setting, and applicants should include a statement in the student application listing their experience. Vet tech students have an overall minimum GPA of 3.0 on a weighted 4.0 scale as well as solid SAT/ACT scores.
Curriculum Fee

Veterinary technology: $722*

*This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the program. The curriculum fee covers the entire two-year course of study. There may be additional fees for uniforms, specific high-cost courses, and/or professional equipment. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester’s Time and Room Schedule. All fees are subject to change.

Veterinary Technology Curriculum Requirements

The following courses must be completed with a minimum grade of C+:

- All AAS and VTEC courses
- Chemistry (CAN 200) and Math (MTH 202)

Students with grades below C+ in these courses after two semesters (26 credits minimum) will be required to repeat those courses before taking additional major courses. In addition, students must maintain a minimum 2.5 GPA in AAS/VTEC courses after two semesters to be eligible to take additional AAS/VTEC courses. Students must have a minimum cumulative 2.5 GPA in AAS/VTEC courses to qualify for graduation from the program.

Students must successfully complete all required skills listed in the Veterinary Technology Essential and Recommended Skills List developed by the Committee on Veterinary Technician Education and Activities (CVTEA) of the American Veterinary Medical Association (AVMA), the accrediting body for this program.

All coursework in the veterinary technology curriculum should be completed within five years of matriculating into the program. If this cannot be accomplished, the student may be required to retake major courses where AVMA essential skills have changed significantly.

Students must show proof of pre-exposure rabies immunization or adequate rabies titer prior to enrollment in practicum and internship coursework. Transportation is provided to students for practicum coursework. Students are responsible for providing their own transportation during internship experiences.

Career Opportunities

Credentialed veterinary technicians can work in private veterinary hospitals, biomedical
research laboratories, humane societies, zoos, and wildlife centers, and can specialize in areas such as anesthesia and surgical assisting, behavior, and emergency medicine.

**Veterinary Technology Program of Study**

### First Year, Fall Semester

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS</td>
<td>421</td>
<td>Large Animal Behavior and Handling Techniques</td>
<td>2</td>
</tr>
<tr>
<td>AAS</td>
<td>428</td>
<td>Anatomy and Physiology of Domestic Animals</td>
<td>3</td>
</tr>
<tr>
<td>AAS</td>
<td>428B</td>
<td>Anatomy and Physiology Lab for Vet Techs</td>
<td>1</td>
</tr>
<tr>
<td>AAS</td>
<td>430</td>
<td>Small Animal Breeds and Behavior</td>
<td>4</td>
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<tr>
<td>AAS</td>
<td>431</td>
<td>Introduction to Animal Science</td>
<td>4</td>
</tr>
<tr>
<td>MTH</td>
<td>202</td>
<td>College Algebra</td>
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### First Year, Spring Semester

<table>
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<tbody>
<tr>
<td>AAS</td>
<td>439</td>
<td>Fundamentals of Animal Health</td>
<td>2</td>
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<tr>
<td>AAS</td>
<td>439B</td>
<td>Fundamentals of Animal Health Lab for VTECs</td>
<td>2</td>
</tr>
<tr>
<td>AAS</td>
<td>449</td>
<td>Clinical Animal Nursing Techniques I</td>
<td>3</td>
</tr>
<tr>
<td>CAN</td>
<td>200</td>
<td>Introductory Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>COM</td>
<td>209</td>
<td>Expository Writing and Reading</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>201</td>
<td>Human Relations OR SSCI 202, below</td>
<td>4</td>
</tr>
<tr>
<td>SSCI</td>
<td>202</td>
<td>Social Issues</td>
<td>4</td>
</tr>
<tr>
<td>VTEC</td>
<td>424</td>
<td>Veterinary Practice Management</td>
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### Second Year, Fall Semester

<table>
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<tr>
<td>AAS</td>
<td>451</td>
<td>Human-Animal Bond</td>
<td>4</td>
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<tr>
<td>AAS</td>
<td>527</td>
<td>Companion Animal Diseases</td>
<td>2</td>
</tr>
<tr>
<td>AAS</td>
<td>550</td>
<td>Clinical Animal Nursing Techniques II</td>
<td>4</td>
</tr>
<tr>
<td>AAS</td>
<td>579</td>
<td>Small Animal Care Practicum</td>
<td>2</td>
</tr>
<tr>
<td>COM</td>
<td>210</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
</tbody>
</table>
VTEC  497  Vet Tech Work Experience  0
VTEC  565  Pharmacology for Vet Techs (hybrid)  3
VTEC  582  Pet Access to Wellness Services (PAWS)  1

**Second Year, Spring Semester**

<table>
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<td>Small Animal Grooming I</td>
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<td>AAS</td>
<td>425</td>
<td>Introduction to Dairy Herd Management</td>
<td>4</td>
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<tr>
<td>AAS</td>
<td>426</td>
<td>Equine Conformation and Lameness</td>
<td>4</td>
</tr>
<tr>
<td>AAS</td>
<td>525</td>
<td>Canine Learning Theory and Application</td>
<td>3</td>
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<tr>
<td>AAS</td>
<td>535</td>
<td>Animal Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>AAS</td>
<td>540</td>
<td>Animal Breeding</td>
<td>3</td>
</tr>
<tr>
<td>AAS</td>
<td>552</td>
<td>Equine Health Management</td>
<td>4</td>
</tr>
<tr>
<td>AAS</td>
<td>558</td>
<td>Animal Population Medicine and Management</td>
<td>2</td>
</tr>
<tr>
<td>AAS</td>
<td>574</td>
<td>Dairy Cattle Disease Seminar</td>
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Total: 72 credits

**Approved Veterinary Technology Elective List (when offered)**

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</table>

» Click to view course offerings

^ back to top
Introduction

Welcome to the University of New Hampshire at Manchester—the university’s urban campus. Our mission is to offer a UNH education to commuter students in the greater Manchester and Merrimack Valley region. We offer students an affordable avenue for working toward a UNH degree, with smaller classes held at times that accommodate the schedules of students who are also working. Our core liberal arts courses provide a foundation for more applied science and technology majors, as well as traditional liberal arts majors.

At UNH Manchester, we capitalize on our location in the revitalized millyard of New Hampshire’s largest city. Our campus on the banks of the Merrimack River is a few blocks from the heart of the state’s financial and corporate center and home to many of the region’s non-profit and government offices. UNH Manchester is a vibrant university campus, and our programs prepare students for the opportunities of tomorrow in the region’s business, education, government, non-profit, service, and technology sectors.

UNH Manchester is uniquely equipped to support regional economic development. The campus creates an environment in which students, faculty, business/industry, government, and nonprofits collaborate on mutually beneficial projects and initiatives. As a community partner, we have a commitment to the region’s economic vitality, respond to educational and economic opportunities, and support innovation and student access to programs designed and delivered for the future.

If you are already one of our students, you have already experienced the excitement of the city and campus for yourself. If you are a prospective student, please contact us to arrange a visit to our campus to meet the great team of faculty and staff who are passionate in what they do to help our students succeed.
Accreditation

The University of New Hampshire at Manchester was established in 1985 as the sixth undergraduate college of the University of New Hampshire. The University of New Hampshire is accredited by the New England Association of Schools and Colleges, which accredits schools and colleges in the six New England states. Accreditation by the association indicates that the institution has been carefully reviewed and found to meet or exceed standards agreed upon by nationally recognized educators.

Faculty

The UNH Manchester faculty is its greatest asset. Residential faculty members have earned reputations for excellent teaching, scholarly achievement in their fields, and service to the community. They are recognized scholars and have acquired national and international reputations. Adjunct faculty members bring applied experience and a commitment to teaching to the classroom. Most importantly, UNH Manchester’s dedicated faculty members are outstanding teachers who care about each individual student. Faculty members work closely with students as advisers and help students define their goals, plan career objectives, and develop an individualized program of study within each major.
Undergraduate Course Catalog 2016-2017
University of New Hampshire at Manchester

» http://manchester.unh.edu

Associate in Arts

General Studies (A.A.)

Associate in Science

Biological Sciences (A.S.)
Business Administration (A.S.)

Bachelor of Arts

Biological Sciences (B.A.)
Business (B.A.)
Communication Arts (B.A.)
English (B.A.)
English Teaching (B.A.)
History (B.A.)
Humanities (B.A.)
Politics and Society (B.A.)
Psychology (B.A.)

Bachelor of Science

Analytics (B.S.)
ASL/English Interpreting (B.S.)
Biotechnology (B.S.)
Computer Information Systems (B.S.)
Computer Science & Entrepreneurship (B.S.)
Engineering Technology (B.S.)
Homeland Security (B.S.)
Neuropsychology (B.S.)
American Sign Language and Deaf Studies Minor

To earn a minor in American Sign Language and Deaf Studies, students must complete 24 credits, with no individual grade lower than C-.

Students must take the following courses:
- ASL 435, American Sign Language I
- ASL 436, American Sign Language II
- INTR 438, A Sociocultural Perspective on the Deaf Community

Three elective courses chosen from the following:
- ASL 531, American Sign Language III
- ASL 532, American Sign Language IV
- INTR 539, Comparative Linguistic Analysis for Interpreters
- ASL 599, Special Topics in ASL/Deaf Studies
- ASL 621, Advanced ASL Discourse I
- ASL 622, Advanced ASL Discourse II: Deaf Culture

For more information, contact Jack Hoza, program coordinator, at (603) 641-4143 or jack.hoza@unh.edu.

Art Minor

The minor in art consists of five courses (20 credits) chosen from the offerings of the department, two of which must be at the 500 level or above.

A maximum of two courses (8 credits) may be transferred from another accredited institution, provided UNH has accepted them as transfer credits. Transfer courses must be a minimum of three credits. Students with transfer courses that are accepted with less than four semester
credits must still meet the credit requirement for completion of the minor.

For more information, contact the Academic Counseling Office, (603) 641-4170, or Jennifer Moses, Paul Creative Arts Center, (603) 862-2190, jennifer.moses@unh.edu.

Business Minor
http://manchester.unh.edu/academics/degree-programs/business-minor

The minor in business allows students to pursue their interests in the liberal arts and sciences while building a foundation of business skills and adding a valuable credential to their portfolio and resume. The minor in business requires successful completion of five business courses or 20 credit hours from the courses listed below.

The three required courses:

- BUS 400, Introduction to Business
- BUS 532, Introduction to Financial Accounting
- ECN 412 or 411, Introduction to Microeconomics or Macroeconomics

Two courses from the following list are required (at least one of which must be at the 600 level or above):

- BUS 430, Business Statistics
- BUS 533, Managerial Accounting
- BUS 601, Financial Management
- BUS 610, Marketing Principles & Applications
- BUS 620, Organizational Behavior
- ECN 650, Economics for Managers

Other 600- or 700-level courses in business (BUS) or economics (ECN) may be substituted for courses listed above with permission of the business program coordinator. This may include an Internship course (BUS 690), Special Topics courses (BUS 675/685), or an Independent Study in Business (BUS 695).

Students must complete the five courses (20 credits) with a cumulative minimum grade point average of 2.0 and with no grade below a C- grade. Transfer course approval for the minor is limited to at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Students must complete a minimum of 20 credits for the minor, with a maximum of 8 credits transferred from accredited institutions and a minimum of 12 credits completed in residence at UNH.

For more information, contact Bill Troy, minor supervisor, at (603) 641-4345 or Bill.Troy@unh.edu.
Communication Arts Minor

http://manchester.unh.edu/academics/degree-programs/communication-arts-minor

The communication arts minor allows students in other majors to broaden their understanding of human communication while also developing deeper knowledge and practical skills that can enhance their professional lives and complement their major field of study.

The communication arts minor requires completion of five courses (20 credits), according to the requirements below. A minimum GPA of 2.0 in minor courses is required, with no individual grade lower than a C-. Courses taken on a pass/fail basis may not be used for the minor. Students should work with their major advisers to ensure that any prerequisites for CA courses have been met, or that permission to enter the course has been granted by the course instructor. Courses used to satisfy Discovery Program requirements may be used to satisfy CA minor requirements. No more than 8 credits used by a student to satisfy major requirements may be used to satisfy minor requirements, but no more than 8 credits (or 2 of 5 classes) should be transfer credits.

I. Breadth Courses
Select any two courses, as long as they are NOT from the same category.

Category A
CMN 457, Introduction to Interpersonal Communication

Category B
CMN 455, Introduction to Media Studies
CA 502, Image and Sound

Category C
CMN 456, Propaganda and Persuasion
CA 450, Introduction to Public Speaking

II. Depth Courses
Select any three 500-level (or above) CA courses, except CA 501.

Note: Students who use CA 502 as a “breadth” course may not use it as a “depth” course.

For more information, contact Jeff Klenotic, minor supervisor, at (603) 641-4130 or e-mail Jeffrey.Klenotic@unh.edu.
Computer Information Systems Minor
http://manchester.unh.edu/academics/degree-programs/computer-information-systems-minor

The minor requires five COMP courses (20 credit hours). Students must earn grades of at least C- in each course and maintain an overall GPA of 2.0 in minor courses. Transfer students may transfer up to two courses, subject to the approval of the minor supervisor. Courses taken on a pass/fail basis may not be used for the minor. No more than 8 credits used by the student to satisfy major requirements may be used in the minor.

