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Accounting (ACFI)

www.unh.edu/acfi/

Professors: Ahmad Etebari, Fred R. Kaen
Associate Professors: Stephen J. Ciccone, Afshad J. Irani, Catherine A. Plante
Assistant Professors: Brian J. Bolton, William C. Johnson, Le Xu

Degree Offered: M.S.

The Whittemore School of Business and Economics offers a master of science in accounting degree program. This program has been created in response to a call for a basic change in accounting education issued by the American Institute of Certified Public Accountants (AICPA), the national association of professional accountants, that the CPA designation will need a minimum of 150 hours of education.

In addition to AICPA’s call, the American Association of Governmental Accountants and the Institute of Management Accountants have also established 150 hours of collegiate study as a desirable prerequisite for entry into their disciplines. To date, 48 state and territory legislatures have formally addressed the issue of post baccalaureate accounting education as a prerequisite for the CPA exam and as a requirement for certification and licensing.

The master of science in accounting degree program is designed to address these concerns within the parameters of the Whittemore School’s educational philosophy. This program emphasizes analytical communication skills, while enhancing the basic core of technical accounting knowledge. It mandates 30 hours of postgraduate study. Students awarded a master of science of accounting degree will be competitively equipped to enter the job market in the accounting profession.

Admission Requirements

The primary admission period for the program is the fall. Admission requirements include a personal history that demonstrates high academic achievement, as well as the applicant’s potential and desire for graduate study in accounting. Applicants are required to submit copies of prior academic records, current GMAT scores, three references, and a complete Graduate School application. A baccalaureate degree program must be completed prior to beginning the M.S. program. Since the Whittemore School is accredited by the American Assembly of Collegiate Schools of Business, candidates meet the requirements set down by this organization.

Admission to the program is highly selective and limited, so it is in the applicant’s best interest to apply early.

Degree Requirements

Upon admission to the program, applicants are required to complete 10 courses detailed in the following program outline. All admitted candidates are expected to have completed a series of prerequisite courses. If an applicant has not completed all the prerequisite courses, the admissions committee may offer provisional admission and require that the applicant take the prerequisite courses prior to moving into full degree candidacy.

Prerequisites

Intermediate Financial Planning I (ACFI 621)
Intermediate Financial Planning II (ACFI 622)
Business Law I (MGT 647)
Advanced Managerial Accounting Concepts and Applications (ACFI 723)
Auditing (ACFI 724)
Introduction to Federal Income Taxation (ACFI 726)

Fall Semester

Corporate Taxation (ACFI 820)
Topics in Advanced Accounting (ACFI 844)
Accounting Theory and Research (ACFI 850)
Government and Non-Profit Accounting (ACFI 895)
Ethics & Professional Practice (ACFI 897)

Spring Semester

Accounting Information Systems (ACFI 890)
Topics in Advanced Auditing (ACFI 830)

Elective: Business Law II (ADMN 898)
Elective:

Courses

ACFI 820 Corporate Taxation 3 cr.
ACFI 830 Advanced Auditing 3 cr.
ACFI 844 Topics in Advanced Accounting 3 cr.
ACFI 848 Law: Use and Application in Business 3 cr.
ACFI 850 Accounting Theory and Research 3 cr.
ACFI 890 Accounting Information Systems 3 cr.
ACFI 895 Governmental and Non-Profit Accounting 3 cr.
ACFI 897 Ethics and Professional Practices 3 cr.
ACFI 898 Master’s Project 3 cr.

Animal and Nutritional Science (ANSC)

www.anascandnur.unh.edu/


Affiliate Professors: Ronald E. Rompalla, Martin Stokes

Associate Professors: Patricia D. Bedker, Dennis J. Bobilya, Elizabeth P. Boulton, Peter S. Erickson, Colette H. Janson-Sand, David H. Townson

Affiliate Associate Professors: John A. Ryan, Arthur F. Stucch, Mark Winndt

Affiliate Assistant Professors: Donald Collins, Bo Rueda, Glenn T. Shwaery, Nathan L. Smith, James Sulikowski

Clinical Professors: Joseph J. Moore, Roger E. Wells

Clinical Assistant Professors: Joanne D. Burke, Ruth A. Reilly, Alice D. Roudabush, Elise R. Sullivan

Degrees Offered: M.S., Ph.D.

The Department of Animal and Nutritional Sciences offers graduate programs that may lead to the M.S. degree in animal sciences, M.S. degree in nutritional sciences, or the Ph.D. degree in animal and nutritional sciences. Areas of research specialization include human nutrition, mammalian physiology and pathology, nutritional biochemistry and metabolism, immunology and genetics, cellular biology and metabolism, reproduction and endocrinology. Research activities utilize human, animal, and cell culture systems to investigate nutrient metabolism and a molecular-level understanding of life processes and diseases.
Admission Requirements

Students applying for the M.S. or Ph.D. program will be expected to present recent (within five years) general Graduate Record Examination (GRE) scores and possess a background in basic sciences appropriate for advanced study in the proposed area of specialization (for example, courses in biology, chemistry, organic chemistry, biochemistry, and physics). Although not required for candidacy in the Ph.D. program, an M.S. degree is suggested for most students. The student’s committee may require certain undergraduate courses as part of the graduate program if additional competencies would be beneficial to the student. Students interested in preparing themselves for admittance to a dietetic internship in advance of applying should contact Dr. Ruth Reilly in advance of applying (862-2164; ruth.reilly@unh.edu) in order to determine their best course of action.

Degree Requirements

M.S. in Animal Sciences

The M.S. degree in animal sciences trains students to gain advanced knowledge and develop research expertise in such areas as biotechnology, cell biology, nutrition, physiology, reproduction, and management of animals. It prepares students for future careers in technical consulting, education, and research in academic, industrial, and government institutions. The program of study must include a minimum of 30 graduate credits and completion of a Master’s Thesis based on a research project. Six credits of thesis research (ANSC 899) are required. No more than 4 credits of investigations (ANSC 995) can apply. Each candidate must present at least two seminars (exclusive of the thesis defense) and must serve as a teaching assistant for at least one semester. A thesis committee will be appointed early in the program and consist of at least three members of the graduate faculty; one of these will be the primary mentor. Students will design a program of study in close consultation with their thesis committee, including their academic courses and scientific research project. Candidates will be required to pass an oral examination based on graduate courses and completed thesis.

M.S. in Nutritional Sciences—Nonthesis Option

This option emphasizes coursework in the nutritional sciences that will provide students with exposure to theoretical aspects of research. Students who anticipate a professional career that emphasizes applied aspects of nutrition, rather than basic biological aspects of nutritional sciences, are most appropriate for this option. This path is also preferred by working professionals who are seeking advanced training in nutrition leading to an accredited degree, but who don’t have the opportunity to devote a significant amount of time to a comprehensive research project that would be required to produce a thesis.

Students in this program will complete a minimum of 39 credits. Upon admittance, the student will be assigned a faculty adviser. Up to 8 credits of Dietetic Internship may apply. All master’s students are required to present two formal seminars during their program.

M.S. in Nutritional Sciences-Thesis Option

With this option, students must become actively engaged in a research project related to the nutritional sciences and gain a comprehensive understanding of nutritional science through coursework. The option emphasizes active participation in original hypothesis-driven research of publishable quality. This option is for students who anticipate a professional career involving research or discovery, with a strong background in the basic biology and chemistry of nutrition. This path may be most appropriate for students who expect to pursue further advanced study, i.e., additional graduate studies or professional school, after graduation.

The program of study must include a minimum of 30 graduate credits and completion of a Master’s Thesis based on a research project. Six credits of thesis research (NUTR 899) are required. No more than 4 credits of investigations (NUTR 995) can apply. Each candidate must present at least two seminars (exclusive of the thesis defense) and must serve as a teaching assistant for at least one semester. A thesis committee will be appointed early in the program and consist of at least three members of the graduate faculty; one of these will be the primary mentor. Students will design a program of study in close consultation with their thesis committee, including their academic courses and scientific research project. Candidates will be required to pass an oral examination based on graduate courses and completed thesis.

Ph.D. in Animal and Nutritional Sciences

The Ph.D. in animal and nutritional sciences trains students to gain advanced knowledge and develop research expertise in such areas as the cellular and molecular biology of various nutrients, nutritional physiology and biochemistry, vascular biology and cardiovascular disease, immunology and genetics, obesity and diabetes, dairy nutrition, human nutrition, reproductive physiology and endocrinology. It prepares students for future careers in technical consulting, education, and research in academic, industrial, and government institutions. Students with appropriate academic training at the baccalaureate or master’s level will design a program of study in conjunction with a faculty guidance committee. The student will advance to candidacy after successful completion of all relevant graduate courses and passing a qualifying examination conducted by the guidance committee, which will contain oral and/or written components at the discretion of the committee members. The guidance committee for doctoral students will consist of a minimum of five members, three of whom must be from within the Department of Animal and Nutritional Sciences and at least one member must be from outside the department. After the student’s advancement to candidacy for the Ph.D. degree, a doctoral committee will be appointed to supervise and approve the dissertation. The doctoral dissertation committee will consist of a minimum of five members; a minimum of two members must be from within the Department of Animal and Nutritional Sciences and at least one member must be from outside the department. The dissertation must be based on original hypothesis-driven research of publishable quality. A public presentation of the dissertation research findings will be followed by a final examination, which will be primarily an oral defense of the dissertation. The candidate will be required to serve as a teaching assistant for a minimum of two semesters or to teach a course for one semester. Aptitude in scientific communication will be developed by presentation of one seminar during each year of enrollment, not including the dissertation defense.

Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANSC 801</td>
<td>Physiology of Reproduction</td>
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<tr>
<td>ANSC 802</td>
<td>Endocrinology</td>
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<tr>
<td>ANSC 804</td>
<td>Principles of Pathobiology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ANSC 805</td>
<td>Veterinary Microbiology and Zoonotic Disease</td>
<td>2 cr.</td>
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<td>ANSC 806</td>
<td>Human Genetics</td>
<td>3 cr.</td>
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<td>ANSC 807</td>
<td>Veterinary Histologic Techniques</td>
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<td>ANSC 808</td>
<td>Ruminology</td>
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<td>ANSC 810</td>
<td>Dairy Nutrition</td>
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<td>ANSC 814</td>
<td>Research Methods in Endocrinology</td>
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<td>ANSC 815</td>
<td>Physiology of Lactation</td>
<td>4 cr.</td>
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<td>ANSC 818</td>
<td>Mammalian Physiology</td>
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<tr>
<td>ANSC 824</td>
<td>Reproductive Management and Artificial Insemination</td>
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<tr>
<td>ANSC 827</td>
<td>Advanced Dairy Management I</td>
<td>4 cr.</td>
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</table>
Debates Offered: M.S., Ph.D.