Three courses from the following:

COMP 405, Introduction to the Internet and Web Authoring
COMP 415, Mobile Computing First and For Most
COMP 425, Programming Fundamentals
COMP 430, Systems Fundamentals
COMP 500, Discrete Structures

Two courses from the following:

COMP 515, Multimedia: Introduction and Applications
COMP 520, Database Design and Development
COMP 525, Data Structures Fundamentals
COMP 530, Machine and Network Architecture
COMP 550, Networking Concepts
COMP 650, Network Administration and Maintenance
COMP 625, Data Structures and Algorithms
COMP 630, Systems Software
COMP 640, Human Computer Interaction
COMP 705, Web Applications Development
COMP 715, Computer Security
COMP 720, Database Application Development

Other 600- or 700-level COMP courses may be substituted with the permission of the minor supervisor. Students must seek permission of the minor supervisor to enroll in courses that have prerequisites. For more information, contact Michael Jonas, minor supervisor, at (603) 641-4352 or e-mail michael.jonas@unh.edu.

Education Minor
http://manchester.unh.edu/academics/degree-programs/education-minor
A minor in education consists of a total of 20 credits in UNH Education Department courses. A methods course provided in another department may be counted for 4 of these 20 credits (e.g., ARTS 791 or 792, ENGL 792, MATH 708, 709, etc.).

**Courses used to obtain a minor in special education cannot be used toward a minor in education.**

**EDUC 500 can only be counted once (4 credits) toward the minor.**

**No more than two transferred courses in education from another college or university may be used toward a minor in education. A 3-credit course transferred from another school will count for three credits at UNH, not four credits.**

For more information, contact Cindy Glidden, department coordinator, cindy.glidden@unh.edu, 209 Morrill Hall, (603) 862-2311.

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**English Minor**

[http://manchester.unh.edu/academics/degree-programs/english-minor](http://manchester.unh.edu/academics/degree-programs/english-minor)

For the English minor at UNH Manchester, students must complete 20 credits with a minimum 2.0 grade-point average in these courses overall and with no individual grade lower than a C-.

Two (2) English courses must be taken at the 500 level and three (3) courses must be taken at the 600 or 700 level. ENGL 419 is recommended as one of the five courses.

Students may include in the English minor courses from the Writing Focus, which includes courses in creative writing and journalism.

For more information, contact Susanne Paterson, English minor supervisor, at (603) 641-4115.

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**Entrepreneurship Minor**

[http://manchester.unh.edu/academics/degree-programs/entrepreneurship-minor](http://manchester.unh.edu/academics/degree-programs/entrepreneurship-minor)

The entrepreneurship minor is designed for those students who are interested in starting their own business or enhancing a business in which they are currently working.

The course content of the minor is designed to meet the objective of developing the mindset, skills, competencies, and experiential learning that enable students to function as entrepreneurs or as productive members of emerging, entrepreneurial firms.
The entrepreneurship program integrates the knowledge and experiences gained in other disciplines, as well as from the field of entrepreneurship, into an understanding of the process of new venture creation and the management of entrepreneurial businesses. With the minor presenting entrepreneurial concepts from a generalist perspective, students will acquire knowledge to conceive, develop, and launch new ventures and to turn innovative ideas into products that can be brought to market. Emphasis is placed on the managerial, legal, and marketing aspects of start-up businesses. The program culminates with a juried business plan competition for financial backing and start-up funding support.

**Ethical and legal**—In addition to exploring legal issues associated with a small business, students will examine their own personal values and aspirations to help guide their entrepreneurial careers.

**Knowing the numbers**—Entrepreneurs must be intimately familiar with the financial health of their businesses, particularly in regard to cash flow and other limited resource management and forecasting.

**Business model**—Students will be expected to develop a full understanding of how to create and utilize a business model and transform it into a fundable business plan.

**Selling the idea**—Students must not only understand how to identify and evaluate potential investors, but also how to sell their business idea when the opportunity presents itself.

**Managing growth in entrepreneurial companies**—Students will learn the unique set of leadership and communication skills necessary to guide a company through its most perilous time period: rapid growth.

**Courses:**

- BUS 410, Introduction to Entrepreneurship
- BUS 453, Leadership for Managers
- BUS 565, Selling and Sales Management
- BUS 550, Business Law
- BUS 600, New Venture Creation

Entrepreneurship minors are strongly encouraged to become active members in the ENACTUS program, which focuses on helping entrepreneurs in the Manchester community.

For more information, contact **Bill Troy**, minor supervisor, at (603) 641-4345 or
History Minor

http://manchester.unh.edu/academics/degree-programs/history#tabs-6

To earn a minor in history, students must complete 20 credits with no individual grade lower than C- and a 2.0 grade-point average in minor courses. Students may take any five history courses (HIST), two of which must be 500 level or above. Up to 8 transfer credits may be used toward the history minor.

For more information, contact John Cerullo, minor supervisor, at (603) 641-4109.

Homeland Security Minor

http://manchester.unh.edu/academics/degree-programs/homeland-security#tabs-6

The minor in homeland security (HLS) is designed to provide a professional experience to students not majoring in homeland security, but who are interested in aspects of the discipline. Students not majoring in homeland security will see how homeland security issues, challenges, and tools are related to their specific major and how homeland security can be used to embellish their careers.

The minor requires five courses. Students must earn grades of at least C- in each course and an overall GPA of 2.0 in minor courses. Transfer students may transfer up to two courses, subject to the approval of the HLS program coordinator. Courses taken on a pass/fail basis may not be used for the minor. No more than 8 credits to satisfy major requirements may be used in the minor.

All students must complete HLS 410, Introduction to Homeland Security.

Choose one from the following two courses:
HLS 455, Foundations of Information Security
HLS 415, Fundamentals of Corporate Security

Choose three courses from the following:
HLS 510, Fundamentals of Emergency Management
HLS 515, Critical Infrastructure Security and Resilience
HLS 520, Homeland Security Law and Policy
PS 505, Political Violence and Terrorism
HLS 650, Intelligence Systems and Structures
HLS 660, Strategic Planning and Decision Making
For more information, contact James Ramsay, HLS program coordinator, at james.ramsay@unh.edu.

Humanities Minor

http://manchester.unh.edu/academics/degree-programs/humanities#tabs-6

The humanities minor is an interdisciplinary program where students can combine humanities courses and courses from other disciplines that form a multidisciplinary theme or topic. The humanities minor is an excellent way to add breadth of perspective to specialized study in particular disciplines. Many professions encourage students to develop skills and knowledge outside their area of professional interest. The humanities minor can meet this objective and make college education a more enlightening and rewarding experience. Students selecting a minor in humanities should, in consultation with a faculty adviser in humanities, identify a general theme or topic for the minor.

To earn a minor in humanities, students must complete 20 credits with no individual grade lower than C in minor courses.

1. There is one required courses in the minor: students must complete either HIST 500 or ENGL 419, which provide an introduction to the methodology and content of the humanities.

2. Students must take at least two courses in the humanities (HUMA).

3. To complete the minor’s fourth and fifth courses, students, in consultation with a faculty adviser in humanities, may choose more courses in the humanities (HUMA) or choose complementary courses from other disciplines, such as history, English, philosophy, communication arts, politics and society, or business, which contribute to the student’s multidisciplinary theme or topic.

For more information, contact Jack Resch, minor supervisor, at Jack.Resch@unh.edu or (603) 641-4134.

Philosophy Minor

http://manchester.unh.edu/academics/degree-programs/philosophy-minor

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

For more information, contact the Philosophy Department in Durham in Hamilton Smith Hall.
Political Economy Minor ▼

http://manchester.unh.edu/academics/degree-programs/politics-society#tabs-6

Students interested in pursuing a career in government, business, communications, or the law can add a breadth of perspective through the politics and the economy minor.

The politics and the economy minor consists of five courses (20 credits total). Students must take five of the following courses, with no more than THREE from the same designation (e.g., no more than three ECN or three POLT/PS), and no more than THREE at the 400 level:

ECN 410W, Novelists & Economists
ECN 411, Introduction to Macroeconomic Principles
ECN 412, Introduction to Microeconomic Principles
ECN 635, Money, Banking, and Macroeconomic Activity
ECN 640, Business, Law, and Economics
ECN 650, Economics for Managers
POLT 401, Politics and Society
POLT 403, United States in World Affairs
POLT 500, American Public Policy
POLT 560, World Politics
POLT 567, Politics of Global Resources
POLT 743, Comparative Political Economy
POLT 762, International Political Economy
PS 501, Social and Political-Economic Theory
PS 509, Political & Social Change in Developing Countries
PS 514, Model United Nations
PS 702, International Relations: Interdisciplinary Approaches
HUMA 660, Moral Dimension of Economic Life

Substitutions are permitted by permission of minor supervisors, Melinda Negron-Gonzales and Tom Birch.

For more information, contact Melinda.Negron@unh.edu, (603) 641-4364, or Tom.Birch@unh.edu, (603) 641-4108.
Political Science Minor ▼

http://manchester.unh.edu/academics/degree-programs/politics-society#tabs-6

The political science minor consists of five courses (20 credits total) that may span the sub-disciplines of American politics, international relations, comparative politics, political philosophy, and political sociology. Any courses with the political science (POLT) or politics and society (PS) course designations may be used toward the minor. No more than two courses may be taken at the 400 level.

The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor. Students wishing to use transfer credits from abroad or other universities should meet with the political science minor adviser, Melinda Negron-Gonzales, to determine eligibility toward the minor.

For more information, contact Melinda.Negron@unh.edu, (603) 641-4364.

Professional Writing Minor ▼

http://manchester.unh.edu/academics/degree-programs/english#tabs-6

The interdisciplinary minor in Professional Writing will introduce students to various types of professional writing and will provide opportunities for them to develop their writing skills and to practice them in an internship setting.

Students must complete 22-24 credits for the minor. Courses must be completed with a minimum grade of C- unless otherwise specified, and a 2.0 overall GPA in courses used for the minor is required. A maximum of two transfer courses (3 or 4 credits each) may be applied to the minor. No more than 8 credits used by the student to satisfy major requirements may be used in the minor.

Students should select courses from the following subject areas:

English courses—students must select three courses from the following:

ENGL 501, Introduction to Creative Non-Fiction
ENGL 502, Professional and Technical Writing
ENGL 534, 21st Century Journalism
ENGL 621, Writing and Reporting the News
ENGL 631, Digital Journalism

**Communication Arts courses**—students must select **at least one** of the following:

- CA 500, Media Writing
- CA 512, Screenwriting
- CA 514, Fundamentals of Video Production
- CA 542, Social Media for Organizations and Business

**Computing courses**—students must select **one** of the following:

- COMP 411, Introduction to Computer Applications
- COMP 415, Mobile Computing First and For Most
- Other course by permission

**Internship**—students must complete:

- UMST 500, or another discipline-based internship approved by the minor supervisor

For more information, contact **Susanne Paterson**, English program coordinator, at susanne.paterson@unh.edu.

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**Psychology Minor**

http://manchester.unh.edu/academics/degree-programs/psychology-minor

The minor in psychology consists of five psychology department courses (20 credits), including PSYC 401 and at least two courses at the 500 level or above. No more than 4 credits of PSYC 795 may be applied to the minor. Each course must be passed with a grade of C- or better, with an overall minimum grade point average of 2.0 for the five minor courses. No pass/fail or credit/fail courses may be applied toward the minor. Under no circumstances can more than 9 transfer credits be applied toward the minor.

For more information, contact **Alison Paglia**, minor supervisor, at (603) 641-4103.

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**Public History Minor**

http://manchester.unh.edu/academics/degree-programs/public-history-minor

The public history minor is designed to provide students with the skills to work in the public as an historian. Public historians work in museums, archives, libraries, historic associations,
historic houses, parks, zoos, arboretums, businesses, corporations, and in public planning of urban and environmental landscapes. Public historians work on translating historical research to the broad public audience.

The minor is composed of five courses of 4 credits each, including an introduction to public history course and an internship, HIST 691, at a local historical site.

A) HIST 500, Historical Methods

B) HIST 595, Issues in Public History

C) 8 credits in public history courses approved by minor supervisor at the 500/600 level

D) 4-credit Internship, HIST 691

For more information, contact Robert Macieski, minor supervisor, at (603) 641-4135.
Undergraduate Course Catalog 2016-2017
University of New Hampshire at Manchester

» http://manchester.unh.edu

American Sign Language (ASL)

» Click to view course offerings

Analytics (DATA)

» http://manchester.unh.edu/academics/degree-programs/analytics

» Click to view course offerings

Assistant Professor: Jeremiah W. Johnson

Analytics (B.S.)

The analytics bachelor of science program is designed to prepare the next generation of data scientists and analytics professionals through a multidisciplinary program that incorporates experiential education, professional development, and project and work experience at a greater level than that typically seen in a bachelor of science program.

The analytics bachelor of science program prepares graduates with the knowledge, skills, and best practices for working in data-intensive roles in industry. Graduates will be prepared to become leaders in data-driven decision-making. The program also prepares graduates to further their studies at the graduate level. Career opportunities are varied, and may include roles such as data engineer, data scientist, business analyst, marketing analyst, quantitative analyst, consultant, and actuary, though this is only a partial list. Career options exist in a wide range of organizations and will expand as more and more industries, governmental organizations, and nonprofits develop, use, and integrate data-driven decision-making processes.