The Department of Biochemistry and Molecular Biology offers the master of science and the doctor of philosophy degrees in biochemistry. The department offers research opportunities in genomics, proteomics, developmental genetics, eukaryotic gene regulation, molecular evolution, molecular genetics, plant biochemistry, physical biochemistry, oncogene function, signal transduction, structure and function of macromolecules, structural glycochemistry, transposable elements, molecular endocrinology, biochemical endocrinology and neuroendocrinology, and molecular population genetics. Opportunities also exist for interdisciplinary research in marine biochemistry, biochemical nutrition, and cell biology in adjunct facilities on campus.

Admission Requirements

An applicant is expected to have completed basic courses in chemistry, biological sciences, mathematics, and physics. Otherwise well-qualified applicants will be permitted to correct deficiencies in undergraduate education by enrollment in the appropriate courses or by independent study during the first year. Applicants must submit current scores (within five years) from the general test of the GRE. Applicants from non-English-speaking countries must also provide a test of the GRE. Applicants from non-English-speaking countries must also provide TOEFL (Test of English as a Foreign Language) scores.

M.S. Degree Requirements

A student will meet the Graduate School’s requirements for the master’s degree (minimum 30 credits) and will be expected to develop a thesis (6–10 cr.) on a basic research problem or to prepare a report or publication based on original research in biochemistry or molecular biology. Demonstration of proficiency in organic chemistry, physical chemistry, and biochemistry will be assessed in the first year. A guidance committee meeting will be held soon after a thesis adviser is identified. In the second year, students will be required to write and defend a research proposal in an area unrelated to their thesis project. Upon completion of graduate courses recommended by a guidance committee, a doctoral student will be required to pass an oral qualifying examination conducted by the guidance committee. The successful completion of these requirements and advancement to candidacy for the Ph.D. degree must occur at least six months prior to the final oral defense of the Ph.D. dissertation administered by the student’s doctoral committee.

Teaching Requirement

Teaching assignments in the laboratory, in lectures, or in an individual instruction format are an essential part of the graduate academic programs of the department and are designed to give graduate students practical teaching experience. Normally, one year of part-time teaching will be required of each student.

Courses

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<td>BCHM 802</td>
<td>Endocrinology</td>
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<tr>
<td>BCHM 850</td>
<td>Physical Biochemistry</td>
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<td>BCHM 851</td>
<td>Principles of Biochemistry I</td>
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<td>Principles of Biochemistry II</td>
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<td>BCHM 854</td>
<td>Laboratory in Biochemistry and Molecular Biology</td>
<td>5 cr.</td>
</tr>
<tr>
<td>BCHM 855</td>
<td>Laboratory in Biochemistry and Molecular Biology</td>
<td>5 cr.</td>
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Business Administration
(ADMN)

www.mba.unh.edu/

Professors: Ross J. Gittell, Raymond J. Goodman, Charles W. Gross, Daniel E. Innis, Allen M. Kaufman, Michael J. Merenda, Barry Shore, Evangelos Simos, Jeffrey E. Sohl, A.R. Venkatachalam


Assistant Professors: Brian J. Bolton, Kholkele L. Gwebu, William C. Johnson, Jun Li, Jeong Eun Park, Anthony T. Pescosolido, Le Xu, Honggeng Zhou

Degree Offered: M.B.A.
The Whittemore School curriculum for the one-year intensive full-time program begins with online foundation work in the summer. Students formally begin the program at the end of August with a weeklong orientation and continue together through the academic year. The 48-credit program comprises ten required core courses, electives, and an international residency; the course culminates with a corporate consulting project. In addition, students are required to participate in the M.B.A. Experience held throughout the year. The M.B.A. Experience offers seminars on topics such as presentation skills, team dynamics, and career development to help students. Electives can be taken in such areas as marketing, finance, entrepreneurship, supply chain management, leadership, and general management. Students with less than three years of professional work experience complete an internship as one of their electives.

Part-time M.B.A. Degree Requirements

Part-time, evening students typically begin the program in the fall term, although a January admission with a reduced course load may be possible. Offered on both the Durham and Manchester campuses, the degree is comprised of ten required core courses and six electives. The schedule is designed to permit students to complete the degree in two years although a reduced pace is also possible. Specializations are available in marketing and supply chain management, entrepreneurial venture creation, financial management and general management.

Course Waivers

Students in the part- or full-time M.B.A. program may petition to waive up to three core courses. A waiver is typically granted if the student possesses a major (five to six courses) in a core area earned within five years of matriculation, e.g., a student with a major in marketing may petition to waive the core course in marketing.

Part-time M.B.A. Specializations

Marketing and Supply Chain Management

This specialization covers such topics as market research and analysis and new product and services development. A cross-functional approach is utilized to teach students how to manage fundamental value processes involved in the production and marketing of goods and services. The specialization is unique in its integrative emphasis on meeting customer and market needs in an effective and efficient manner given technological and operational constraints.

Entrepreneurial Venture Creation

This specialization is designed to promote an environment that produces an entrepreneurial culture and promotes learning through experiential, real-world, real-time learning. It provides a basis to learn about the high-growth entrepreneurial venture process of value creation through an application of technology in a dynamic environment and is appropriate for students who intend to start a high-growth business, work for a new venture, become involved in a new venture creation within an established organization, or are interested in the field of venture capital.

Financial Management

This specialization is designed for the student who wants to take a coherent set of finance courses offered within the general framework of the M.B.A. The study of finance provides students with opportunities in a wide variety of disciplines including banking, insurance, corporate finance, investment management, and risk management.

Executive M.B.A. Degree Requirements

The curriculum for practicing managers comprises 17 courses, which include 12 core courses as well as a required Integrative Management Seminar taken each term. The curriculum is tailored and scheduled to meet the needs of individuals working full time at managerial-level jobs. The program emphasizes general management and provides for broad-based exposure to the functional areas of finance and accounting.
human resources management, marketing, operations, and strategic management. In the second year, all students take a year-long track in International Business and choose between a second track in either Entrepreneurial Venture Creation or Managing Technology and Innovation. The program is offered in Durham at the New England Conference Center. The 19-month program begins in early September with a week in residence. Thereafter, classes are held twice each month in all-day Friday and Saturday sessions. The program concludes with a required 10-day international residence taught as part of the International Management Course.

### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<td>ADMN 823</td>
<td>Topics in Finance</td>
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<td>ADMN 826</td>
<td>Decision Support Systems</td>
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<td>ADMN 829</td>
<td>Financial Policy</td>
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<td>ADMN 830</td>
<td>Investments Analysis</td>
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<td>ADMN 832</td>
<td>Exploration in Entrepreneurial Management</td>
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<td>ADMN 834</td>
<td>Private Equity/Venture Capital</td>
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<td>ADMN 836</td>
<td>Financial Statement Analysis</td>
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<td>ADMN 837</td>
<td>Financial Accounting Theory and Applications</td>
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<td>ADMN 840</td>
<td>International Business</td>
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<td>ADMN 841</td>
<td>International Management</td>
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<td>ADMN 846</td>
<td>International Financial Management</td>
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<td>ADMN 847</td>
<td>Business Taxation</td>
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<td>ADMN 848</td>
<td>Law: Use and Application in Business</td>
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<td>ADMN 852</td>
<td>Marketing Research</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ADMN 855</td>
<td>Marketing of Services</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ADMN 859</td>
<td>Managing Technological Innovations</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ADMN 863</td>
<td>International Marketing</td>
<td>3 cr.</td>
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<td>ADMN 865</td>
<td>Total Quality Management</td>
<td>3 cr.</td>
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<tr>
<td>ADMN 898</td>
<td>Topics</td>
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<td>ADMN 900</td>
<td>Integrative Management Seminar</td>
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<td>ADMN 902</td>
<td>MBA Internship</td>
<td>3 cr.</td>
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<td>ADMN 905</td>
<td>Integrated Team Projects I</td>
<td>3 cr.</td>
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<td>ADMN 906</td>
<td>Integrated Team Projects II</td>
<td>3 cr.</td>
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<tr>
<td>ADMN 912</td>
<td>Organizational Behavior</td>
<td>3 cr.</td>
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<td>ADMN 919</td>
<td>Management Accounting</td>
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<td>ADMN 920</td>
<td>Financial Accounting</td>
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<td>ADMN 921</td>
<td>Managerial Accounting</td>
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<td>ADMN 926</td>
<td>Information Systems and Enterprise Integration</td>
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<td>ADMN 930</td>
<td>Financial Management</td>
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<td>ADMN 940</td>
<td>Technology and Operations Management</td>
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<td>ADMN 950</td>
<td>Managerial Statistics</td>
<td>3 cr.</td>
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<td>ADMN 952</td>
<td>Organizations, Leadership, and Environments</td>
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<td>ADMN 955</td>
<td>Quantitative Business Analysis</td>
<td>3 cr.</td>
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<td>ADMN 956</td>
<td>Managerial Decision Making</td>
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<td>ADMN 960</td>
<td>Marketing Management</td>
<td>3 cr.</td>
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<td>ADMN 970</td>
<td>Economics</td>
<td>3 cr.</td>
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<td>ADMN 982</td>
<td>Strategic Management: Decision Making</td>
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<td>ADMN 985</td>
<td>Organizational Structure and Environments</td>
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<tr>
<td>ADMN 992</td>
<td>Special Projects and Independent Study</td>
<td>1 to 6 cr.</td>
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</tbody>
</table>

### Chemical Engineering (CHE)

**Website**: [www.chemengunh.com/](http://www.chemengunh.com/)


**Assistant Professor**: Nivedita R. Gupta

### Degrees Offered: M.S., Ph.D.

The Department of Chemical Engineering offers the master of science degree and chemical engineering Ph.D. option in the Engineering Ph.D. Program.

### Admission Requirements

An applicant is expected to have completed a baccalaureate degree or master's degree in chemical engineering. Students with good academic records but with deficiencies in certain areas may be admitted on condition that they complete specified courses without credit to make up for their deficiencies. Applicants must submit current scores (within five years) from the general test of the GRE.

### M.S. Degree Requirements

A minimum of 30 credits, which must include CHE 913, 915, 916, 923, and 932, is required for the master of science in chemical engineering. The core courses requirement can be waived only in special cases with permission from the department faculty. A thesis (6 credits) is required, unless the candidate is specifically exempted by the faculty because of previous research experience. These candidates must still fulfill the 30 credit minimum requirement.

### Ph.D. Option Requirements

Students admitted to the Ph.D. program normally hold master's degrees in chemical engineering. The program generally requires three years of study beyond the master's degree.

A minimum of 50 credits or 15 courses (whichever comes first) must be completed beyond the bachelor's degree. At least eight of the courses must be at the 900 level. Students who enter the Ph.D. program must pass a written qualifying examination, which consists of five papers on Heat Transfer, Mass Transfer, Fluid Mechanics, Thermodynamics, and Kinetics.

The qualifying examination is administered after the completion of coursework requirements. The student must prepare a research proposal, which is different from their Ph.D. dissertation research, and defend the proposal in an oral examination before a committee.

There is no language requirement. A dissertation based on original research is required. Upon completion of the dissertation, doctoral candidates will take the final oral examination.

Permission of the instructor and consent of the student’s advisor are required for enrollment in all chemical engineering courses.

### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHE 805</td>
<td>Natural and Synthetic Fossil Fuels</td>
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<tr>
<td>CHE 809</td>
<td>Fundamentals of Air Pollution and Its Control</td>
<td>4 cr.</td>
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<td>CHE 812</td>
<td>Introduction to Nuclear Engineering</td>
<td>4 cr.</td>
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<td>CHE 852</td>
<td>Process Dynamics and Control</td>
<td>4 cr.</td>
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<td>CHE 861</td>
<td>Biochemical Engineering</td>
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<td>CHE 862</td>
<td>Biomedical Engineering</td>
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<tr>
<td>CHE 899</td>
<td>Master's Thesis</td>
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<td>CHE 913</td>
<td>Advanced Fluid Mechanics</td>
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<td>CHE 915</td>
<td>Heat Transfer</td>
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<td>CHE 916</td>
<td>Diffusive Mass Transfer</td>
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<td>CHE 923</td>
<td>Advanced Chemical Engineering Thermodynamics</td>
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<td>CHE 932</td>
<td>Advanced Chemical Engineering Kinetics</td>
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<td>CHE 996</td>
<td>Graduate Independent Study</td>
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<tr>
<td>CHE 999</td>
<td>Doctoral Research</td>
<td>0 cr.</td>
</tr>
</tbody>
</table>

### Chemistry (CHEM)

**Website**: [www.unh.edu/chemistry](http://www.unh.edu/chemistry)


**Associate Professors**: Steven B. Levery, Roy Paul Planalp

**Assistant Professor**: Margaret E. Greenslade

### Degrees Offered: M.S., M.S.T., Ph.D.

The Department of Chemistry offers programs leading to the doctor of philosophy and the master of science degrees in the areas of organic, inorganic, physical, and analytical chemistry. The department also offers an option in chemistry education in the Ph.D. and the master of science for teachers.

### Admission Requirements

Admission to the master of science and the doctor of philosophy degrees is based upon a strong undergraduate record and requires satisfactory work in the usual undergraduate courses in inorganic chemistry, analytical chemistry, organic chemistry, and physical chemistry, as well as the normal supporting courses in mathematics and physics. Entering graduate students (except for those desir-
ing the M.S.T. degree) are expected to take proficiency examinations in chemistry to ensure they begin their graduate work at the appropriate level. These examinations will be offered at the beginning of each semester on dates announced in the departmental graduate calendar. Applicants for the master of science for teachers should consult the General Regulations of the Graduate School for special admission requirements.

Degree Requirements

The master’s degree requires completion of coursework appropriate to the student’s field of study and the completion of a research problem presented in the form of a thesis (6–10 cr.). A minimum of 30 credit hours is required.

Master of Science for Teachers Degree Requirements

This degree requires 30 credit hours in graduate-level courses approved by the graduate coordinator. Persons interested in this degree should confer with the department’s graduate program coordinator.

Ph.D. Degree Requirements

This degree requires completion of coursework appropriate to the student’s field of study and the completion of a research problem presented in the form of a dissertation. Students will also demonstrate to the guidance committee that they have a broad basic knowledge of the field of chemistry: by completing certain fundamental graduate courses; by means of a series of examinations in the major field; and by presenting and defending an original research proposal before the end of the third year. The culmination of the program will result in a public thesis defense and acceptance of the dissertation.

The Ph.D. degree program now also includes an option in education. Please contact the department for more information.

Preparing Future Faculty (PFF)

Students who desire a career in college-level teaching follow their regular degree program in addition to PFF requirements.

Teaching Requirement

All graduate students who are doctor of philosophy or master of science candidates will obtain some teaching experience during their tenure.

Courses

- CHEM 800 Chemistry Teaching Seminar 1 cr.
- CHEM 808 Spectroscopic Investigations of Organic Molecules 3 cr.
- CHEM 855 Advanced Organic Chemistry 3 cr.
- CHEM 862 Instrumental Methods of Chemical Analysis 3 cr.
- CHEM 874 Inorganic Chemistry 3 cr.
- CHEM 876 Physical Chemistry III 3 cr.
- CHEM 895 Special Topics 2 to 4 cr.
- CHEM 899 Thesis/Problems 6 to 10 cr.
- CHEM 901 Theoretical Organic Chemistry I 4 cr.
- CHEM 903 Advanced Inorganic Chemistry I 3 cr.
- CHEM 904 Advanced Inorganic Chemistry II 3 cr.
- CHEM 905 Advanced Physical Chemistry I 3 cr.
- CHEM 911 Synthetic Organic Chemistry I 3 cr.
- CHEM 917 Special Topics in Organic Chemistry 2 to 4 cr.
- CHEM 918 Special Topics in Organic Chemistry 2 to 4 cr.
- CHEM 926 Physical Chemistry of Solutions 3 cr.
- CHEM 927 Molecular Reaction Dynamics 3 cr.
- CHEM 930 Advanced Optical Methods 3 cr.
- CHEM 933 Chemical Separations 3 cr.
- CHEM 934 Chemical Equilibria 3 cr.
- CHEM 935 Electrical Methods of Analysis 3 cr.
- CHEM 936 Modern Practice of Mass Spectrometry and Nuclear Magnetic Resonance Spectroscopy 3 cr.
- CHEM 947 Inorganic Biochemistry 3 cr.
- CHEM 971 Teaching and Learning Chemistry 3 to 4 cr.
- CHEM 995 Colloquium 1 to 4 cr.
- CHEM 996 Colloquium 1 to 4 cr.
- CHEM 997 Seminar 1 cr.
- CHEM 998 Seminar 1 cr.
- CHEM 999 Doctoral Research 0 cr.

Degrees Offered: M.S., Ph.D.

The Department of Civil Engineering offers the master’s degree in civil engineering with the following areas of specialization: structural, materials, geotechnical, water resources, and environmental engineering. Interested applicants are encouraged to write to the graduate program coordinator for specific information on current research in the department. An engineering Ph.D. program with an option in civil engineering is also available.

Admission Requirements

An applicant must have completed a baccalaureate degree in engineering, mathematics, or science at an accredited college or university. If coursework or laboratory experience is deficient, an admitted student will be required to fulfill, without graduate credit, all undergraduate prerequisites for graduate courses. In some cases, the student’s advisor may require additional undergraduate courses in order to achieve a well-integrated program of study. Applicants must submit current scores (within five years) from the general test of the GRE.

M.S. Degree Requirements

A student in the master’s program may elect either a thesis (minimum of 25 course credits and 6 thesis credits) or nonthesis (minimum of 28 course credits and a 3-credit project) option. Up to two senior-level civil engineering courses or 8 credits may be counted toward the master’s degree under the dual registration program provided the student has been admitted to the Graduate School prior to the course offerings.

Thesis Option: A formal oral presentation/thesis defense is required. All thesis option students are eligible for teaching or research assistantships and are required to register for Civil Engineering Seminar (CIE 900) for one semester. For graduation, a B average and a successful thesis defense must be achieved.

Non-Thesis Option: The nonthesis option is designed to facilitate completion of a B.S./M.S. civil engineering program within five years. A student electing the nonthesis option is required to prepare a project paper and give a final oral presentation/project defense. Nonthesis option students are not eligible for an assistantship. For graduation, a B average and a successful project defense must be achieved.

Ph.D. Option Requirements

Following admission into the program, a guidance committee is appointed for the
student by the dean of the Graduate School upon recommendation of the graduate coordinator. This committee assists in outlining the student’s course of study and may specify individual coursework requirements. Within 18 months after admission, the student must pass both written and oral qualifying exams. The student must successfully complete at least 24 course credit hours beyond a master’s degree or 49 course credit hours beyond a bachelor’s degree.

Minor Requirements: An identifiable group of courses (9 credits minimum) in an area outside of the civil engineering department and approved by the guidance committee must be successfully completed to provide a minor to the Ph.D. degree. A minor may be satisfied by courses taken toward a master’s degree other than civil engineering, but the credits will not be applied against the 24 credit-hour minimum.

Language or Research Tool: Students are required to gain or prove proficiency in a language or research tool in an appropriate area, such as mathematics, statistics, or data analysis; laboratory analysis or procedures; instrumentation; computer programming; or a foreign language suitable to the area of concentration. The proposed language or research tool must be approved by the guidance committee and may be achieved through the successful completion of coursework, an examination, or both.

Teaching Experience: A minimum of one semester as a teaching assistant or comparable experience is required. The guidance committee will evaluate whether a student’s past teaching assistantship satisfies this requirement.

Doctoral Candidates: Upon successful completion of the Ph.D. qualifying examinations and the language or research tool requirement, a doctoral student is advanced to the status of doctoral candidate. When a student achieves candidacy, a doctoral committee is established. The doctoral committee directs research, conducts a semi-annual review of the student’s progress, supervises and approves the doctoral dissertation, and administers the final examination (also known as the dissertation defense).