Program Objectives

This program has been designed to prepare students for professional careers working with
data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. Graduates of the bachelor of science in analytics program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security
- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team
- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor’s degree program.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

Program of Study

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the university’s Discovery program, completing all of the 20 required courses in the major as listed below, including the capstone course, the internship preparedness course, and a three-credit internship. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements). DATA courses II – IV, the internship, and the capstone project must be completed at UNH Manchester.

Program Requirements

Mathematics (16 credits, 4 per course)
MATH 425, Calculus I
MATH 426, Calculus II
MATH 545, Introduction to Linear Algebra, or MATH 645, Linear Algebra for Applications
MATH 739, Applied Regression Analysis

**Computer Science (20 credits, 4 per course)**
COMP 425, Introduction to Programming
COMP 430, System Fundamentals
COMP 490, Statistics in Computing and Engineering
COMP 520, Database Design and Development
COMP 525, Data Structures Fundamentals

**Business (12 credits, 4 per course)**
BUS 400, Introduction to Business
BUS 453, Leadership for Managers
BUS 620, Organizational Behavior

**English (4 credits)**
ENG 502, Professional and Technical Writing

**New Analytics Courses (20 credits, 4 per course)**
DATA 557, Introduction to Data Science and Analytics (Discovery E.T.S.)
DATA 674, Predictive and Prescriptive Analytics I
DATA 675, Predictive and Prescriptive Analytics II
DATA 757, Big Data
DATA 790, Capstone Course

**New Professional Development Courses (4 credits)**
UMST 599, Professional Development Seminar (1 credit)
DATA 690, Internship Experience (3 credits)

**Specialization Course Clusters**
Data scientists and business analysts are often most effective when they have some discipline-specific background or expertise. To assist students in the program in attaining such expertise, departments and programs at the University of New Hampshire will be invited to identify approximately two courses in their program that will provide students an appropriate foundation in their discipline. These courses may already exist, or the program can choose to create them. At least one of the specialization courses must contain a data analysis element. For example, if a student wished to complete a bachelor of science in analytics with a specialization in finance, the student would complete the core analytics curriculum, and would select for their
elective/specialization courses the set of courses identified by the business program as providing the foundational knowledge necessary for working in finance. In this way, students can tailor their analytics B.S. degree to suit their interests.

For additional information about the analytics program, contact Jeremiah Johnson, program coordinator, (603) 641-4127, jeremiah.johnson@unh.edu, or contact the UNH Manchester Office of Admissions, (603) 641-4150, unhm.admissions@unh.edu.

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Anthropology (ANTH)▼
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Art and Art History (ARTS)▼
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ASL/English Interpreting (ASL)▼
» http://manchester.unh.edu/academics/degree-programs/asl-english-interpreting

» Click to view course offerings

Professor: Jack E. Hoza
Lecturer: Patrick F. McCarthy

ASL/English Interpreting (B.S.)
The American Sign Language (ASL)/English interpreting program at UNH Manchester is a specialized, in-depth program with a national reputation for quality and has twice been recognized at the national level. In 1999, the program became the first interpreting program in the country to be found in compliance with the National Interpreter Education Standards of the Conference of Interpreter Trainers (CIT). In 2007, the program became the first interpreting program in the nation to be accredited by the Commission on Collegiate Interpreter Education (CCIE). UNH Manchester also houses one of northern New England’s most comprehensive collections of books and media materials on sign language interpretation.
The program is guided by the premise that deaf people, as a linguistic minority, possess their own cultural values, literature, history, traditions, and social conventions. Interpretation requires bilingual and bicultural competence in spoken English and American Sign Language. The ASL/English interpreting program at UNH Manchester provides students with a strong theoretical foundation as generalists in ASL/English interpreting and helps prepare students for either state-level interpreter screening or national Registry of Interpreters for the Deaf (RID) interpreter certification, depending on students’ skill level and experience.

Graduates may go on to pursue specialty areas in interpretation or related fields of study.

Students who complete the bachelor of science degree in ASL/English interpreting graduate with a varied and flexible academic base. Interpreting requires skills such as sustained powers of concentration, versatility in dealing with a variety of people and content areas, fast-thinking and excellent communication skills in the respective languages. Students seeking to become interpreters receive a foundation in American Sign Language, Deaf culture, and the interpreting process, and their programs of study often include elective courses in linguistics, sociology, communication, and psychology. Students also gain a thorough grounding in the liberal arts through the University’s Discovery program.

Graduates of the ASL/English interpreting program may pursue careers in ASL/English interpreting, deaf education, rehabilitation, health care, audiology, social work, counseling, and the media. The program provides students with a varied and flexible academic base. Graduates are prepared for further study in such fields as psychology, communication, linguistics, sociology, and anthropology.

**Program of Study**

Students must complete 64 credits in the major, 40 credits in the University’s Discovery program, and 24 credits in elective courses. Students must complete 64 credits in the major with a grade of C or better. Students who earn less than a C on a particular course may repeat that course only once. Students must achieve a GPA of 2.5 or better in major courses and must pass both ASL 532 and INTR 630 with at least a B- (or successfully demonstrate competence in American Sign Language and consecutive interpretation, respectively). Transfer students must complete a minimum of eight ASL/English interpreting courses at UNH Manchester.

**Required Courses**

Language Courses

ASL 435, American Sign Language I
ASL 436, American Sign Language II
ASL 531, American Sign Language III
ASL 532, American Sign Language IV
ASL 621, Advanced ASL Discourse I
ASL 622, Advanced ASL Discourse II: Deaf Culture

Culture and Linguistic Courses
INTR 438, A Sociocultural Perspective on the Deaf Community
INTR 539, Comparative Linguistic Analysis for Interpreters

Interpreting Courses
INTR 430, Introduction to Interpretation
INTR 439, Ethics & Professional Standards for Interpreters
INTR 540, Translation
INTR 630, Consecutive Interpretation I
INTR 636, Consecutive Interpretation II
INTR 732, Simultaneous Interpretation
INTR 734, Field Experience and Seminar I
INTR 735, Field Experience and Seminar II

Capstone Experience
The capstone experience in the bachelor of science degree program in ASL/English interpreting is met by INTR 735, Field Experience and Seminar II, which is a senior-level course and the last in the sequence of courses required for the major. This course meets the following two criteria of the capstone experience for this major: 1) the capstone synthesizes and applies disciplinary knowledge and skills, 2) the capstone demonstrates emerging professional competencies.

For more information, contact Jack Hoza, program director, at (603) 641-4143 or jack.hoza@unh.edu; or contact the Office of Admissions.
Biological Sciences (BIOL)

» [http://manchester.unh.edu/academics/degree-programs/biological-sciences](http://manchester.unh.edu/academics/degree-programs/biological-sciences)

» [Click to view course offerings](#)

*Associate Professor:* Sarah Prescott, Stephen R. Pugh  
*Assistant Professor:* Patricia A. Halpin, Kyle MacLea

**Biological Sciences (B.A.)**

Biology is the study of living organisms in both laboratory and field conditions. It concerns itself with questions of understanding the living world, its complex interrelationships, and the role of human beings within it.

The B.A. in biological sciences at UNH Manchester is designed to: 1) allow students to earn a baccalaureate degree in biology at UNH Manchester; 2) allow students to combine study in biology with other programs and disciplines by completing a second major, a minor, or a self-designed set of elective courses along with their biology degree; 3) allow students to complete a major in biology while taking required courses in education in preparation for the five-year M.A.T. or M.Ed. programs and state certification in secondary science education; and 4) provide an opportunity for students to complete a baccalaureate degree in biology while completing the required courses for admission to medical, dental, veterinary, physician assistant, pharmacy, physical therapy, and other professional graduate programs.

The biological sciences program at UNH Manchester can also serve as a springboard for students interested in the B.S. programs in the life sciences at UNH Durham, which include majors in biology, microbiology, zoology, plant biology, wildlife management, environmental conservation, biochemistry, and animal sciences.

Employment opportunities in the public and private sectors include education; food, water, wastewater and other industrial laboratories; clinical laboratories; biotechnology; environmental research and monitoring; and animal behavior.

Students must complete a minimum of 128 credits and satisfy the University’s Discovery Program and foreign language requirements. BIOL 413, 414 may be used to satisfy the biological sciences Discovery requirement and CHEM 403, 404 may be used to satisfy the Physical Sciences Discovery requirement. PSYC 402 may be used to satisfy the Quantitative Reasoning Discovery requirement; however, students interested in graduate or professional programs are encouraged to take MATH 425, Calculus I, or MATH 424b, Calculus for Life Sciences, to satisfy the Quantitative Reasoning requirement.
The UNH Manchester B.A. in biological sciences program is structured with three levels of coursework.

**Biology Core Curriculum (9 courses, 37 credits)**

*The biology core curriculum consists of five required biology courses:*

- BIOL 413-414, Principles of Biology I and II
- BMS 503, General Microbiology
- BIOL 541, General Ecology
- GEN 604, Principles of Genetics

*Two required chemistry courses:*

- CHEM 403-404, General Chemistry I and II

*One course in mathematics:*

- MATH 418, Analysis and Application of Functions, or MATH 425, Calculus I, or MATH 424b, Calculus for Life Sciences

*One course in statistics:*

- PSYC 402, Statistics in Psychology (other statistics courses such as BIOL 528 or BUS 430 may be used to satisfy this requirement).

Depending on their specific academic and career goals and in consultation with their adviser, students may elect to take additional supporting science courses such as CHEM 545/546, Organic Chemistry with lab (one semester); CHEM 651/653 - 652/654, Organic Chemistry I and II with lab (two semesters); BMCB 658/659, Biochemistry with lab; MATH 426, Calculus II; and PHYS 407-408, General Physics I and II. These courses are often required for admission to medical, professional, and other graduate programs.

**Self-Designed Concentration in Biology (4 courses, 16 credits)**

Students will select, in consultation with their adviser, four biology courses at the 600-700 level to be taken at UNH Manchester or UNH Durham.

**Capstone Experience**

The capstone experience will be fulfilled by taking the one-credit course, BSCI 701, Senior Seminar, during either semester of the senior year and a capstone experience, such as BSCI 792, Research; BSCI 793, Internship; or BSCI 795, Independent Study. Senior Seminar will meet weekly during either semester of the senior year in a seminar format to share information about students’ research or independent study activities, listen to presentations on timely issues in biology, and support and provide training in poster production, PowerPoint, and other methods of oral presentation and scientific writing as students prepare to present the results of their capstone activities at the Undergraduate Research Conference or other venues.
In addition, all students will take elective courses to fulfill the 128-credit requirement for a B.A. degree. These elective courses could fulfill the requirements for a major or minor in another program or they could fulfill a self-designed interdisciplinary concentration. They could include some of the supporting science courses listed above. These courses would be selected in consultation with the adviser and the appropriate faculty adviser in another program.

*Note: Pre-medical and pre-dental students should enroll in CHEM 651/653 and 652/654. These courses may substitute for CHEM 545/546 and BMCB 658/659. In addition, students should also enroll in MATH 426.*

For more information, contact Stephen Pugh, program coordinator, at (603) 641-4128 or Stephen.Pugh@unh.edu; or contact the Office of Admissions.

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Biological Sciences (BIOL)▼

» http://manchester.unh.edu/academics/degree-programs/associates-biology

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**Associate Professor:** Sarah Prescott, Stephen R. Pugh

**Assistant Professor:** Patricia A. Halpin, Kyle MacLea

**Biological Sciences (A.S.)**

Biology is the study of living organisms in both laboratory and field conditions. It concerns itself with questions of understanding the living world, its complex interrelationships, and the role of human beings within it.

The associate of science in biological sciences program at UNH Manchester is designed to serve either as a terminal degree or as a springboard for students interested in the life sciences, which include majors in biology, microbiology, zoology, plant biology, wildlife management, environmental conservation, biochemistry, and animal sciences. Employment opportunities in the public and private sectors include education; food, water, wastewater and other industrial laboratories; clinical laboratories; biotechnology; environmental research and monitoring; and animal behavior.

Students must complete a minimum of 64 credits to graduate. There are two tracks in the A.S. degree program at UNH Manchester: biology and microbiology.

**Biology Track Requirements**
Math 425, Calculus I, or MATH 424b, Calculus for Life Sciences
PSYC 402, Statistics in Psychology (other statistics courses such as BIOL 528 or BUS 430 may be used to satisfy this requirement).
BIOL 413, Principles of Biology I
BIOL 414, Principles of Biology II
CHEM 403, General Chemistry I
CHEM 404, General Chemistry II
BMS 503, General Microbiology
CHEM 545/546, Organic Chemistry and Organic Chemistry Laboratory
BMCB 658/659, General Biochemistry and General Biochemistry Laboratory
BIOL 541, General Ecology
GEN 604, Principles of Genetics

**Microbiology Track Requirements**

Students opting for the microbiology track must take all courses listed in the biological sciences program with the exception of BIOL 541, General Ecology. Two additional courses selected from BMS 504, Brewing and Industrial Microbiology; BMS 602, Pathogenic Microbiology; or BMS 601, Bacteriology of Food, are required of students in the microbiology track.