Upon completion of the dissertation, and with the approval of the doctoral committee, the student schedules an oral defense in accordance with the requirements of the Graduate School.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 821</td>
<td>Pavement Design</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 822</td>
<td>Properties and Production of Concrete</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 823</td>
<td>Bituminous Materials and Mixtures</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 840</td>
<td>Public Health Engineering</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 841</td>
<td>Open Channel Engineering</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 842</td>
<td>Solid and Hazardous Waste Engineering</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 845</td>
<td>Engineering Hydrology</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 847</td>
<td>Introduction to Marine Pollution and Control</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 848</td>
<td>Solid and Hazardous Waste Design</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 849</td>
<td>Water Chemistry</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 850</td>
<td>Echohydrology</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 854</td>
<td>Transportation Engineering and Planning</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 855</td>
<td>Design of Pressurized Water Transmission Systems</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 856</td>
<td>Environmental Engineering Microbiology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 857</td>
<td>Coastal Engineering and Processes</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 858</td>
<td>Stormwater Management Designs</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 859</td>
<td>Stream Restoration</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 860</td>
<td>Foundation Design I</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 861</td>
<td>Foundation Design II</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 862</td>
<td>Introduction to Geotechnical Earthquake Engineering</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 863</td>
<td>Geological Engineering</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 866</td>
<td>Geo-Environmental Engineering</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 874</td>
<td>Reinforced Concrete Design</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 882</td>
<td>Timber Design</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 883</td>
<td>Matrix Structural Analysis and Modeling</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 885</td>
<td>Introduction to Structural Vibrations</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 886</td>
<td>Introduction to Finite Element Analysis</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 887</td>
<td>Dynamics of Structures</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 891</td>
<td>Prestressed Concrete</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 892</td>
<td>LRFD Bridge Design</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 893</td>
<td>Structural Design in Steel</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 895</td>
<td>Independent Study</td>
<td>1 to 4 cr</td>
</tr>
<tr>
<td>CIE 896</td>
<td>Special Topics</td>
<td>1 to 4 cr</td>
</tr>
<tr>
<td>CIE 897</td>
<td>Special Topics in Environmental Engineering</td>
<td>1 to 4 cr</td>
</tr>
<tr>
<td>CIE 899</td>
<td>Master’s Thesis</td>
<td>6 cr.</td>
</tr>
<tr>
<td>CIE 900</td>
<td>Seminar</td>
<td>1 cr.</td>
</tr>
<tr>
<td>CIE 940</td>
<td>Hydrologic Monitoring</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 942</td>
<td>River Mechanics</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 943</td>
<td>Advanced Hazardous Waste and Environmental Sampling and Analysis</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 944</td>
<td>Advanced Physicochemical Treatment Design</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 945</td>
<td>Advanced Groundwater Topics</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 946</td>
<td>Advanced Bioenvironmental Engineering Design</td>
<td>4 cr.</td>
</tr>
<tr>
<td>CIE 960</td>
<td>Advanced Soil Mechanics</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 961</td>
<td>In Situ Geotechnical Testing</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CIE 995</td>
<td>Problems</td>
<td>2 to 4 cr</td>
</tr>
<tr>
<td>CIE 999</td>
<td>Doctoral Research</td>
<td>0 cr.</td>
</tr>
</tbody>
</table>

College Teaching (GRAD)
www.gradschool.unh.edu/pff

Affiliate Professor: Daniel Reagan

Degrees Offered: M.S.T., Cognate

The college teaching program prepares graduate students for academic teaching positions. Students must be ready to teach in their field or discipline upon completion of program requirements. The transfer and relationship between theory and research and instructional practice is emphasized in all courses.

This is a University-wide program coordinated by the Office of the Dean of the Graduate School and involving the Center for Teaching Excellence and faculty members from many fields and disciplines. Two academic programs are offered: the Cognate in College Teaching and the Master of Science for Teachers (M.S.T.).

Admission Requirements

Applicants to the cognate or M.S.T. programs must have completed one year in a doctoral program at UNH and have the support and recommendation of their doctoral program coordinator. The M.S.T. program is also available to faculty members and doctoral students from other universities. Students in master’s-only programs at UNH may be eligible to enroll in an M.S.T. program as a dual degree.

Degree Requirements

Cognate in College Teaching Requirements

This program requires the satisfactory completion of 12 academic credits and emphasizes the development of classroom teaching skills in a specific field or discipline. Students elect, with the permission of their graduate coordinator, to add the cognate to their graduate degree. The cognate will be awarded at the time of the award of the qualifying graduate degree. Requirements include 4 credits in the GRAD 950 series, including GRAD 950, Issues in College Teaching. Students also complete a minimum of 4 credits in field and disciplinary studies related to teaching in their specific area of graduate study. A list of approved graduate-level courses for field and disciplinary studies is available and includes courses in the GRAD 970 and 980 series. All stu-
students also must complete 4 credits in GRAD 990, College Teaching Praxis.

M.S.T. Degree Requirements

Building upon the basic foundation in college teaching, the M.S.T. program adds advanced studies in specific content related to teaching and learning from many fields, the evolving role and function of the professor in higher education and postsecondary academic institutions, and specific methods related to pedagogical improvement and research. Completion of the M.S.T. as a dual degree with the Ph.D. may lengthen the time usually needed to earn the doctoral degree. Under no circumstances will the M.S.T. be awarded to a doctoral student who fails to complete the doctoral degree.

Requirements include core requirements of 16 credits from the GRAD 950 and 960 series of courses. Required courses include GRAD 950, 961, and 965. Students also complete a minimum of 8 credits in field and disciplinary studies related to their specific area of graduate study. A list of approved courses for field and disciplinary studies is available and includes courses in the GRAD 970 and 980 series. All students also must complete 8 credits in GRAD 990, College Teaching Praxis.

Some graduate programs have requirements that complement the requirements of these University-wide future faculty programs. In these instances, formal articulation agreements insuring fully coordinated programs so that students are not required to duplicate requirements. Information on existing articulation agreements is available from the coordinator of this program or specific graduate program directors.

Permission to enroll in GRAD 990, Teaching Praxis, is dependent upon the student's readiness to be an effective instructor. Readiness is determined by the coordinator based upon the recommendation of the faculty. Permission to enroll in GRAD 990 is also based upon the satisfactory completion of prerequisite requirements and the ability to communicate effectively in a college classroom as an instructor. Students may be required to submit evidence to verify this ability to communicate effectively in a classroom as a prerequisite. Responsibilities as a teaching assistant are insufficient to demonstrate the competencies needed to complete GRAD 990, College Teaching Praxis.

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAD 800</td>
<td>Continuing Enrollment 0 cr.</td>
</tr>
<tr>
<td>GRAD 885</td>
<td>Graduate Foreign Exchange 1 to 9 cr.</td>
</tr>
<tr>
<td>GRAD 900</td>
<td>Master's Continuing Research 0 cr.</td>
</tr>
<tr>
<td>GRAD 930</td>
<td>Ethics in Research and Scholarship 2 or 3 cr.</td>
</tr>
<tr>
<td>GRAD 940</td>
<td>Foundations in College Teaching 2 cr.</td>
</tr>
</tbody>
</table>

Communication Sciences and Disorders (COMM)

www.shhs.unh.edu/csd

Professor: Stephen N. Calculator
Associate Professors: Steven P. Bornstein, Frederick C. Lewis, Penelope E. Webster
Affiliate Associate Professor: Mark R. Windt
Assistant Professor: Michael Fraas
Clinical Assistant Professors: Sheryl Gottwald, Rae M. Sonnenmeier

Degree Offered: M.S.

The graduate program integrates an array of academic and clinical experiences to prepare students for a variety of careers in speech-language pathology. The program offers a master of science degree program in communications sciences and disorders. Students can elect to self-design their program, choosing from an array of required and elective courses that best suit their career objectives. This is referred to as the “no option” concentration. Two additional options: language/literacy disabilities and early childhood are available to those students seeking particular expertise in one of these areas. Irrespective of which of the three options a student selects, the program of study will prepare them to treat the full range of communication disabilities across the life span.

Faculty and students are actively engaged in research activities. Their projects include examinations of the efficacy of language intervention for adults with aphasia, management of motor speech deficits, functional outcomes of augmentative and alternative communication, role of communication in fostering inclusive education, relationships between language and literacy, and ways of enhancing the process of clinical supervision.

Admission Requirements

The Department of Communications Sciences and Disorders offers a master of science degree. Students are prepared to practice in a variety of job settings within the field of speech-language pathology and to meet the academic and practicum requirements of the American Speech-Language-Hearing Association (ASHA) for the Certification of Clinical Competence in speech-language pathology. The program is accredited by the Council on Academic Accreditation of ASHA. Applicants for admission should possess a bachelor’s degree in communication sciences and disorders or its equivalent. The following courses, or their equivalents, are undergraduate prerequisites for the master’s program: COMM 521, Anatomy and Physiology of the Speech and Hearing Mechanism; COMM 522, Language Acquisition; COMM 524, Clinical Phonetics; COMM 704, Basic Audiology; COMM 705, Introduction to Auditory Perception and Aural Rehabilitation; COMM 777, Speech and Hearing Science; and KIN 706, Neurology. In addition, a course in statistics is required. Students are also required to have completed coursework in typical human development, and both biological and physical sciences in preparation for fulfillment of ASHA requirements. Applicants with degrees in related fields may be admitted to the Graduate School as provisional students, with the expectation that they will complete the above prerequisite prior to, or concurrently, with graduate courses. Acceptance to the communications sciences and disorders program is based primarily on grade-point average and GRE scores. Applicants must submit current scores (within five years) from the general test of the GRE. Generally, students must have earned a minimum grade-point average of 3.00 to be considered for admission. Letters of recommendation are considered, particularly for the awarding of scholarships, assistantships, and other sources of support.

M.S. Degree Requirements

Three options are offered: No option, option in language and literacy disabilities, and option in early childhood intervention (minimum 59 credits). The following core courses are required of all students: COMM 876 and 877, Ethics/Professional Issues in Speech Language Pathology I and II, 2 cr.; COMM
In addition to the core courses listed above, required courses for this option are:

COMM 900 Articulation and Phonological Disorders 3 cr.
COMM 901 Dysphagia 3 cr.
COMM 908 Language/Literacy Disorders 13 cr.
COMM 912 Language Disorders in Early Childhood 0-5 yr. 3 cr.
COMM 920 Seminar (Autism Spectrum Disorders) 3 cr.
EDUC 949 Supporting Families of Students with Special Needs 4 cr.

In addition, the student will also take five elective courses from the three groups below:

Students will take two of the following courses:
COMM 902 Stuttering 3 cr.
COMM 906 Voice Disorders 3 cr.
COMM 907 Advanced Seminar in Aural Rehabilitation 3 cr.
COMM 914 Augmentative/Alternative Communication 3 cr.

Students will take one of the following courses:
COMM 904 Aphasia 3 cr.
COMM 905 Motor Speech Disorders 3 cr.
COMM 913 Cognitive/Communication Disorders 3 cr.

Students will take two of the following courses:
COMM 909 Language/Literacy Disorders 3 cr.
EDUC 941 Diversity and Child Development 4 cr.
HHS 899 Neurodevelopmental and Related Disorders 1 to 8 cr.

Other courses within the department Courses outside of the department approved by adviser
Computer Science (CS)
www.cs.unh.edu

Professors: R. Daniel Bergeron, Pilar de la Torre, Philip J. Hatcher, Ted M. Sparr, Colin Ware
Associate Professors: Radim Bartos, Michel Charpentier, Robert D. Russell, Elizabeth Varki, James L. Weiner

Degrees Offered: M.S., Ph.D.

The computer science department offers both the Master of Science and the Doctor of Philosophy degrees. A major emphasis of our graduate program is the blending of theoretical and applied aspects of computer science. Students pursuing a specialization in computer science theory are required to develop a strong background in systems and are encouraged, whenever possible, to identify applications for theory. Similarly, students specializing in applied areas of computer science are required to base their work on strong theoretical foundations.

Admission Requirements

The computer science graduate program is geared toward students with a B.S. degree in computer science. Students with undergraduate degrees in other fields are invited to apply, but if accepted into the program, they will be required to satisfy courses equivalent to those listed below. If a student is only missing a small number of the prerequisites, it may be possible to be accepted into the program on the condition that the remaining prerequisites are completed at UNH. Applicants must submit current scores (within five years) from the general test of the GRE.

For students without a B.S. degree in computer science, the minimal formal coursework includes an introduction to computer science, object-oriented programming, data structures, operating systems, programming language concepts, and computer science theory.

These prerequisites can be satisfied at UNH by the following undergraduate courses:

- CS 415 Introduction to Computer Science I
- CS 416 Introduction to Computer Science II
- CS 515 Data Structures
- CS 516 Introduction to Software Design and Development
- CS 620 Operating System Fundamentals
- MATH 531 Mathematical Proof
- MATH 532 Discrete Mathematics

And, one of the following CS theory courses:

- CS 659 Introduction to the Theory of Computation
- CS 645 Introduction to Formal Specifications

Although the master’s program is normally a two-year program, someone admitted with just this minimal background should anticipate taking two-and-a-half to three years to complete the degree. Students without a B.S. or M.S. in computer science are not normally admitted directly into the Ph.D. program, but it is possible to transfer from the M.S. program to the Ph.D. program.

Degree Requirements

M.S. Degree Requirements

The M.S. program has three options: thesis, project, and exam.

M.S. Thesis Option

1. CS 900, Computer Science Seminar.
2. Eight CS graduate courses of at least 3 credits each.
   a. Two must be implementation intensive (see list below).
   b. Three courses must be chosen from three different breadth groups (see list below).
   c. At least two courses must be above 900.
3. Thesis (6 credits). The student must complete a thesis under the supervision of a thesis adviser and a thesis committee of at least three members.

M.S. Project Option

1. CS 900, Computer Science Seminar.
2. Ten CS graduate courses of at least 3 credits each.
   a. Two must be implementation intensive (see list below).
   b. Four courses must be chosen from four different breadth groups (see list below).
   c. At least three courses must be above 900; one of these must be related to the project area.
3. Project (3 credits). The student must complete a project under the supervision of a faculty adviser.

M.S. Exam Option

1. CS 900, Computer Science Seminar.
2. Ten CS graduate courses of at least 3 credits each.
   a. Two must be implementation intensive (see list below).
   b. Four courses must be chosen from four different breadth groups (see list below).
   c. At least three courses must be above 900.
3. Comprehensive exam that includes four different examination topics (see list below). One topic must be selected from one of the topics in the Theory breadth group (see list below); the other three topics must be selected from three different breadth groups (which can include a second theory topic).

Ph.D. Degree Requirements

1. CS 900, Computer Science Seminar.
2. Seven CS graduate courses (three credits or more) beyond the M.S. or fifteen CS graduate courses beyond the B.S.
   a. Two must be implementation intensive (see list below).
   b. A minimum of four courses must be chosen from four different course breadth groups (see list below).
3. Breadth examination that includes four different examination topics (see list below); one topic must be selected from one of the Theory Group; the other three topics must be selected from three different groups (which can include a second theory topic).
4. Research tool. A research tool represents knowledge and skills in another discipline that can help the student carry out his or her research plan. This is typically satisfied by taking a non-computer science graduate level course.
5. Depth requirement. Under the direction of a depth adviser and a depth committee, the student carries out some preliminary research that is likely to lead to a dissertation topic. The student must produce two written reports (a literature survey and a research report) and make a presentation as part of an oral examination on the material.
6. Dissertation. The student must complete original research and present and defend a dissertation describing that research. The research is carried out under the supervision of a faculty member dissertation adviser and a dissertation committee of at least five members, including one from outside the department.

Implementation Intensive Courses

Implementation intensive courses include: CS 812, 819, 820, 830, and 870.

Examination Topic Groups

The list below identifies the six topic groups used for both the M.S. comprehensive exam and the Ph.D. breadth exam.

Group: Exam Topics

2. Systems: Operating Systems, Computer Networks
3. Compiler and Language: Compilers
4. Database: Database
5. Artificial Intelligence: Artificial Intelligence
6. Interactive Systems: Graphics

Breadth Course Groups*

The list below identifies the six breadth course groups and introductory (800-level) graduate courses in each group. It is also acceptable to satisfy a group requirement by taking an advanced course (900-level) in the specified area. (Note that there are courses in the curriculum that are not in any of the identified groups.)

*Not all breadth courses form the basis for exam topics. There are no current exams in the following courses: CS 820, 821, 835, 860, and 867.
Earth, Oceans, and Space (EOS)

www.eos.sr.unh.edu

The Institute for the Study of Earth, Oceans, and Space offers students the opportunity for interdisciplinary study and research. Certain graduate degree programs in earth sciences, physics, natural resources, and zoology may be accessed through the institute as follows: all the M.S. programs in earth sciences, the specialization in space mapping, and a specialization in geochronology.

**Degree Offered: M.S.**

The Department of Earth Sciences offers the master of science in Earth sciences with options in geology, oceanography, ocean mapping, and a specialization in geochemical systems. The department also offers the master of science degree in hydrology. Graduate students in the department may conduct research through the Institute for the Study of Earth, Oceans, and Space and the Center for Coastal and Ocean Mapping.

In the geology option, emphasis may be placed on petrology, mineralogy, structural geology, tectonics, geophysics, sedimentation, glacial geology, paleoclimates, glaciology, hydrogeology, stratigraphy, paleontology, low- or high-temperature geochemistry, and isotopic geochemistry.

**Concentration in the oceanography option** may be placed on chemical, geological, or physical oceanography. Although the broad scope of oceanography will be presented, the program emphasizes estuarine, coastal, continental margin processes and environments, and midocean ridges.

The ocean mapping option is intended for students with an interest in hydrography and hydrographic survey technology.

The geochemical systems specialization is intended for students with an interest in all aspects of geochemistry: bedrock, sediment, water, ice, and air with particular emphasis on interpreting and modeling the interaction of these media, biogeochemistry, air quality, and climate change.

The hydrology degree is intended for students with an interest in fluvial processes, global-scale hydrology, groundwater hydrology, hydroclimatology, surface-water hydrology, water quality, and quantitative hydrology.

**Note:** The Ph.D. in Earth and Environmental Science is offered as part of the interdisciplinary and inter-college Natural Resources and Earth Systems Science (NRESS) program. All earth sciences emphases available in the Department of Earth Sciences Masters Program (see above) are also available in the NRESS Ph.D. program. Please see the program information under the NRESS program for further details.

**Admission Requirements**

An applicant to the M.S. program is expected to have completed one year of calculus and at least four semesters of college chemistry, physics, and/or biology; and to have an undergraduate degree or equivalent in geology, chemistry, physics, mathematics, engineering, or the biological sciences. Applicants must submit current scores (within five years) from the general test of the GRE. Students lacking some background in a particular area may be admitted provided they are prepared to complete courses, without graduate credit, in which they may be deficient. The program of study a student wishes to follow and the student’s undergraduate major determine the level of preparation necessary. The preparation of each student is determined before the beginning of the

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### Earth Sciences (ESCI)

www.unh.edu/esci/

**Professors:** Francis S. Birch, Wallace A. Bothner, Larry A. Mayer, Karen L. Von Damm

**Research Professors:** Janet W. Campbell, Robert W. Talbot, Charles J. Vorosmarty

**Affiliate Professors:** P. Thompson Davis, Jim Gardner, Dork L. Sahagian, Peter J. Thompson, David R. Wunsch

**Associate Professors:** William C. Clyde, J. Matthew Davis, Robert J. Griffin, Jo Laird, James M. Pringle

**Research Associate Professors:** Jack E. Dibb, Stephen E. Frolking, Cameron P. Wake, Larry G. Ward

**Affiliate Associate Professor:** Douglas C. Vandemark

**Assistant Professors:** Julia G. Bryce, Joel E. Johnson, Joseph M. Liciardi

**Affiliate Assistant Professors:** David Brown, John R. Morrison, Ruth K. Varner

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### Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CS 800</td>
<td>Internship</td>
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</tr>
<tr>
<td>CS 812</td>
<td>Compiler Design</td>
<td>3 cr.</td>
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<tr>
<td>CS 819</td>
<td>Object-Oriented Methodology</td>
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</tr>
<tr>
<td>CS 820</td>
<td>Operating System Programming</td>
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<td>CS 821</td>
<td>Operating System Kernel Design</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CS 824</td>
<td>Distributed Operating Systems</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CS 825</td>
<td>Computer Networks</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CS 830</td>
<td>Introduction to Artificial Intelligence</td>
<td>3 cr.</td>
</tr>
<tr>
<td>CS 845</td>
<td>Formal Specifications and Verification of Software Systems</td>
<td>3 cr.</td>
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<tr>
<td>CS 859</td>
<td>Theory of Computation</td>
<td>3 cr.</td>
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<tr>
<td>CS 860</td>
<td>Introduction to Human-Computer Interaction</td>
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<td>CS 865</td>
<td>Introduction to Computational Linguistics</td>
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<tr>
<td>CS 867</td>
<td>Interactive Data Visualization</td>
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<tr>
<td>CS 870</td>
<td>Computer Graphics</td>
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<tr>
<td>CS 875</td>
<td>Database Systems</td>
<td>3 cr.</td>
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<tr>
<td>CS 880</td>
<td>Topics</td>
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<tr>
<td>CS 898</td>
<td>Master's Project</td>
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<td>CS 899</td>
<td>Master's Thesis</td>
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<tr>
<td>CS 900</td>
<td>Graduate Seminar</td>
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<td>CS 925</td>
<td>Advanced Computer Networks</td>
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<td>CS 941</td>
<td>Design and Analysis of Algorithms</td>
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<td>CS 970</td>
<td>Advanced Computer Graphics</td>
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<td>CS 975</td>
<td>Object-Oriented Database Systems</td>
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<td>CS 980</td>
<td>Advanced Topics</td>
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<td>CS 981</td>
<td>Advanced Topics in Database Systems</td>
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<td>CS 986</td>
<td>Introduction to Space Plasma Physics</td>
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<td>CS 988</td>
<td>Advanced Topics in Computer Graphics</td>
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<td>CS 989</td>
<td>Advanced Topics in Algorithms</td>
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<td>CS 998</td>
<td>Independent Study</td>
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</tr>
<tr>
<td>CS 999</td>
<td>Doctoral Research</td>
<td>0 cr.</td>
</tr>
</tbody>
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### Earth, Oceans, and Space (EOS)

www.eos.sr.unh.edu
first semester in residence in order to plan
the course of study. Each entering student
is assigned an academic adviser to assist in
planning a program of study.