*Note: Pre-medical and pre-dental students should enroll in CHEM 651-652 and 653-654 at Durham. These courses may substitute for CHEM 545/546 and BMCB 658-659. In addition, students should also enroll in MATH 426.*

For more information, contact **Stephen Pugh**, program coordinator, at (603) 641-4128, or Stephen.Pugh@unh.edu, or contact the **Office of Admissions**.

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Assistant Professor: Patricia A. Halpin

**Biotechnology (B.S.)**

Biotechnology is the use of living organisms, biological systems, and small chemicals and biomolecules in technology. Biotechnology has applications in the treatment of diseases, the production of food, the protection of ecosystems, and the generation of energy, as well as in the basic science study of many biological questions.

The B.S. in biotechnology at UNH Manchester is designed to: 1) allow students to earn a baccalaureate degree in biotechnology at UNH; 2) allow students to combine study in biotechnology with other programs and disciplines by completing a minor, or a self-designed set of elective courses along with their biotechnology degree; 3) allow students to complete a major in biotechnology while taking required courses in education in preparation for the five-year M.A.T. or M.Ed. programs and state certification in secondary science education; 4) allow students to complete a baccalaureate degree in biotechnology while completing the required courses for admission to medical, dental, veterinary, optometry, physician assistant, pharmacy, physical therapy, nursing, and other professional graduate programs; and 5) allow students to complete a baccalaureate degree in biotechnology while completing the required courses for admission to graduate research programs (M.S. or Ph.D.) in the life sciences and related fields.

The biotechnology program at UNH Manchester can also serve as a springboard for students interested in the B.S. programs in the life sciences at UNH Durham, which include majors in biology; microbiology; zoology; plant biology; wildlife management; environmental conservation; biochemistry; animal sciences; biomedical science; biochemistry, molecular, and cellular biology; genetics, and more.

Employment opportunities in the public and private sectors include education; research laboratories; clinical laboratories; forensic laboratories; jobs in diverse areas from research to quality control to sales in the pharmaceutical industry; industrial positions in the food industry; water and wastewater laboratories and facilities; and environmental research and monitoring.

Students must complete a minimum of 128 credits and satisfy the University’s Discovery Program and writing requirement. BIOL 413, 414 can be used to satisfy the biological sciences Discovery requirement and CHEM 403, 404 may be used to satisfy the Physical Sciences Discovery requirement. PSYC 402 or MATH 424B/425 may be used to satisfy the Quantitative Reasoning Discovery requirement.

The UNH Manchester B.S. in biotechnology program is structured with three levels of coursework.

**Biology Core Courses.** This consists of a core of five biology courses: BIOL 413 and BIOL
414, Principles of Biology I & II; BMS 503, General Microbiology; GEN 604, Principles of Genetics; and BSCI 501 Ethical Issues in Biology.

**Additional Required Science and Math Courses.** Students will take eight supporting science courses: CHEM 403 and 404, General Chemistry I & II; CHEM 651/653, Organic Chemistry I; CHEM 652/654, Organic Chemistry II; BMCB 658/659, Biochemistry; PHYS 401 or 407, Physics I; PSYC 402, Statistics in Psychology; and either MATH 424B, Calculus for Life Sciences, or MATH 425, Calculus I.

**Advanced Biology Courses (600/700 level).** Five courses are required with at least one course from each of three categories: 1. Advanced Biology, 2. Laboratory Techniques, and 3. Advanced Microbiology.

Depending on their specific academic and career goals and in consultation with their adviser, students may elect to take additional supporting science courses and a full year of physics (adding PHYS 408 to PHYS 407 listed above, General Physics I and II). These courses are often required for admission to medical, veterinary medical, and other professional and graduate programs.

**Capstone Experience**

The capstone experience will be fulfilled by taking the one-credit course, BSCI 701, Senior Seminar, during either semester of the senior year and a capstone experience, such as BSCI 792, Research; BSCI 793, Internship; or BSCI 795, Independent Study. Senior Seminar will meet weekly during either semester of the senior year in a seminar format to share information about students’ research or independent study activities, listen to presentations on timely issues in biology, and support and provide training in poster production, PowerPoint, and other methods of oral presentation, and scientific writing as students prepare to present the results of their capstone activities at the Undergraduate Research Conference and other venues.

In addition, all students will take elective courses to fulfill the 128-credit requirement for a B.S. degree. These elective courses could fulfill the requirements for a major or minor in another program or they could fulfill a self-designed interdisciplinary concentration. These courses would be selected in consultation with the adviser and the appropriate faculty adviser in another program.

*Note: Pre-medical, pre-veterinary medicine, and pre-dental students may need a full year of physics, calculus, and additional humanities courses.*

For more information, contact **Stephen Pugh**, program coordinator, at (603) 641-4128, or **Stephen.Pugh@unh.edu**; or contact the **Office of Admissions**.
Business (BUS)

» http://manchester.unh.edu/academics/degree-programs/business

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Professor: Thomas D. Birch
Associate Professor: Kelly M. Kilcrease
Senior Lecturer: William F. Troy
Lecturer: Jeanne Gerard

Business (B.A.)

The bachelor of arts in business has a strong interdisciplinary focus. The curriculum adheres to a philosophy that effective decision making requires a broad understanding of the institutional and cultural climate within which businesses are operating. The program uses the resources of Manchester’s business community and its economic strengths to provide students with skills, knowledge, and opportunities.

The business program offers areas of focus in accounting, business economics and political economy, business and technology, management, marketing, and human resource management. Students with a unique interest can create a self-designed concentration with approval of their adviser and the coordinator of the business program.

A culminating capstone experience enables students to apply their knowledge in the form of an internship, applied senior project, or special topics seminar. Because this is a bachelor of arts program, students fulfill the foreign language requirement. Students have the opportunity to enhance fluency through community experiences and internships. Graduates of UNH Manchester’s business program are in demand because they offer future employers a portfolio of practical and theoretical knowledge and experience combined with effective communication and leadership skills.

Program of Study

Students must complete 128 credits to graduate. Each required course must be completed with a minimum grade of C-. Students must attain a minimum GPA of 2.0 in major courses required for graduation. Majors cannot use BUS 430, ECN 411, or ECN 412 to satisfy both Discovery Program and major requirements. Transfer students must complete at least half of their credits in the major and the 8-credit capstone experience in residence at UNH Manchester.

Introductory Business Core Courses (8 courses)
BUS 400, Introduction to Business
ECN 411, Introduction to Macroeconomic Principles
ECN 412, Introduction to Microeconomic Principles
COMP 411, Introduction to Computer Applications
COMP 510, Fundamentals of Computer Information Systems
BUS 430, Business Statistics
BUS 532, Financial Accounting
BUS 533, Managerial Accounting

Intermediate Business Core (3 courses)
BUS 610, Marketing Principles and Applications
BUS 620, Organizational Behavior
BUS 601, Financial Management

Capstone
Business Capstone Experience (two courses: BUS 705 and one senior business seminar [BUS 750 or 760], fulfills the Discovery Program capstone requirement for business majors and is taken during the senior year)

BUS 705, Business Ethics and
BUS 750, Business Internship Seminar, or BUS 760, Applied Senior Project

Note: Because this is a bachelor of arts program, students must fulfill a language requirement. Efforts will be made to enhance fluency through subsequent courses and community experiences.

Areas of Study

Accounting
Four courses from the following:
BUS 603, Intermediate Financial Accounting I
BUS 615, Intermediate Financial Accounting II
BUS 629, Advanced Managerial Accounting
BUS 710, Federal Taxation
BUS 720, Auditing

Business Economics and Political Economy
Four courses from the following (including at least one course at 600 level or above):
POLT 401, Politics and Society
POLT 403, United States in World Affairs
POLT 560, World Politics
ECN 640, Business Law and Economics
ECN 625, Regulation of Business
ECN 635, Money, Banking and Macroeconomic Activity
ECN 650, Economics for Managers
ECN 670, Public Sector Economics
HUMA 412, Industry and Welfare
POLT 762, International Political Economy
BUS 690, Internship
BUS 695, Independent Study

**Business and Technology**
*Four courses from the following:*
COMP 405, Introduction to the Internet and Web Authoring
COMP 425, Computing Fundamentals
COMP 515, Multimedia: Introduction and Applications
COMP 520, Database Design and Development
COMP 550, Networking Concepts

**Management**
*Four courses from the following:*
BUS 453, Leadership for Managers
BUS 550, Business Law
BUS 630, International Management
BUS 650, Operations Management
ECN 650, Economics for Managers

**Marketing**
*Four courses from the following:*
A. *At least three must be from marketing*
BUS 565, Selling & Sales Management
BUS 661, Integrated Marketing Communications
BUS 663, Services Marketing & Operations Management
BUS 665, International Marketing Strategy Management

B. *May also include one course from:*
BUS 675, Special Topics: Negotiations
BUS 695, Independent Study (Marketing/Communication Project)
BUS 690, Internship (in Marketing or Communication)
COMP 405, Internet & Web Authoring

**Human Resource Management**
BUS 455, Management of Human Resources
BUS 520, Training and Development
BUS 640, Business Communication and Conflict
BUS 660, Employment and Labor Law

**Self Designed**
Four courses (or 16 credit hours) with faculty approval, including at least one course at 500 level or above.

For more information, contact **Bill Troy**, program coordinator, at (603) 641-4345 or Bill.Troy@unh.edu, or contact the **Office of Admissions**.

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**Business Administration (Bus)**

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*Professor: Thomas D. Birch
Associate Professor: Kelly M. Kilcrease
Senior Lecturer: William F. Troy
Lecturer: Jeanne Gerard*

**Business Administration (A.S.)**
Students must complete a minimum of 64 credits to graduate with an associate of science degree in business administration. A minimum cumulative GPA of 2.0 is required for graduation. In addition to completing eight Discovery Program courses and one Inquiry or Inquiry-attribute course within their first 48 earned credits, students must complete seven courses (28 credits) in the major and one elective course.

**Required Courses**
BUS 400, Introduction to Business
ECN 412, Introduction to Microeconomics
BUS 532, Introduction to Financial Accounting
BUS 533, Introduction to Managerial Accounting

**Business Administration Electives**
*Choose two of the following courses. Students may select electives from 600-level ECN or BUS courses with adviser permission.*
BUS 430, Introduction to Business Statistics
COMP 405, Introduction to Internet and Web Authoring
COMP 515, Multimedia: Introduction and Applications
COMP 520, Database Design and Development
COMP 530, Machine and Network Architecture
CMN 457, Introduction to Language and Social Interaction
CA 450, Public Speaking
ECN 411, Introduction to Macroeconomic Principles
ECN 635, Money, Banking, and Macroeconomic Activity
ECN 640, Business Law and Economics
ECN 650, Economics for Managers
Other 600-level ECN or BUS courses by permission

*Students planning to pursue the B.A. in business should select BUS 430, Introduction to Business Statistics, and ECN 411, Introduction to Macroeconomic Principles.

For more information, contact Bill Troy, program coordinator, at (603) 641-4345, or contact the Office of Admissions.

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Chemistry (CHEM)▼
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Lecturer: Samantha Reynolds

Chinese (CHIN)▼
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Lecturer: Xi Zang

Communication (CMN)▼
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Communication Arts (CA) » http://manchester.unh.edu/academics/degree-programs/communication-arts

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Associate Professor: Barbara J. Jago, Jeffrey F. Klenotic, Anthony Tenczar

Communication Arts (B.A.)
Communication Arts majors explore the creativity, artistry, and impact of human communication. The program offers a rich variety of learning experiences, including:

- Working with cutting-edge digital media in state-of-the-art sound and video production studios and a high-definition editing suite with full Adobe creative cloud access.
- Discovering how communication theories and practices shape personal identity, social interaction, professional relationships, and public relations.
- Understanding the power and ethics of creative media and strategic communication.
- Exploring the history of media and popular culture using a super-tech screening room with surround sound.
- Developing hands-on research activities, creative media projects, and internship experiences that link students with businesses, nonprofits, and the community.

To complete the major, students may select courses from across the Communication Arts curriculum. Students can also focus their coursework by concentrating in one of five suggested areas of study: Cinema and Media Arts*, Digital Media*, News and Public Relations, and Relational Communication. (*Cinema and Media Arts and Digital Media are Degree Options that appear on the official UNH transcript and diploma. For information on Option requirements, students should contact the communication arts program coordinator or their academic advisor).

A degree in Communication Arts prepares students for success in today’s communication-driven society. The program offers students the essential knowledge and flexible skills they need to excel as professional communicators, media artists, and entrepreneurs working in a variety of careers. Our alumni have gone on to work in fields such as radio, television, film, web, digital video, corporate communications, journalism, public relations, social media, advertising, sales, strategic communication, audience research, counseling, conflict mediation, human resources and more. A Communication Arts degree also creates pathways to careers in government, social service, public education, and community affairs, where employers seek graduates who can think creatively and communicate effectively to a variety of audiences and constituents.

Communication Arts faculty bring exceptional expertise to the classroom and are actively
engaged in their own creative work and scholarly research. They regularly share their knowledge with audiences around the country and the world. Some are also experienced professionals who bring current, real-world knowledge from their workplace into the classroom. In addition to classroom instruction, the program also provides students with exceptional access to experiential learning opportunities (internships, community-based research, service learning, and media production projects) that occur within real-life settings.