Degree Requirements
Students in the M.S. programs are required
to complete the core curriculum for their
respective areas. Students in the thesis
option must satisfactorily complete 30 credits,
which include the credits accumulated in
the core curriculum. Students in this option
must complete a master’s thesis (6 credits)
and give an oral presentation of the results.
Students in the nonthesis option must satisfac-
torily complete 34 credits, which includes
the core curriculum, a 2-credit directed re-
search project, and a written and oral pre-
sentation of that research.

Geology
The core curriculum for the option in geol-
ogy normally includes at least three courses
from 825, Igneous Petrology; 826, Meta-
orphic Petrology; 832, Regional Geology
and Advanced Structure; 834, Applied Geo-
physics; 841, Geochemistry; 845, Isotope
Geochemistry; 854, Sedimentology; 859,
Geological Oceanography; and 862, Glacial
Geology. Students are also required to take
997, Seminar in Earth Sciences (1 cr. first
year), and 998, Proposal Development (1 cr.
first year).

Oceanography
The core curriculum for the option in ocean-
ography normally includes 852, Chemical
Oceanography, 3 or 4 cr.; 858, Introducto-
ry Physical Oceanography; 859, Geological
Oceanography; 997, Seminar in Earth
Sciences (1 cr. first year); and 998, Proposal
Development (1 cr. first year).

Ocean Mapping
The core curriculum for the option in ocean
mapping normally includes 858, Introducto-
ry Physical Oceanography; 859, Geological
Oceanography; OE 810, Ocean Measure-
ments Laboratory; 870, Introductory Hy-
drography; 871, Geodesy and Positioning for
Ocean Mapping; 972, Hydrographic Field
Course; 997, Seminar in Earth Sciences (1
cr. first year); and 998, Proposal Develop-
ment (1 cr. first year).

Geochemical Systems
The core curriculum for the specialization
in geochemical systems normally includes
three courses from 841, Geochemistry; 846,
Analytical Geochemistry; 847, Aqueous
Geochemistry; 852, Chemical Oceanogra-
phy; 864, Data Analysis in Earth System Sci-
ence; EOS 813, Biogeochemical Dynamics;
ESCI/EOS 815, Global Atmospheric Chem-
istry; ESCI/EOS 816, Atmospheric Aerosol
and Precipitation Chemistry; 997, Seminar
in Earth Sciences (1 cr. first year); and 998,
Proposal Development (1 cr. first year).

Hydrology
The core curriculum for the major in hy-
drology normally includes 805, Principles
of Hydrology; 810, Groundwater Hydrology;
997, Seminar in Earth Sciences (1 cr. first
year); and 998, Proposal Development (1 cr.
first year).

In each of the options listed above, addi-
tional electives are to be selected from 800-
and 900-level courses in the department and/or
from courses numbered 700 and above in
related disciplines outside of the department.
More detailed information is available from
the department.

Courses
ESCI 805 Principles of Hydrology 4 cr.
ESCI 810 Groundwater Hydrology 4 cr.
ESCI 815 Global Atmospheric Chemistry 3 cr.
ESCI 816 Atmospheric Aerosol and Precipitation
Chemistry 3 cr.
ESCI 817 Macro-scale Hydrology I 4 cr.
ESCI 818 Macro-scale Hydrology II 4 cr.
ESCI 826 Metamorphic Petrology 4 cr.
ESCI 832 Regional Geology and Advanced
Structure 4 cr.
ESCI 834 Applied Geophysics 4 cr.
ESCI 841 Geochemistry 4 cr.
ESCI 845 Isotope Geochemistry 4 cr.
ESCI 846 Analytical Geochemistry 4 cr.
ESCI 847 Aqueous Geochemistry 4 cr.
ESCI 850 Biological Oceanography 4 cr.
ESCI 852 Chemical Oceanography 3 cr.
ESCI 854 Sedimentology 4 cr.
ESCI 858 Introduction to Physical Oceanography
3 cr.
ESCI 859 Geological Oceanography 4 cr.
ESCI 862 Glacial Geology 4 cr.
ESCI 864 Data Analysis in Earth System Science
4 cr.
ESCI 865 Paleoclimatology 3 cr.
ESCI 866 Volcanology 4 cr.
ESCI 870 Fundamentals of Ocean Mapping 4 cr.
ESCI 871 Geodesy and Positioning for
Ocean Mapping 3 cr.
ESCI 895 Topics 1 to 4 cr.
ESCI 896 Topics 1 to 4 cr.
ESCI 897 Colloquium 0 cr.
ESCI 898 Directed Research 2 cr.
ESCI 899 Master’s Thesis 6 cr.
ESCI 903 Advanced Hydrology 3 cr.
ESCI 906 Statistical Hydrology 4 cr.
ESCI 952 Advanced Chemical Oceanography
3 or 4 cr.
ESCI 972 Hydrographic Field Course 4 cr.
ESCI 973 Seafloor Characterization 3 cr.
ESCI 993 Advanced Seminar 1 cr.
ESCI 994 Advanced Seminar 1 cr.
ESCI 995 Advanced Topics 1 to 4 cr.

Economics (ECON)
www.wsbe.unh.edu/economics/

Professors: Karen Smith Conway, Bruce T.
Elmslie, Richard W. England, Evangelos O.
Simos, James R. Wible, Robert S. Woodward
Associate Professors: Michael D. Goldberg,
Marc W. Herold, Ju-Chin Huang, Robert D.
Mohr, Neil B. Niman, Torsten Schmidt
Assistant Professor: Reagan A. Baughman

Degrees Offered: M.A., Ph.D.

Programs offered through the Whitten-
more School of Business and Economics.

Students seek graduate training in econom-
ics for several reasons. Some pursue the
M.A. as a terminal degree and become pro-
fessional economists employed in a variety of
business and government settings, including
banking, investment, insurance, pharmaceu-
tical companies, consulting, the U.S. com-
merce department, and international organi-
izations such as the World Bank and the
World Health Organization. Other students
may wish to become professional economists
who advance to the very highest levels of
management in business, government, or
academia. Students with these career goals
continue their graduate studies by earning
the Ph.D. degree.

The graduate programs in economics at
UNH are some of the most distinctive in
the country. The M.A. program is based on
a fast-track, 10-month calendar that provides
rigorous training in economic theory and
applied statistics. It also allows students to
pursue applied coursework in international
finance, environmental and resource econo-
mics, health economics, data analysis and
information management, and international
business. The doctoral program at UNH is
one of only a few with a dual emphasis on
training first-rate economists and outstanding
college teachers. Students learn econom-
ic theory and econometrics at the highest
level and can pursue coursework work and
receive supervised training in the teaching of
economics. Beyond its strengths in the
fields of international economics, health econo-
mics, and environmental economics, the
department is known for its emphasis on the
history of economic thought and methodol-
ogy. The graduate programs draw on faculty
from the business, natural resources, health
management, and policy, philosophy, and
mathematics departments. The Department of Economics maintains an active and high quality weekly research seminar, which attracts leading economists and researchers from around the country.

**Admission Requirements**

In addition to requirements established by the Graduate School, applicants must submit current scores (within five years) from the general test of the Graduate Record Exam (GRE). The graduate programs seek students whose undergraduate experiences provide evidence of superior ability and that indicate the promise of independent scholarship. At a minimum, undergraduate preparation should include courses in economics at the intermediate level, as well as courses in calculus and statistics. Because the first year of the M.A. and Ph.D. programs overlap to a large extent, students who wish to pursue a Ph.D. degree, but who do not possess an M.A. in economics, are considered for admissions into the M.A. program. The doctoral program requires a master’s degree in economics.

**Master of Arts Programs**

The M.A. program in economics builds on some of the core economic theory and econometrics classes from the Ph.D. program. Many other schools offer stand-alone M.A. programs whose core consists of little more than advanced undergraduate classes. At UNH, graduate economics is taught on an entirely different level. Consequently, our master’s students are exceptionally well trained.

The fast-track, 10-month program is based on four terms, running from the end of August through the end of May. It consists of three components; the foundation (Term I), the core (Term II), and concentrations (Term III and IV). As part of the program, students attend a weekly research seminar where they are exposed to cutting-edge research presented by UNH faculty and by scholars from around the country. The culminating experience for the program is a master’s paper written during Term IV, which affords students the opportunity to work closely with faculty members in conducting original research in their chosen field.

**Requirements**

Students must earn 36 credits to graduate, consisting of 10, 3-credit courses, plus 6 hours of economic seminar. Up to four electives - as substitutes for economics electives - may be taken in courses offered outside of the Department, subject to approval by the department.

**Term I: The Foundation**

- Mathematical Economics
  - Class meets four days a week and students earn 3 credits, the same as in the other terms.

**Term II: The Core**

- Microeconomics I
- Macroeconomics I
- Econometrics I
- Economics Seminar

These courses enable students to advance to specialized areas in the third and fourth terms with a strong background in theory and econometrics.