**Degree Requirements**
Students must complete a minimum of 128 credits and satisfy the University’s Discovery Program and foreign language requirements. Communication Arts (CA) majors must complete 10 courses (40 credits) and maintain a minimum overall grade point average of 2.0 in the major. Transfer students must complete at least 20 credits in the Communication Arts major at UNH. Communication Arts majors cannot use CMN 455, 456, 457, or CA 502 to satisfy Discovery requirements. Degree requirements for the major are presented below.

I. Required Core Courses, 12 credits (3 courses): Students must earn a “C” or better in each course to satisfy CA degree requirements.
   CMN 455, Introduction to Media Studies
   CMN 456, Propaganda and Persuasion
   CMN 457, Introduction to Language and Social Interaction

II. Selected Coursework, 28 credits (three courses from area A, two from area B, two from area C). Students must earn a “C -” or better in each selected course to satisfy CA requirements.

      CA 444, Manipulating Media: Exploring Image and Sound Aesthetics
      CA 450, Introduction to Public Speaking
      CA 500, Media Writing
      CA 501, Internship: Communication in the Urban Community
      CA 502, Image and Sound
      CA 503, Techniques for News Reporting
      CA 504, Film Criticism
      CA 506, Gender
      CA 507, Relational Violence
      CA 508, Conflict in Relational Communication
      CA 510, Language and Interaction
      CA 512, Scriptwriting
      CA 513, Radio News Production
      CA 514, Fundamentals of Video Production
CA 515, Advanced Video Production
CA 516, Speechwriting
CA 517, Fundamentals of Audio Production
CA 518, Advanced Topics in Digital Media Production
CA 519, Advanced Screenwriting
CA 520, Special Topics in Applied Communication
CA 522, Graphic Design I
CA 523, Graphic Design II
COMP 515, Multimedia: Introduction and Applications
HIST 595, Issues in Public History
PSYC 762, Counseling

   CA 525, Media Programming
   CA 526, Organization of Newswork
   CA 527, History of Film
   CA 528, Media Policy and Law
   CA 531, History and Organization of Advertising
   CA 532, Typography I
   CA 533, Typography II
   CA 535, Marital Communication
   CA 537, Health Communication
   CA 539, Communicating in Families
   CA 540, Public Relations
   CA 542, Social Media for Organizations and Business
   CA 550, Special Topics in Communication Organization, History and Policy
   ENGL 534, 221st Century Journalism

   CA 600, Research Methods: Media
   CA 601, Exploring Relationships
   CA 610, Communication Technologies and Culture
   CA 611, Theories of Relational Communication
   CA 612, Narrative
   CA 614, Communication and Power
   CA 615, Film History: Theory and Method
   CA 618, Documentary
   CA 720, Seminar in Communication Arts
   CA 795, Independent Study
Capstone Requirement
The capstone requirement will be satisfied in a student’s senior year by completion of a specific four-credit capstone course at the 600 or 700 levels. Students may not enroll in a capstone course until they have completed all three CA program core courses (CMN 455, 456, and 457) and all CA Area A and Area B requirements. The capstone course can also fulfill an Area C course requirement.

The capstone experience offers seniors an opportunity to synthesize and apply knowledge and skills gained throughout their communication arts major coursework. The capstone course requires students to conduct an original research study, a creative media project, an internship, community-based research, or an advanced service learning project in communication arts under the close supervision of a communication arts faculty member. Students are strongly encouraged to share their capstone projects with the larger UNH community through participation in the Undergraduate Research Conference, a presentation in the Brown Bag lunch series, publication in the UNH undergraduate journal Inquiry, or presentation in some other public venue. Students should work closely with their advisers to make sure the capstone requirement has been satisfied.

Courses that satisfy this requirement include, but are not limited to: CA 601, Exploring Relationships; CA 614, Communication and Power; CA 615, Film History: Theory and Method; CA 720, Seminar in Communication Arts; and CA 795, Independent Study.

Suggested Areas of Study
Students may choose courses from across the Communication Arts curriculum, but those wishing to meet specific academic or professional goals may plan coursework using one of the pathways suggested below. Please note that these are “suggested” areas of study that may be used to help plan courses but will not appear on the student’s official UNH transcript. Students who wish to complete a Degree Option that appears on their transcript should contact the communication arts program coordinator or schedule an appointment with their academic advisor to get more information on specific option requirements.

Cinema and Media Arts
CA 444, Manipulating Media
CA 500, Media Writing
CA 501, Internship: Communication in the Urban Community
CA 502, Image and Sound
CA 504, Film Criticism
CA 512, Scriptwriting
CA 514, Fundamentals of Video Production
CA 515, Advanced Video Production
CA 517, Fundamentals of Audio Production
CA 518, Advanced Topics in Digital Media Production
CA 519, Advanced Screenwriting
CA 522, Graphic Design I
CA 523, Graphic Design II
CA 525, Media Programming
CA 527, History of Film
CA 531, History and Organization of Advertising
CA 532, Typography I
CA 533, Typography II
CA 600, Research Methods: Media
CA 615, Film History: Theory and Method
CA 618, Documentary
CA 720, Seminar in Communication Arts

**Digital Media**

CA 500, Media Writing
CA 501, Internship: Communication in the Urban Community
CA 502, Image and Sound
CA 504, Film Criticism
CA 514, Fundamentals of Video Production
CA 515, Advanced Video Production
CA 517, Fundamentals of Audio Production
CA 518, Advanced Topics in Digital Media Production
CA 522, Graphic Design I
CA 523, Graphic Design II
CA 531, History and Organization of Advertising
CA 532, Typography I
CA 533, Typography II
CA 540, Public Relations
CA 542, Social Media for Organizations and Business
CA 610, Communication Technologies and Culture
CA 720, Seminar in Communication Arts

**News and Public Relations**

CA 450, Introduction to Public Speaking
CA 500, Media Writing
CA 501, Internship: Communication in the Urban Community
CA 503, Techniques for News Reporting
CA 513, Radio News Production
CA 516, Speechwriting
CA 517, Fundamentals of Audio Production
CA 525, Media Programming
CA 526, Organization of Newswork
CA 528, Media Policy and Law
CA 531, History and Organization of Advertising
CA 540, Public Relations
CA 542, Social Media for Organizations and Business
CA 600, Research Methods: Media
CA 610, Communication Technologies and Culture
CA 618, Documentary
CA 720, Seminar in Communication Arts
ENGL 534, 21st Century Journalism

Relational Communication
CA 501, Internship: Communication in the Urban Community
CA 506, Gender
CA 507, Relational Violence
CA 508, Conflict in Relational Communication
CA 510, Language and Interaction
CA 535, Marital Communication
CA 537, Health Communication
CA 539, Communicating in Families
CA 601, Exploring Relationships
CA 611, Theories of Relational Communication
CA 612, Narrative
CA 614, Communication and Power
CA 720, Seminar in Communication Arts

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Computer Information Systems (COMP)▼
» http://manchester.unh.edu/academics/degree-programs/computer-information-systems

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Associate Professor: Mihaela Sabin
Assistant Professor: Michael Jonas
Lecturer: Karen Jin

Computer Information Systems (B.S.)

The computer information systems (CIS) or information technology (IT) field, in its broadest sense, encompasses all aspects of computing technology. During their program of study, students develop a strong skillset to effectively select, administer, apply, and integrate computing technologies to create IT solutions that meet the needs of users within an organizational context.

The bachelor of science degree in Computer Information Systems prepares graduates with knowledge, skills, and professional practices to work in the highly integrated field of computing technologies and to grow into leadership positions. The program also enables graduates to further their studies at the graduate level and pursue research in a computing-related discipline.

Career opportunities for students with an undergraduate CIS degree are varied, but may include such areas as software applications developer, data security specialist, database developer/administrator, e-commerce analyst/programmer, help desk manager, multimedia developer, network/system administrator, technical writer, technology trainer, user support specialist, testing and quality assurance specialist, or web developer. Career options exist in a wide range of organizations as all businesses, industries, and nonprofits continue to use, develop, and integrate information technology solutions.

Program Educational Objectives

Within five years of graduation a CIS student should be able to:

- Apply knowledge and skills in core and advanced information technologies to help an organization achieve its goals.
- Advocate for users of information technologies, whether they are end users of information systems, managers of enterprise applications, developers of IT solutions, or customers of IT-reliant work systems.
- Develop, manage, and evaluate computing and communication systems and services.
- Live and work as contributing, well-rounded members of society.

Program Outcomes

The program enables students to achieve, by time of graduation, the following competencies:

- Apply knowledge of computing and mathematics appropriate to the discipline.
- Analyze a problem, and identify and define the computing requirements appropriate to its solution.
- Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- Function effectively on teams to accomplish a common goal.
- Be cognizant of professional, ethical, legal, security, and social issues and responsibilities.
- Communicate effectively with a range of audiences.
- Analyze the local and global impact of computing on individuals, organizations, and society.
- Recognize the need for, and an ability to engage in, continuing professional development.
- Use current techniques, skills, and tools necessary for computing practice.
- Use and apply current technical concepts and practices in the core information technologies.
- Identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems.
- Effectively integrate IT-based solutions into the user environment.
- Be cognizant of best practices and standards and their application.
- Assist in the creation of an effective project plan.

The CIS program outcomes are aligned with criteria for accrediting computing programs (the first nine outcomes listed above) and information technology programs (the last five outcomes listed above) as recommended by the ABET Computing Accreditation Commission and the ACM Computing Curricula – IT 2008 Information Technology guidelines.

Program of Study
Students majoring in computer information systems must complete 128 credits to graduate, satisfy the University's Discovery Program, and complete 61 credits in the major with a minimum of C- in each course and 16 credits in a self-designed concentration in an area of study that enhances learning in the IT discipline. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer information systems must earn 61 approved credits for completion of the CIS major, of which at least 24 credits must be completed at UNH Manchester; and 16 approved credits for completion of a self-designed concentration.

Program Requirements
The CIS program of study requires one mathematics course from the following: MATH 420, Finite Math; MATH 424B, Calculus for Biological Sciences; MATH 425, Calculus I; or COMP 500, Discrete Structures. Any of these courses, except for COMP 500, may be used to satisfy the Quantitative Reasoning Discovery requirement.

Introductory Core (4 courses, 16 credits)
COMP 405, Introduction to the Internet and Web Authoring (may be used to satisfy the
Environment, Technology and Society, Discovery breadth requirement)
COMP 425, Programming Fundamentals
COMP 430, Systems Fundamentals
COMP 530, Machine and Network Architecture

**Intermediate Core (4 courses, 16 credits)**
COMP 520, Database Design and Development
COMP 525, Data Structures Fundamentals
COMP 550, Networking Concepts
COMP 560, Ethics and Law in the Digital Age (may be used to satisfy Humanities Discovery requirement)

**Integrative and Professional Experience (5 courses, 17 credits)**
COMP 715, Computer Security
COMP 730, Object-Oriented Software Development
UMST 582, Internship/Career Planning Seminar (1 credit)
COMP 690, Internship Experience
COMP 790, Capstone Project (satisfies the Discovery senior capstone experience requirement)

CIS electives (3 courses, 12 credits) chosen from COMP courses not already applied to the major. No COMP 400-level courses or other major courses without permission from adviser

**Concentration (4 courses, 16 credits)**
Majors can creatively design a concentration of courses that meet their academic and professional goals and career plans. Four courses can be selected across a wide university curriculum, reflecting majors' interests in a liberal arts, scientific, engineering, interdisciplinary, or professional area of study. The concentration must be approved by the student's adviser before the student's junior year.

For additional information about the computer information systems program, contact Michael Jonas, (603) 641-4352, michael.jonas@unh.edu, or contact the UNH Manchester Office of Admissions, (603) 641-4150, unhm.admissions@unh.edu.

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### Computer Science (CS)

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*Research Assistant Professor:* Thomas Butkiewicz
Affiliate Assistant Professor: Kevin Ma, Michael Jonas
Lecturer: Alejo Hausner, Karen Jin, Sofia Lemons, Arvind Narayan

Computer Science & Entrepreneurship (CS&E)

» http://manchester.unh.edu/academics/degree-programs/computer-science-entrepreneurship

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Associate Professor: Mihaela Sabin
Assistant Professor: Michael Jonas
Lecturer: Karen Jin

Computer Science and Entrepreneurship (B.S.)
The computer science and entrepreneurship (CS&E) program combines a solid foundation in computing with the entrepreneurial and business skills necessary to succeed in today’s start-up and high-tech environments. The program is designed in response to market demand for students proficient in computer science with business knowledge.

Students in the bachelor of science in Computer Science and Entrepreneurship degree program are required to complete three sponsored projects focusing on entrepreneurship, engineering, and a new venture creation. The courses give students the opportunity to work with industry experts through internships and sponsored research. Students are also required to create a business plan, which they will have to pitch to venture capitalists and industry professionals.

Career opportunities for students with an undergraduate CS&E degree are varied, and may include such areas as applications developer, computer and information research scientist, data security specialist, database administrator, database developer, multimedia developer, network architect, product development manager, quality assurance analyst, software systems developer, user experience designer, or web developer.

Program Educational Objectives

Within five years of graduation, a CS&E student should be able to:

- Demonstrate mastery of the core areas of computer science
- Invent, develop, manage, and evaluate computing systems and services
- Exercise professional responsibility and have appreciation of the social, legal, ethical, and cultural issues inherent in the computing field.
Program Outcomes
The program enables students to achieve, by time of graduation, the following competencies:

- Apply knowledge of computing and mathematics appropriate to the discipline.
- Analyze a problem, and identify and define the computing requirements appropriate to its solution.
- Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- Function effectively on teams to accomplish a common goal.
- Be cognizant of professional, ethical, legal, security, and social issues and responsibilities.
- Communicate effectively with a range of audiences.
- Analyze the local and global impact of computing on individuals, organizations, and society.
- Recognize the need for, and an ability to engage in, continuing professional development.
- Use current techniques, skills, and tools necessary for computing practice.
- Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- Apply design and development principles in the construction of software systems of varying complexity.

Program of Study
Students majoring in computer science and entrepreneurship must complete 128 credits to graduate, satisfy the University’s Discovery Program, and complete 61 credits in the major with a minimum of C- in each course and 16 business-related credits in the entrepreneurship area. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer science and entrepreneurship must earn 61 approved credits for completion of the their major, of which at least 24 credits must be completed at UNH Manchester; and 16 approved credits for completion of the entrepreneurship component.

Program Requirements

Mathematics and Science (4 courses, 16 credits)

The CS&E program of study requires three mathematics courses and one physics course:

- COMP 490, Statistics in Computing and Engineering
- COMP 500, Discrete Structures
- MATH 425, Calculus I
PHYS 407, General Physics I
MATH 425 may be used to satisfy the Quantitative Reasoning Discovery requirement and PHY 407 may be used to satisfy the Physical Sciences Discovery requirements.

**Computing Core (8 courses, 32 credits)**

- COMP 415, Mobile Computing First and For Most
- COMP 425, Programming Fundamentals
- COMP 430, Systems Fundamentals
- COMP 525, Data Structures Fundamentals
- COMP 530, Machine and Network Architecture
- COMP 560, Ethics and Law in the Digital Age
- COMP 625, Data Structures and Algorithms
- COMP 630, Systems Software

COMP 415 may be used to satisfy Environment, Technology, and Society Discovery requirements. COMP 560 may be used to satisfy Humanities Discovery requirement.

**Project and Professional Practice (4 courses, 13 credits)**

*The program prepares students for the workforce and further education in a holistic way by emphasizing communication, collaboration, team work, initiative, appreciation for diversity, and self-direction and responsibility. These competencies are developed through the following sequence of courses:*

- COMP 590, Entrepreneurship Project
- COMP 685, Professional Development Seminar (1 credit)
- COMP 690, Internship Experience
- COMP 790, Capstone Project

**Entrepreneurship Component (4 courses, 16 credits)**

*Four courses that round out the student skill set form the entrepreneurship component. These courses are selected from the following courses offered in the business program:*

- Introduction to Business
- Introduction to Entrepreneurship
- Leadership for Managers
- Economics for Managers
- Selling and Sales Management
- New Venture Creation
- Marketing Principles and Applications
- Students in Free Enterprise
- Integrated Marketing Communications
Computing Topics (3 courses, 12 credits)

*Three courses in computing broaden and advance student learning of computing innovations.*

For additional information about the computer science and entrepreneurship program, contact Michael Jonas, (603) 641-4352, michael.jonas@unh.edu, or contact the UNH Manchester Office of Admissions, (603) 641-4150, unhm.admissions@unh.edu.

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Earth Sciences (ESCI)

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*Extension Assistant Professor:* Erik Chapman

Economics (ECN)

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*Professor:* Thomas D. Birch

Education (EDUC)

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Engineering Technology (ET)

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*Assistant Professor:* Christopher D. LeBlanc, Sean Tavares

*Engineering Technology (B.S.)*

Engineering technology requires the application of engineering and scientific knowledge and methods combined with technical skills in support of engineering activities. Graduates may work in a variety of areas including engineering design, manufacturing, field service, testing, and sales and may work in management positions related to engineering, manufacturing, and computer technology.
The UNH Manchester engineering technology program is accredited by the Engineering Technology Accreditation Commission of ABET, 415 North Charles Street, Baltimore, MD 21201, (410) 347-7700.

The engineering technology program at UNH Manchester offers only junior- and senior-level coursework. Students admitted to this program must have an appropriate associate degree from the New Hampshire Technical Institute or an equivalent institution accredited by the Engineering Technology Accreditation Commission of the Accreditation Board of Engineering and Technology (ETAC of ABET) or show academic evidence of ability to successfully complete the requirements of this calculus-based program. After two major courses, non-matriculated students must either be admitted to the program or declare that they are not planning to pursue a degree in engineering technology.

The programs at UNH Manchester are designed to meet the needs of both full- and part-time students with a mix of classes scheduled during the day and in the evening.

Program of Study
Students may major in electrical engineering technology, electrical engineering technology with a concentration in computer engineering technology, or mechanical engineering technology. All entering ET students should have completed mathematics through differential and integral calculus (Calculus I & II). Students without Calculus II will be required to take ET 630, Analytical Methods in Engineering Technology. Students with Calculus II may have ET 630 waived, although it is recommended that it still be taken, as there are other useful topics covered. Students must complete a minimum of 128 credits and satisfy the University’s Discovery Program.

Program Courses:

Electrical Engineering Technology (EET)
- ET 625, Technical Communications
- ET 630, Analytical Methods in Engineering Technology
- ET 671, Digital Systems
- ET 674, Control Systems and Components
- ET 677, Analog Systems
- ET 680, Communications and Fields
- ET 697, Topics in Electrical Engineering Technology
- ET 734, Economics of Business Activities
- ET 781, Automation Engineering
- ET 788, Introduction to Digital Signal Processing
- ET 791, Electrical Engineering Technology Project (Senior Capstone Project, two semesters; satisfies the Discovery Senior Capstone Experience requirement)
Discovery Program Requirements, Writing Intensive (WI) Requirement, and electives

**EET Computer Engineering Technology Option (EET-CET)**

COMP 625, Data Structures and Algorithms  
ET 625, Technical Communications  
ET 630, Analytical Methods in Engineering Technology  
ET 671, Digital Systems  
ET 697, Topics in Electrical Engineering Technology  
COMP 715, Information Security  
COMP 725, Programming Languages  
COMP 730, Object Oriented Software Development  
ET 733, Business Organization and Law  
ET 734, Economics of Business Activities  
ET 791, Electrical Engineering/CET Technology Project (Senior Capstone Project, two semesters; satisfies the Discovery Senior Capstone Experience requirement).

Discovery Program Requirements, Writing Intensive (WI) Requirement, and electives

**Mechanical Engineering Technology (MET)**

ET 625, Technical Communications  
ET 630, Analytical Methods in Engineering Technology  
ET 635, Fluid Technology and Heat Transfer  
ET 641, Production Systems  
ET 644, MET Concepts in Design and Analysis  
ET 674, Control Systems and Components  
ET 675, Electrical Technology  
ET 696, Topics in Mechanical Engineering Technology  
ET 734, Economics of Business Activities  
ET 751, Mechanical Engineering Technology Project (Senior Capstone Project, two semesters; satisfies the Discovery Senior Capstone Experience requirement)  
ET 781, Automation Engineering  

Discovery Program Requirements, Writing Intensive (WI) Requirement, and electives

Mechanical engineering technology students must satisfactorily complete CHEM 403, General Chemistry, or offer evidence of equivalent coursework.

For information about the engineering technology program, contact the B.S. engineering technology program coordinator for the electrical engineering technology (EET) and the EET computer engineering technology options, Christopher LeBlanc, at (603) 641-4323, or Christopher.LeBlanc@unh.edu.

For information about the mechanical engineering technology program (MET), contact Sean
Tavares at (603) 641-4322, or Sean.Tavares@unh.edu.

For admissions information, contact the Office of Admissions at (603) 641-4150.

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English (ENGL)

» http://manchester.unh.edu/academics/degree-programs/english

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Associate Professor: Gail Fensom, Susanne F. Paterson, Susan A. Walsh
Assistant Professor: Seth Abramson
Senior Lecturer: Robert M. Pugh

English (B.A.)

Through the study of a wide variety of literary materials, English majors deepen their understanding of history, culture, language, and human behavior. They also gain skill in writing, reading, and critical thinking.

The faculty of the UNH Manchester English department specializes in American and British fiction, Victorian literature and art, Renaissance drama, interdisciplinary studies, composition, and grammar.

Many upper-level courses are conducted as seminars, and individual conferences with professors are common. When possible, field trips to see local performances of drama and poetry readings are planned in conjunction with specific literature courses.

Job prospects for English majors after graduation are varied. English majors find employment in libraries and museums, government agencies, nonprofit organizations, publishing companies, journalism, the media, marketing, advertising, social work, banking, and many other fields. English graduates also are well prepared to enter graduate study in fields such as law and business.

English Program of Study

For the English major at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University’s Discovery Program and foreign language requirements, and complete a minimum of 40 credits in major coursework. Introduction to Critical Analysis (ENGL 419) must be completed with a grade of C or better. Except for ENGL 419, all courses must be
completed with a grade of C- or above in order to count toward the English major.

Major requirements include ENGL 419, two 500-level courses, six courses numbered 600 or above, one course numbered 500 or above, and, of these, one course that qualifies as a Diversity offering, with an overall grade-point average in the major of 2.0 or better. The capstone will be a 700-level course designated as such by the instructor in consultation with the student, or the Senior Seminar, ENGL 787. In selecting these courses, students must meet the following distribution requirements:

ENGL 419, Introduction to Literary Analysis, or ENGL 529, Writing About Literature

Literature before 1800: Either two advanced courses (numbered 600 or above), or one advanced course and ENGL 512 or 513

Literature after 1800: Either two advanced courses, or one advanced course and one course from the following list: ENGL 514, 515, or 516

Total English courses must include ENGL 419, two 500-level courses, six courses numbered 600 and above, one course numbered 500 level and above, and, of these, one must include a Diversity course

A typical first-year program in the first semester consists of First-Year English and three Discovery Program requirements or electives. In the second semester, the student typically would take Introduction to Critical Analysis, an introductory literature course, and two Discovery Program requirements or electives.

**Writing Focus for English Majors**

The English department offers a writing focus for English majors interested in creative or other specialized types of writing. Students who might be interested include students with an interest in graduate school in English or writing; students thinking about teaching and teaching writing; students considering law school or journalism training; students looking for careers in marketing and advertising; students wanting to write for corporate in-house publications; students thinking about freelance writing for magazines; and students who enjoy creative writing.

**Four of the following nine courses are required. Students should take at least one 500-level course before taking 600- and 700-level courses.**

English 501, Introduction to Creative Nonfiction
English 502, Technical Writing
English 503, Persuasive Writing
English 623, Essay Writing
English 625/626, Writing Fiction
English 627/628, Writing Poetry
English 710, Teaching Writing
Special Studies in Writing courses will be offered on an occasional basis.

For more information about the English program, contact Susanne Paterson, program coordinator, (603) 641-4115, or susanne.paterson@unh.edu. Or contact the UNH Manchester Office of Admissions at (603) 641-4150, or unhm.admissions@unh.edu.

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**English (ENG)**

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Senior Lecturer: Robert M. Pugh

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**English Teaching (ENGLTCH)**

» [http://manchester.unh.edu/academics/degree-programs/english-teaching](http://manchester.unh.edu/academics/degree-programs/english-teaching)

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Associate Professor: Gail Fensom, Susanne F. Paterson, Susan A. Walsh
Assistant Professor: Seth Abramson
Senior Lecturer: Robert M. Pugh

**English Teaching, (B.A.)**

The English Teaching major uses language, literature, and standards-based teaching as a means to explore education.

The English Teaching major is designed for students wishing to teach English or language arts in middle or high schools, grades 5-12. Students learn what the study of English entails and how areas of knowledge and the abilities to read, write, and discuss can best be taught to students in grades 5-12.

This major takes the guesswork out of course selection by clearly delineating the prerequisites necessary for New Hampshire state teaching certification and UNH's Master of Arts in Teaching (MAT).

For the English Teaching major at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University’s Discovery Program and foreign language requirements,
and complete a minimum of 40 credits in major coursework. The major requirements consist of a minimum of 10 courses, including ENGL 419, two 500-level courses (or one 500-level and ENGL 405), six courses numbered 600 and above and one additional 500-, 600-, or 700-level class of the student's choosing. These 10 courses (40 credits) must include the Diversity requirement and the capstone requirement. The capstone will be a 700-level course designated as such by the instructor in consultation with the student, or the Senior Seminar, ENGL 787. To count toward the major, grades must be C- or above, except ENGL 419, which must be completed with a minimum grade of C. In selecting these courses, students must meet the following distribution requirements:

**Program Requirements**

- ENGL 419, Introduction to Critical Analysis
- ENGL 514, Survey of British Literature, 1800-President
- ENGL 516, Survey of American Literature, Civil War to Present
- An additional 500/600/700-level English course
- Two literature courses 600/700 level
- ENGL 657, Shakespeare
- ENGL 710, Teaching Writing
- ENGL 791, English Grammar
- ENGL 792, Teaching Literature and Literacy

Combine the English Teaching major with UNH’s renowned MAT, taken at the Manchester campus, and in five years students can be state certified to teach English and Language Arts. With the five-year master’s option, students can apply 12 undergraduate credits to the advanced degree. The English Teaching major includes courses that will introduce students to the Common Core Standards, a nationwide effort now transforming K-12 education.