**Term III: Econometrics and Electives**

- Econometrics II or approved skills course
- Two field/elective courses
- Economics Seminar

**Term IV: Research Workshop and Electives**

- Research Skills
- Two field/elective courses
- Economics Seminar

Students can pursue applied coursework in international finance, international trade, environmental and resource economics, health economics, data analysis and information management, and international business.

**Ph.D. Degree Requirements**

The doctoral program in economics has four key elements: (1) broad education in economics; (2) integrative research experience; (3) dual emphasis on training first-rate economists and outstanding college teachers; and (4) outstanding faculty with strong expertise in international economics, health economics, and environmental and resource economics.

Nationally, doctoral study in economics has increasingly involved quantitative rigor. UNH’s program has responded to this trend, but not at the expense of providing a broad background in economics. Beyond the core theory and econometrics classes, students study methodology and the history of economic thought.

The doctoral program encourages students to develop their research skills early on through an integrative research experience. The cornerstone of this experience is the department’s weekly research seminar. Students participate in the seminar by writing critical reviews and referee reports of the papers presented, acting as discussants, and presenting their own research.

The most distinctive feature of UNH’s doctoral program is its dual emphasis on training economists and college teachers. The Department of Economics, in conjunction with the Teaching Excellence Program in the Graduate School, has developed a nationally known program that provides training in pedagogy for students whose career goals include teaching at the college level. This program, called the Cognate in College Teaching, is an option that Ph.D. students may pursue in addition to the requirements of the Ph.D. degree.

**Requirements**

After completing the first-year M.A. requirements, students pursue the following coursework in their second year:

**Term I**

- Advanced Economic Theory

**Term II**

- Microeconomic Theory II
- Macroeconomic Theory II
- Economics Seminar

**Term III**

- Field/Elective Course
- Field/Elective Course
- History of Economic Thought or Methodology
- Economics Seminar

**Term IV**

- Field/Elective Course
- Field/Elective Course
- Field Workshop
- Economics Seminar

Ph.D. students take comprehensive examinations in macroeconomic and microeconomic theory, which are administered twice a year, usually in June and September. Students select two fields of concentration, one major and one minor. A major field consists of three field classes, the field workshop, and a comprehensive examination. A minor field consists of two field courses. Currently, the department offers the following three major and three minor fields:

**International Economics Major**

(a) ECON 845, International Trade and ECON 846, International Macroeconomics;

(b) one of either ADMN 846, International Financial Management, ECON 846, Multinational Enterprises, ECON 807, Economics of Sustainable Development, ECON 868, Seminar in Economic Development, ADMN 840, International Management, or other approved course;

(c) Field Workshop; and

(d) comprehensive examination.

**International Economics Minor**

ECON 845, International Trade, and ECON 846, International Macroeconomics.
Health Economics Major

(a) ECON 941, Survey of Health Economics, and ECON 942, Selected Topics in Health Economics;
(b) one of either PHP 901, Epidemiology, PHP 907, Public Health Policy, PHP 922, Public Health Economics, or other approved course;
(c) Field Workshop; and
(d) comprehensive examination.

Health Economics Minor
ECON 941, Survey of Health Economics, and ECON 942, Selected Topics in Health Economics.

Environmental Economics Major
(a) ECON 908, Environmental Economics: Theory and Policy, and ECON 909, Environmental Valuation;
(b) one of either RECO911, Natural & Environmental Resource Management, ECON 807, Economics of Sustainable Development, or other approved course;
(c) Field Workshop; and
(d) comprehensive examination

Environmental Economics Minor

The program in the third and fourth years of study consists of the following components:
- Develop a dissertation topic and secure a dissertation committee
- Defend dissertation proposal in a public forum
- Defend dissertation in a public forum
- Complete the Cognate in College Teaching (optional)
- Two terms of Doctoral Workshop

Cognate in College Teaching

The Ph.D. degree in economics from UNH is a research degree that provides students with a deep understanding of economic theory, institutions, and empirical analysis. Most graduates of the program move into faculty positions at other institutions of higher learning where teaching is an important component of their responsibilities. Graduate programs in economics traditionally focus on developing research skills, with little or no emphasis on the history of economic thought, methodology and institutions, and no formal training in the teaching of economics at the college level. These traditional programs produce students who are well-trained in technique, but who often have difficulty in talking about real-world problems with undergraduates.

This state of affairs has led to a growing dissatisfaction among many colleges and universities, whose primary goal is to hire faculty who can generate interest in economics and build undergraduate majors. Few institutions have accepted the challenge of training first-rate economists and college teachers; the Department of Economics at UNH has.

In conjunction with the Teaching Excellence Program in the Graduate School, the department has developed a track in its doctoral program that provides formal training in pedagogy for students whose career goals include teaching at the college level. This track, called the Cognate in College Teaching, is an option that Ph.D. students may select in addition to the requirements of the doctoral degree (discussed above). The Cognate is a 12-credit program and is awarded, upon satisfaction of all requirements, with the Ph.D. The Cognate can only be awarded in conjunction with the Ph.D. and none of the course requirements of the Cognate can substitute for those of the Ph.D.

To enter the program, a student must formally apply to the Graduate Dean after at least one year of full-time graduate studies in economics. Admission to the Cognate will be decided by the Graduate Dean, based upon recommendations of the Economics Graduate Program Coordinator and the Teaching Excellence Program Director.

Requirements of the Cognate

Coursework (12 credits)
- Core Courses (4 credits)
- GRAD 940 Foundations in College Teaching (2 credits)
- GRAD 951 Teaching with Writing (2 credits)
- Teaching Economics (4-credits), ECON 898
- College Teaching Praxis (4 credits), GRAD 990

Teaching Portfolio

A student must submit an approved teaching portfolio. The teaching portfolio is a relatively short collection of materials selected from documentation, one's growth, experiences and strengths as a teacher. For those new to the academic job market, it can help set them apart from other candidates.

Upon completion of the foregoing requirements, the Cognate in College teaching is awarded and noted on the graduate transcript. For more information see www.unh.edu/teaching-excellence/resources/Programs.html.

Courses

Recent revisions to the graduate programs have led to several new courses in the curricula. These new courses will be offered as 898 topics courses until they are given their own course numbers.

Courses
- ECON 807 Economics of Sustainable Development 3 cr.
- ECON 825 Mathematical Economics 3 cr.
- ECON 841 Introduction to Public Policy 4 cr.
- ECON 842 Public Economics I 3 cr.
- ECON 843 Public Economics II 3 cr.
- ECON 845 International Trade 3 cr.
- ECON 846 International Finance 3 cr.
- ECON 847 Multinational Enterprises 3 cr.
- ECON 868 Seminar in Economic Development 3 cr.
- ECON 898 Economic Problems 1 to 3 cr.
- ECON 908 Environmental Economics: Theory and Policy 3 cr.
- ECON 909 Environmental Valuation 3 cr.
- ECON 926 Econometrics I 3 cr.
- ECON 927 Econometrics II 3 cr.
- ECON 941 Survey of Health Economics 3 cr.
- ECON 942 Selected Topics in Health Economics 3 cr.
- ECON 957 History of Economic Thought 3 cr.
- ECON 958 Topics in Economic Thought and Methodology 3 cr.
- ECON 970 Advanced Economic Theory 3 cr.
- ECON 972 Macroeconomics I 3 cr.
- ECON 973 Macroeconomics II 3 cr.
- ECON 976 Microeconomics I 3 cr.
- ECON 977 Microeconomics II 3 cr.
- ECON 979 Research Skills 3 cr.
- ECON 988 Graduate Seminar 2 cr.
- ECON 992 Field Workshop 3 cr.
- ECON 995 Independent Study 1 to 6 cr.
- ECON 996 Research Workshop 2 cr.
- ECON 999 Doctoral Research 0 cr.

Education (EDUC)
www.unh.edu/education
www.unh.edu/education/programs/phd/

Professors: Michael D. Andrew, Todd A DeMitchell, Ann L. Diller, Janer Elizabeth Falvey, David J. Hebert, Barbara E. Houston, Bruce L. Mallory, Sharon N. Oja
Research Professor: David C. Hagner
Affiliate Professors: Tom Franke, Jeanne E. Ormrod
Affiliate Associate Professor: Wanda S. Mitchell
Assistant Professors: Vincent J. Connelly, Leslie J. Couse, Mary K. Fries, Suzanne E. Graham, John F. Hornstein, Loan T. Phan, Sarah M. Stitzlein
Ph.D. Specialization
Program Information: Please contact Education Department

The Department of Education offers a Ph.D. in education with specialization in fields related to the areas of teacher education, educational leadership and policy studies, curriculum and instruction, literacy and school improvement, and experiential/Outdoor education. The doctoral program is designed to engender a broad understanding of the field of education by encouraging focused scholarly inquiry grounded in the reality of educational practice. Professors and students work to place educational issues in a philosophical and socio-cultural context. Collaborative projects sometimes move beyond the boundaries of the University into other educational settings. The program enrolls full- and part-time students.

An individual program of study is planned by the student and her or his guidance committee. Each student's program includes a set of common core courses, specialized study, a number of selected electives from across areas of inquiry, and required research preparation. Students must meet specific University, department, and program requirements. Within this framework, individual programs can vary widely from student to student depending upon the student's own interests and goals.

The Ph.D. in education provides students with preparation for distinguished leadership in a variety of settings. Graduates hold positions at all levels of schooling, ranging from early childhood to adulthood. Former students are also involved in the administration of schools, colleges and universities in work as policy makers, community agency directors, consultants, and research analysts.

Admission

Individual programs within the department may have additional admissions requirements. Applicants should refer to specific program descriptions. Consultation with a program faculty member is recommended. In all cases, the applicant's relevant experience, references, and professional goals will be considered in the admission process.

Action on applications to Department of Education programs varies by individual program. Applicants to this program must refer to the online Programs of Study listing for additional application instructions. This can be done by referring to the graduate school's program of study page and then selecting the specific program of study. The additional application instructions can be found under each program of study's Application Requirements.

Admission Requirements

In addition to the materials required by the Graduate School, each application must include recent (within five years) Graduate Record Examination general test scores and a thoughtful, well-written statement of purpose for undertaking graduate study in a particular program.

Individual programs within the department may have additional admissions requirements. Applicants should refer to specific program descriptions. Consultation with a program faculty member is recommended. In all cases, the applicant’s relevant experience, references, and professional goals will be considered in the admission process.

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Education Department

Research Assistant Professors: Cheryl M. Jorgensen, Mary C. Schuh
Affiliate Assistant Professor: Cari A. Moorhead

Degrees Offered: M.A., M.Ed., M.A.T., C.A.G.S., Ph.D.