For more information about the English program, contact Gail Fensom, director of First-Year Writing, (603) 641-4162, or gail.fensom@unh.edu. Or contact the UNH Manchester Office of Admissions at (603) 641-4150, or unhm.admissions@unh.edu.

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**Exchange (EXCH)**

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French (FREN) ▼
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General Studies (GenStud) ▼
» http://manchester.unh.edu/academics/degree-programs/general-studies-aa

General Studies (A.A.)
The associate of arts in general studies offers students academic flexibility in a program that combines the foundations of a liberal education and elective courses that satisfy personal interests. The A.A. in general studies is the first two years of a baccalaureate program and all 400-level courses transfer to and fulfill the University’s Discovery requirements. Students who earn an A.A. in general studies have a foundation for continued study in any major while they develop problem-solving skills, cognitive skills, and learning techniques that are vital to a lifetime of learning. Many students begin their college study in the A.A. general studies program. Depending on personal interests and academic goals, students may choose to apply to a baccalaureate degree program prior to completion of the A.A. degree.

To graduate with an associate of arts degree in general studies, students must complete 64 credits, earn a minimum cumulative GPA of 2.0, and fulfill two types of requirements: University Discovery Program and degree requirements. The program includes nine courses from the Discovery Program curriculum. Working with their advisers, students enhance their program of study with elective courses where they can explore their interests and possible baccalaureate degree majors. The last 16 hours of credit must be UNH courses completed following admission and matriculation, unless permission is granted to transfer part of this work from another institution.

The A.A. general studies program includes the following course requirements:
Two writing-intensive courses, one of which must be ENGL 401, First-Year Writing
One course in quantitative reasoning (must be completed within the first 32 credits)
Two courses chosen from two different categories: Biological Sciences, Physical Sciences, or Environment, Technology and Society. One must be a lab course.
One course in Historical Perspectives
One course in World Culture or Fine and Performing Arts
One course in Social Science
One course in Humanities
Completion of the interdisciplinary core requirement, Humanities I or Humanities II
One Inquiry or Inquiry attribute course, to be completed within the student’s first 48 earned credits
Elective courses

For more information, contact the **Office of Admissions** at (603) 641-4150 or **unhm.admissions@unh.edu**.

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**Genetics (GEN)**

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_Assistant Professor: Jeffrey T. Foster_

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**Geography (GEOG)**

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**History (HIST)**

» [http://manchester.unh.edu/academics/degree-programs/history](http://manchester.unh.edu/academics/degree-programs/history)

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_Professor: John J. Cerullo, John P. Resch_

_Associate Professor: Robert L. Macieski_

**History (B.A.)**

The study of history is an essential element of a liberal arts education. The history major develops both an awareness of the past and the tools to express one's knowledge. Study of the past gives meaning to the present, increasing understanding of the political, social, economic, and cultural forces that influence contemporary life.

The study of history may encompass all of human culture and society, and UNH Manchester’s history program allows great latitude in the subjects that students may select as their focus. In fact, the study of those subjects is often best pursued through an interdisciplinary approach, something we encourage.

The student who majors in history will not only have the opportunity to study the breadth of human experience, but will also acquire the most important and broadly applicable skills conferred by a liberal-arts education: critical thinking, independent research, and effective
writing skills. Students of history learn to analyze conflicting evidence; to find cause and effect; to express themselves clearly; to ask relevant questions; and to seek out their own answers. In explaining human events, they come to value careful observation and balanced, informed evaluations of the information at hand. Those are the skills that characterize effective, productive individuals in any and all walks of life.

Students majoring in history must complete a minimum of 128 credits, satisfy the University’s Discovery Program and foreign language requirements, and take ten 4-credit history courses or their equivalent. Students must receive at least a C in HIST 500 and HIST 797, and at least a C- in the other eight courses with an overall average in these courses of 2.0 or better.

History majors are urged to complete HIST 500 in the semester following the major declaration, and HIST 797 during the senior year. Between those gateway and capstone courses, History majors take eight additional history courses. A minimum of three of those must be 600-level or above. A student’s area of concentration is comprised of either four or five of those eight courses; all courses within that concentration must be either 500 or 600 level. No more than two 695/696 courses (Independent Studies) may be put toward the ten-course requirement, and only one 695/696 (Independent Study) course may be put toward the (three-course) 600-level requirement. No more than two 400-level courses may be counted toward the major. The program must be planned in consultation with an adviser.

The distribution of required courses for the major is as follows:

HIST 500, Introduction to Historical Thinking
HIST 797, Colloquium in History (fulfills the Discovery Program capstone requirement for history majors and is taken during the senior year)

CONCENTRATION. Either four or five courses numbered 500 and above centered around a nation, region, time period, interdisciplinary theme, or other subject approved by a faculty adviser. Two of these courses may be in another program, if the student’s adviser approves.

COMPLIMENTARY CATEGORY. At least three history courses from outside the area of specialization.

A particular feature of the history program at UNH Manchester is the opportunity to do internships for academic credit. These internships, which enable students to work in museums, historical societies, government agencies, archives, and other institutional settings, are arranged with the help of the faculty.

A typical first-year program consists of at least two history courses (e.g., Introduction to Historical Thinking, Western Civilization, Historical Survey of American Civilization, etc.); First-Year English; three to five Discovery Program requirements; and/or electives.
For more information about the history program, contact John Cerullo, program coordinator, at (603) 641-4109 or John.Cerullo@unh.edu. Or, contact the UNH Manchester Office of Admissions at (603) 641-4150 or unhm.admissions@unh.edu.

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Home Security (HLS)

Professor: James D. Ramsay

The Homeland Security Program at UNH Manchester will give students the tools to defend, protect, act, and react to a variety of threats, including threats from small- and large-scale attacks of violence and terrorism, to technological hazards or catastrophic natural disasters such as hurricanes, tornadoes, and earthquakes.

The Homeland Security Program is built around the expertise and advice of subject matter experts from around the nation. Its proven curriculum includes practical experiences, service-learning opportunities, and consulting opportunities that empower students to manage programs and lead people. It provides students with an impressive array of tools including how to do strategic planning, how to build emergency management and continuity plans, how to perform an organization-wide security and risk assessments, and how to design and evaluate exercises. The curriculum is flexible and includes the ability to either obtain two minors or to double major within four years. Ultimately, the homeland security program empowers students to be successful on the job market or in graduate school.

Homeland security is a broad field providing students with many graduate school opportunities and career paths in the public sector (e.g., local, state or federal government), the private sector, or the military. Students will find diverse and rewarding career opportunities in cyber security/information assurance; intelligence analysis; civil or Foreign Service; diplomatic security; law enforcement at the local, state or federal level; emergency and disaster management; immigration; border and transportation security; policy making; corporate security; risk management; critical infrastructure protection; human security; and more.

Program Requirements
Introduction to Homeland Security
Foundations of Information Security
Fundamentals of Corporate Security
Professional Skills in Homeland Security
Fundamentals of Emergency Management
Critical Infrastructure Security & Resilience
Homeland Security Law and Policy
Political Violence & Terrorism
Environmental and Human Security (ETS Discovery course)
Exercise Design and Evaluation
Intelligence Systems and Structures
Strategic Planning and Decision Making
Internship in Homeland Security OR Thesis in Homeland Security
Capstone in Homeland Security

**Complimentary Block of Courses.** In addition to the core HLS courses, students must complete 40 additional credits in one of five ways: (1) two minors; (2) a minor AND a “coherent block”/self-designed concentration approved by the HLS coordinator; (3) a second major; (4) an associate’s degree transferred in to UNH; (5) some other combination of coursework with consent of the HLS program coordinator.

For additional information about the Homeland Security Program, contact James Ramsay at james.ramsay@unh.edu, or contact the UNH Manchester Office of Admissions, (603) 641-4150, unhm.admissions@unh.edu.

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**Humanities (HUMA)**

» [http://manchester.unh.edu/academics/degree-programs/humanities](http://manchester.unh.edu/academics/degree-programs/humanities)

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*Professor:* John J. Cerullo, John P. Resch
*Senior Lecturer:* Phillip Deen

**Humanities (B.A.)**

The UNH Manchester humanities program is an interdisciplinary study of the human condition, past and present. The program is based on careful examination of substantial works from a
variety of disciplines and is intended to develop intellectual skills, specialized knowledge, and breadth of understanding. It provides students with a broad foundation of knowledge and skills in the liberal arts combined with a coordinated, self-designed program of studies in an area of individual student interest.

The program attracts highly motivated students who wish to assume significant responsibility for the content and direction of their studies. Humanities students develop skills of analysis, critical assessment, and effective communication as they study diverse works of art, music, literature, history, philosophy, and the sciences. Individually designed programs may cover the full range of student interests: for example, the social and ethical implications of genetic engineering or the examination of an historical period through study of its literature, arts, history, philosophy, and sciences. Students complete their major with two capstone seminars. The first, HUMA 795, Study of Creativity, explores the nature of creativity through the lives and works of individuals such as Leonardo da Vinci, Kathe Kollwitz, Mozart, Freud, Einstein, and Georgia O'Keeffe. The second seminar, HUMA 796, Study of Contemporary Issues, explores current social and political issues with a focus on developments in public policy, science, and business, and their impact on social values.

Humanities majors find employment in a wide range of fields or pursue graduate study in subjects such as law or education. Skills and knowledge developed through the major are important in virtually all social and career responsibilities. A humanities major or minor can also complement work in other majors such as elementary or secondary education, business, communications, or computer information systems.

**Program of Study**
For the humanities major at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University’s Discovery Program and foreign language requirements, and students must complete 40 credits with a minimum grade of C in each course in the major. The required courses for the humanities major are:

**Core Courses (required of all majors)**
HIST 500, Introduction to Historical Thinking
or
ENGL 419, Introduction to Literary Analysis
HUMA 411, Humanities I
HUMA 412, Humanities II

**Discovery Program Capstone Courses:**
HUMA 795, Humanities: Study of Creativity
HUMA 796, Humanities: Study of Contemporary Issues
Self-Designed Concentration
This is an approved program of study designed by the student in consultation with a faculty adviser. In addition to courses available on the Manchester campus, students may, with prior approval, use courses from area colleges and the University’s Durham campus. The concentration is made up of two humanities courses (HUMA prefix) at the 600 or 700 level and three courses from any relevant discipline at any level.

For more information, contact Jack Resch, program coordinator, at Jack.Resch@unh.edu or (603) 641-4134; or contact the Office of Admissions.

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Intercollege (INCO)

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Italian (ITAL)

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Assistant Professor: Jeremiah W. Johnson
Lecturer: Donald Plante

Mathematics (MATH)

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Music (MUSI)

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Assistant Professor: Nathan Jorgensen

Neuropsychology (PSYC)
Neuropsychology (B.S.)

Neuropsychology is the study of the human brain and its relationship to behavior. The UNH Manchester program focuses on the biological basis of human functioning in both normal and pathological states (e.g., dementia, depression, etc.) and therefore, prepares students for careers working with individuals with various mental health and neurological conditions. This interdisciplinary program offers a concentration of core and advanced courses in psychology and biology while providing sufficient flexibility for students to customize their education in order to meet specific requirements for their chosen career path, including the health professions.

The neuropsychology program prepares students for a variety of careers within the field of neuroscience, including bachelor-level positions and graduate training in research and health professions. At the bachelor-level, students are prepared for positions in healthcare (e.g., clinical laboratory technologist, psychometrician) and biomedical research (research assistant). The program is also designed to provide the flexibility needed to prepare students for graduate training in the health professions, such as being a physician, physician assistant, psychologist, neuropsychologist, or occupational therapist. Students interested in medical school are able to complete premedical requirements within four years.

Program of Study

Students majoring in neuropsychology must complete a minimum of 128 credits and satisfy the University’s Discovery Program, and complete 56 credits in the major with a minimum of C- in each course and a 2.0 overall grade-point average in all major requirements. Three courses in the major can be used to fulfill both a major requirement and a Discovery requirement, providing students with more flexibility to customize their education.

Transfer students who elect to major in neuropsychology must complete at least 32 credits in the program at UNH (Durham or Manchester campuses) to qualify for the degree in neuropsychology. The department’s academic advisers will determine the distribution of these credits. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the neuropsychology major.

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

A. Nine core courses in Psychology and Biology

BIOL 413 and 414, Principles of Biology I and II (both with lab); CHEM 403, General Chemistry (with lab); GEN 604, Genetics; PSYC 401, Introduction to Psychology; PSYC 402, Statistics in Psychology; PSY 502, Research Methods in Psychology; PSYC 531, Psychobiology; and PSYC 705, Tests and Measurement.

C. Three Advanced Courses in Psychology and Biology

BSCI 680, Pharmacology; BSCI 735, Cell Biology; PSYC 710, Visual Perception; PSYC 713, Psychology of Consciousness; PSYC 731, Brain and Behavior (with lab); PSYC 733, Drugs and Behavior; PSYC 736, Neurobiology of Mood Disorders; or PSYC 741, Advanced Topics A (Natural Science), B (Cognition), or D (Biological/Sensory).

Note: students can either take Pharmacology (BSCI 680) or Brain and Behavior (PSYC 731) for major credit, but not both.

D. One Advanced Elective in Psychology

PSYC 712, Psychology of Language; PSYC 758, Health Psychology; PSYC 762, Counseling; or PSYC 791, Advanced Topics D (Abnormal/Counseling), or G (Adult Development).

E. Capstone Requirement:

PSYC 793, Internship (at approved site); PSYC 795 Advanced Topics A (Physiological), B (Perception), F (Cognition), or O (Advanced Externship), Independent Study with UNH Manchester URC presentation or capstone seminar.

For more information about the neuropsychology program, contact Daniel Seichepine, Ph.D., program coordinator, at Daniel.Seichepine@unh.edu or (603) 641-4356. Or contact the UNH Manchester Office of Admissions at (603) 641-4150, or unhm.admissions@unh.edu.

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Nutrition (NUTR)

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Clinical Assistant Professor: Kevin J. Pietro
Philosophy (PHIL)
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Physics (PHYS)
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Assistant Professor: Noé Lugaz, Patricia H. Solvignon

Plant Biology (PBIO)
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Political Science (POLT)
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Assistant Professor: Melinda Negron-Gonzales
Lecturer: Stephen Pimpare

Politics and Society (PS)
» http://manchester.unh.edu/academics/degree-programs/politics-society
» Click to view course offerings

Assistant Professor: Melinda Negron-Gonzales
Lecturer: Stephen Pimpare

Politics and Society (B.A.)
The bachelor of arts degree in politics and society provides an interdisciplinary approach to the study of politics. Though grounded in political science, the program draws on other social science disciplines—sociology, economics, anthropology—to explore the many ways in which politics both shapes and is shaped by social, cultural, economic, and historical context.

Students may choose to concentrate in American politics & public policy, international &
comparative studies, or law & justice.

Politics and society majors develop critical thinking, communication, and research skills essential for careers in government, politics, non-profits, international affairs, journalism, and business. Graduates of the program also will be well-prepared for graduate studies in law, political science, international relations, sociology, public policy, public administration, journalism, and diplomacy.

As the University’s urban campus, UNH Manchester is well-positioned to connect students to local, state, and national politics through coursework, research, and internships. Students will have opportunities to work on local and national political campaigns, in local government, and with community organizations for credit as a part of their senior capstone project.

For complete more information, contact program coordinator Melinda Negron-Gonzales at (603) 641-4364 or melinda.negron@unh.edu; or contact the Office of Admissions.

Program of Study
Students must complete 128 credits to graduate, including 44 credits in the politics and society major. Students must maintain an overall cumulative GPA of 2.0 and a cumulative GPA in the major of 2.0. No credit toward the major will be given for any course in which the student receives a grade of less than C-. Students also must fulfill the UNH Discovery Program requirements. Up to three courses may be used toward both the politics and society major and UNH Discovery Program requirements. Transfer students must take at least 28 credits in the major at UNH Manchester.

Requirements for the Politics & Society B.A. degree

11 required courses (44 credits)

Five required courses:

POLT 401, Politics & Society, or PHIL 436, Social & Political Philosophy
POLT 402, American Government
POLT 403, U.S. in World Affairs
POLT 595, Strategies for Political Inquiry
PS 701, Senior Capstone Experience

Six PS or POLT courses. Up to TWO SOC or ECN courses may substitute for PS/POLT courses, with approval from the program coordinator. Only one 400-level course will be accepted; one course must be 700 level. Four of these six courses may be used toward an option in international & comparative studies, American politics & public policy, or law & justice.
PS 407, Politics & Law in Contemporary Society
POLT 500, American Public Policy
POLT 521, Rights & the Political Community
POLT 522, Dissent & the Political Community
POLT 560, World Politics
POLT 509, Managing Bureaucracy in America
PS 501, Social & Political-Economic Theory
PS 502, Political Psychology
PS 503, Political Theory & Historical & Social Context
PS 504, Empire, Democracy & War
PS 505, Political Violence & Terrorism
PS 506, Civil Society & Public Policy
PS 507, Justice, Law & Politics
PS 508, Supreme Court in American Society
PS 509, Political & Social Change in Developing Countries
PS 510, Politics of Food
PS 511, Women & War
PS 512, Immigration & Refugee Policy in Global Perspective
PS 514, Model United Nations
PS 651, Selected Topics in Politics & Society
PS 695, Independent Study
POLT 701, Courts & Public Policy
PS 702, International Relations: Interdisciplinary Approaches
PS 703, Dictatorship & Democracy

**Options**: Students are not required to choose an area of specialization ("option"). Students who concentrate in a particular area of study MUST complete FOUR courses in the chosen option. Options are recorded on student transcripts.

**Law & Justice**

This option will appeal to students who are interested in law, justice, and philosophy. Students learn about the structural and procedural aspects of the American court system, and the philosophical and ideological foundations that undergird this system. The option is designed to prepare students for careers in law, government, and public service.

PS 407 and PS 507 required.

(* = required)

PS 407, Politics & Law in Contemporary Society*
POLT 500, American Public Policy
POLT 507, Politics of Crime & Justice
POLT 513, Civil Rights & Liberties
PS 501, Social and Political-Economic Theory
PS 503, Political Theory and Historical and Social Context
PS 506, Civil Society & Public Policy
PS 507, Justice, Law & Politics*
PS 508, The Supreme Court in American Society
POLT 520, Justice and the Political Community
POLT 521, Rights & the Political Community
PS 512, Immigration & Refugee Policy in Global Perspective
PS 651, Special Topics: International Human Rights
PS 651, Special Topics: Business & International Human Rights
HIST 679, Rights Revolution
POLT 701, Courts & Public Policy

**International & Comparative Studies**

This option will appeal to students interested in international affairs, the way politics works in different countries, and the relationship between governments and societies. Students learn about the role of governments and non-governmental organizations in addressing social problems that often transcend national borders in an increasingly inter-connected world. The option is designed to prepare students for careers in government, international organizations, diplomacy, international development, public service, non-profit organizations, international business, and education.

ONE 400-level course accepted. PS 509 required. ONE 700-level course required.

(* = required)

ECN 411, Introduction to Macroeconomic Principles
HIST 422, World History in the Modern Era
HIST 425, Foreign Cultures
SOC 400, Introduction to Sociology
ANTH 411, Introduction to Anthropology
POLT 560, World Politics
PS 502, Political Psychology
PS 505, Political Violence & Terrorism
PS 506, Civil Society & Public Policy
PS 509, Political & Social Change in Developing Countries*
PS 510, Politics of Food
PS 511, Women & War
PS 512, Immigration & Refugee Policy in Global Perspective
PS 514 Model United Nations
POLT 521, Rights & the Political Community
POLT 522, Dissent & the Political Community
POLT 550, Comparative Government & Society
HIST 656, 20th Century Europe
PS 702, International Relations: Interdisciplinary Approaches*
PS 703, Dictatorship & Democracy*
(ONE 700-level course required, either PS 702 or PS 703)

American Politics & Public Policy
This option will appeal to students interested in the American political system. Students learn how America’s public policies are created and implemented, and how the government agencies tasked with their implementation are managed. The option is designed to prepare students for careers in local, state, and federal government; non-profit agencies; law; public service; and public policy in specific areas (e.g., public health, environment, etc.).

ONE 400-level course accepted. POLT 500 required.

(* = required)

PS 407, Politics & Law in Contemporary Society
HIST 406, History of Modern US
POLT 500, American Public Policy*
POLT 502, State and Local Government
POLT 505, American Congress
POLT 506, Parties, Interest Groups, and Voters
POLT 507, Politics of Crime & Justice
POLT 509, Managing Bureaucracy in America
POLT 512, Public Opinion in American Politics
POLT 521, Rights & the Political Community
POLT 562, Strategy and National Security Policy
PS 506, Civil Society & Public Policy
PS 507, Justice, Law & Politics
PS 508, The Supreme Court in American Society
PS 512, Immigration & Refugee Policy in Global Perspective
POLT 701, Courts & Public Policy
POLT 711, Public Opinion and Survey Research
POLT 751, Comparative Environmental Politics and Policy
Psychology (PSYC)

» http://manchester.unh.edu/academics/degree-programs/psychology

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Associate Professor: Alison K. Paglia, John E. Sparrow
Assistant Professor: Nicholas Mian
Lecturer: Daniel R. Seichepine

Psychology (B.A.)

Psychology is the scientific study of behavior. The UNH Manchester psychology program provides students with a broad background in psychology, introducing them to both the experimental and clinical perspectives in the field. Students majoring in psychology will explore the fundamental principles involved in how people and animals learn and adapt to their environments.

The psychology program, through its independent study and internship programs, offers opportunities for participation in cooperating New Hampshire mental health, human services, and rehabilitation facilities. Students have worked in hospitals, halfway houses, mental health centers, and other agencies. The department also invites guest speakers to discuss important issues in the field and sponsors a Psychology Club.

Psychology graduates find employment as trained research assistants, mental health aides in a wide variety of human services agencies, social welfare caseworkers, teachers in special education programs, and professionals in government, business, and industry. It is normally expected that students who wish to do professional work in the field of psychology will pursue graduate training at the M.A., M.S., Ph.D., or Psy.D. level.

Psychology Program of Study

Students majoring in psychology must complete a minimum of 128 credits, satisfy the University’s Discovery Program and foreign language requirements, and complete 44 credits with a minimum of C- in each course and a 2.0 overall grade-point average in all major requirements.
Transfer students who elect to major in psychology must complete at least 24 credits in the program at UNH/UNH Manchester to qualify for the degree in psychology. Transfer students must earn a total of 44 approved credits for completion of the psychology major. The department’s academic advisers will determine the distribution of these credits. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major.

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

Program Requirements

A. Three core courses

PSYC 401, Introduction to Psychology; PSYC 402, Statistics in Psychology; and PSYC 502, Research Methods in Psychology

B. Four 500-level breadth courses, as follows:

Group I: Two courses:

PSYC 511, Sensation and Perception; PSYC 512, Psychology of Primates; PSYC 513, Cognitive Psychology; PSYC 521, Behavior Analysis; PSYC 522, Behaviorism; PSYC 531, Psychobiology

Group II: Two courses:

PSYC 552, Social Psychology; PSYC 553, Personality; PSYC 561, Abnormal Behavior; PSYC 571, Pioneers of Psychology; PSYC 581, Child Development; PSYC 582, Adult Development and Aging

Note: PSYC 522, Behaviorism, may not be used for transfer credit to Durham.

C. Four 700-level depth courses, as follows:

Group I: Two Courses:

PSYC 702, Advanced Statistics and Research Methodology; PSYC 705, Tests and Measurement; PSYC 710, Visual Perception; PSYC 712, Psychology of Language; PSYC 713, Psychology of Consciousness; PSYC 720, Animal Cognition; PSYC 722, Behaviorism, Culture, and Contemporary Society; PSYC 731, Brain and Behavior; PSYC 733, Drugs and Behavior; PSYC 735, Neurobiology of Mood Disorders; PSYC 737, Behavioral Medicine; PSYC 741, Advanced Topics
Group II: Two Courses:

PSYC 702, Advanced Statistics and Research Methodology; PSYC 705, Tests and Measurement; PSYC 755, Psychology and Law; PSYC 756, Psychology of Crime and Justice; PSYC 758, Health Psychology; PSYC 762, Counseling; PSYC 763, Community Psychology; PSYC 765, Dysfunctional Families and Therapy; PSYC 771, Psychology in 20th Century Thought and Society; PSYC 780, Prenatal Development and Infancy; PSYC 783, Cognitive Development; PSYC 785, Social Development; PSYC 791, Advanced Topics: Adult Development; PSYC 793, Externship

Note: PSYC 702, Advanced Statistics and Research Methodology, and PSYC 705, Tests and Measurement, may be substituted for a group I or group II course, but they may not both be used to fill the same group.

D. Capstone Requirement:

PSYC 793, Internship, or PSYC 795, Independent Study with UNHM URC presentation or capstone seminar. You may also use any 700-level course as a capstone experience if the professor agrees to let you do so. You will be required to do extra class work or an extra assignment (worked out in advance with the professor) to receive capstone credit.

The Durham psychology major has slightly different requirements. Students who plan to transfer to Durham should consult with their adviser.

For more information about the psychology program, contact Alison Paglia, program coordinator, (603) 641-4103. Or contact the UNH Manchester Office of Admissions at (603) 641-4150, or unhm.admissions@unh.edu.
Professor: Thaddeus M. Piotrowski
Assistant Professor: Nicole S. Fox

Spanish (SPAN) ▼
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Lecturer: Derek Hubbard

Theatre & Dance (THDA) ▼
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UNHM Independent Study (UMIS) ▼
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UNHM Misc. Non-Credit (UMNA) ▼
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UNHM Special Topics (UMST) ▼
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Women's Studies (WS) ▼
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Zoology (ZOOL)

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Assistant Professor: Sandra M. Rehan