The Department of Education offers a variety of programs leading to the master’s degree, the doctor of philosophy degree, and the certificate of advanced graduate study.

The master of arts is offered in counseling. The master of arts in teaching is offered in elementary and secondary education. The master of education is offered in administration and supervision, counseling, early childhood education (including an option in special needs), elementary education, reading, secondary education, special education, and teacher leadership. Special education certification is also available to those who complete the M.A.T. or M.Ed. programs in either elementary or secondary education.

The certificate of advanced graduate study is offered in educational administration and supervision. The doctor of philosophy is offered in education.

The master of science for teachers is offered through the departments of chemistry, English, and mathematics. (See those departments for information.) Most programs are available to part-time admitted graduate students.

Admission Requirements

In addition to the materials required by the Graduate School, each application must include recent (within five years) Graduate Record Examination general test scores and a thoughtful, well-written statement of purpose for undertaking graduate study in a particular program.

Individual programs within the department may have additional admissions requirements. Applicants should refer to specific program descriptions. Consultation with a program faculty member is recommended. In all cases, the applicant’s relevant experience, references, and professional goals will be considered in the admission process.

Action on applications to Department of Education programs varies by individual program. Applicants to this program must refer to the online Programs of Study listing for additional application instructions. This can be done by referring to the graduate school’s program of study page and then selecting the specific program of study. The additional application instructions can be found under each program of study’s Application Requirements.

Ph.D. Specialization

Program Information: Please contact Education Department

The Department of Education offers a Ph.D. in education with specialization in fields related to the areas of teacher education, educational leadership and policy studies, curriculum and instruction, literacy and school improvement, and experiential/Outdoor education. The doctoral program is designed to engender a broad understanding of the field of education by encouraging focused scholarly inquiry grounded in the reality of educational practice. Professors and students work to place educational issues in a philosophical and socio-cultural context. Collaborative projects sometimes move beyond the boundaries of the University into other educational settings. The program enrolls full- and part-time students.

An individual program of study is planned by the student and her or his guidance committee. Each student’s program includes a set of common core courses, specialized study, a number of selected electives from across areas of inquiry, and required research preparation. Students must meet specific University, department, and program requirements. Within this framework, individual programs can vary widely from student to student depending upon the student’s own interests and goals.

The Ph.D. in education provides students with preparation for distinguished leadership in a variety of settings. Graduates hold positions at all levels of schooling, ranging from early childhood to adulthood. Former students are also involved in the administration of schools, colleges and universities in work as policy makers, community agency directors, consultants, and research analysts.

Admission

Students admitted to the program must have completed a master’s degree in education or a related field and will normally have worked full time as an educator at the elementary, secondary, or college level. Entering students are expected to have completed some graduate-level coursework in educational psychology, curriculum and instruction, educational structure and change, and the philosophical and social foundations of education. Exceptional candidates who do not meet all of these course prerequisites will be considered. To apply, candidates must submit a Graduate School application, transcripts of all undergraduate and graduate coursework, and Graduate Record Examination (GRE) general test scores.

In addition to the personal statement required on the Graduate School application, candidates must submit an essay on an educational issue. This essay should discuss one issue in the field of education that is of interest to the candidate. It should explore the opportunities and challenges this issue poses and explain why the applicant finds it personally compelling (1000 to 1500 words in length).

Prior to completing and submitting the application, it is highly recommended that the candidate arrange for an on-campus interview with the Director of Doctoral Studies or with an appropriate department faculty member. Applicants from distant locations may interview by phone. Contact the Department of Education by phone: (603) 862-2310 or e-mail: education.department@unh.edu.

Degree Requirements

Candidates for the degree must meet admission requirements, develop and complete an approved program of study in consultation with their guidance committee, complete required coursework, undergo an annual assessment review by the Doctoral Advisory Committee (for first- and second-year students), pass a qualifying examination to advance to candidacy, establish a dissertation committee, develop an approved dissertation proposal, write and present the dissertation, and pass the final oral examination.

Program of Studies

Upon acceptance to the program, students are assigned an adviser. During the first year of study, students identify, either in consultation with their adviser or with the director of doctoral studies, faculty members to serve as their guidance committee. Programs for the doctoral degree in education are planned individually by students and their guidance committees. The program of study consists of four major elements: common core courses, specialization specific to the student’s scholarly interests, a number of selected electives from across areas of inquiry, and research preparation, including specific advanced research modules. At least five common core courses are required of all students: Proseminar in Doctoral Studies, Critical Inquiry in Education, Normative Inquiry in Education, Qualitative Inquiry in Education, Introduction to Statistics: Inquiry, Analysis, and Decision Making; Applied Regression Analysis; Educational Research, and Quantitative Inquiry: Methods and Techniques of Educational Research. Typically students complete 52 to 64 hours in graduate coursework following their matriculation. These hours do not include doctoral research (EDUC 999).
Qualifying Examination
To be advanced to Ph.D. candidacy, students must satisfactorily complete qualifying examinations as well as other program requirements. After completing at least two-thirds of their coursework, students may take the qualifying examination. The examination is a written exam to be developed, supervised, and evaluated by the student’s guidance committee. The qualifying examination is used to evaluate the student’s general knowledge in relevant areas of inquiry, and his or her fitness for engaging in research, particularly in the subject proposed for the dissertation.

Dissertation
To complete the degree, the student must present and defend a dissertation of original research and publishable quality.

Doctor of Philosophy in Literacy and Schooling
Note: The Literacy and Schooling program (Ph.D) is no longer accepting applications to their program effective 5/27/2005. This program is now an area of inquiry option in the Ph.D. in education program.

Administration and Supervision
Program information: Todd DeMitchell, Virginia Garland, Barbara Krysiak
The Department of Education offers the degrees of Master of Education and the Certificate of Advanced Graduate Study in Educational Administration and Supervision.

Master of Education
The program is designed for the experienced teacher who wishes to become qualified in the broad area of supervision and administration, grades K-12. Emphasis is on the elementary and secondary school principalship and instructional supervision. This program leads to certification in New Hampshire as a principal.

Core requirements (28 credits): 953, Seminar in Curriculum Study; 961, Public School Administration; 962, Educational Finance and Business Management; 965, Educational Supervision; 967, School Law; 969, Practicum in Educational Administration; and 972, Educational Program Evaluation.

Electives (8 credits): Electives are elected in consultation with the program adviser. EDUC 976, The Principalship, is strongly recommended as an elective.

Concluding experience: A degree candidate must successfully complete one of the following: a comprehensive oral examination based on a set of theses statements prepared by the candidate or a major research study related to school administration, curricula, or educational supervision.

Certificate of Advanced Graduate Study (C.A.G.S.)
This program is designed for those who possess a master’s degree in school administration or a master’s degree in a related educational field supplemented by work experience that is equivalent to that outlined in the University of New Hampshire’s M.Ed. program in Educational Administration and Supervision. This program offers advanced preparation for those educators who desire careers as school superintendents, assistant superintendents, business managers, state department of education personnel, vocational education coordinators, curriculum coordinators, or educational personnel in private organizations. This program leads to certification as a superintendent in New Hampshire. It is possible to also receive certification as a principal under special circumstances.

Core requirements (20 credits). C.A.G.S. students may select any five of the following six core courses: 964, Human Resources in Education; 968, Collective Bargaining in Public Education; 971, School Facilities Management; 973, Analysis of Educational Policy; and 977, Leadership: The District Level Administrator.

Electives (8 credits): Electives are selected in consultation with the program adviser. A student who does not hold a master’s degree in administration may be required to take specific courses as electives.

Concluding experience (12 credits): A student must complete a significant field project and field internship in an appropriate administrative setting.

Special Education Administrator certificate program: See information provided by the Special Education program.

Counseling Program
Program information: Janet Elizabeth Falvey, David Hebert, Dwight Webb, Loan Pham, Janet Thompson
The Graduate Program in Counseling prepares counselors to function in a variety of institutions, agencies and schools dedicated to the educational, social, vocational and psychological development of the person. Graduates are typically involved in team delivery of services and work in collaboration with other human services professionals.

Students are encouraged to develop a fundamental psychotherapeutic approach that can be applied to diverse client populations. Students may also individualize their program of study to serve the needs of a particular clientele. This can be accomplished through selected readings and projects in required courses, the internship experiences, elective courses, and independent study or research projects. The program meets educational requirements for certification in school counseling (M.Ed.) and licensure in mental health counseling (M.A.).

Master of Arts (62 credit hours)
The Master of Arts in Counseling requires the following:

Core Requirements (52 credits): 919, Counseling Practicum: Professional and Ethical Orientation; 920, Counseling Theory and Practice; 921, Psychology of Career and Personal Development; 922, Assessment in Counseling; 923, Group Counseling; 924, Psychological Disorders: Variations in Human Development; 925, Counseling Internship I; 926, Counseling Internship II; 927, Human Growth and Development: Personality Theory; 929, Advanced Counseling Internship; 930, Research in Counseling; 931, Clinical Diagnosis and Treatment Planning in Counseling; 932, Society and Culture: Contemporary Issues in Counseling.

Electives (4 credits): Selected in consultation with the student’s advisor, electives may be chosen from graduate-level courses on campus, or they may be completed through an approved independent study.

Concluding Experience (6 credits): Degree candidates must complete a research thesis or an inquiry project and presentation.

Master of Education (48 credit hours)
The Master of Education in Counseling requires the following:

Core requirements (44 credits): 919, Counseling Practicum: Professional and Ethical Orientation; 920, Counseling Theory and Practice; 921, Psychology of Career and Personal Development; 922, Assessment in Counseling; 923, Group Counseling; 924, Psychological Disorders: Variations in Human Development; 925, Counseling Internship I; 926, Counseling Internship II; 932, Society and Culture: Contemporary Issues in Counseling; 933, Developmental Models of Comprehensive School Guidance; 851c, Teaching Exceptional Learners: Related Services.
Electives (4 credits): Selected in consultation with the student’s adviser, electives may be chosen from graduate-level courses on campus, or may be completed through an approved independent study.

Concluding experience: Degree candidates must complete a comprehensive essay examination.

Early Childhood Education

Program information: John Horstein

The Department of Education offers the master of education degree in early childhood education and an option in special needs. Certification as an early childhood teacher (N-3) is available.

This program is an advanced course of study designed for teachers, administrators, and other early childhood practitioners who wish to improve their professional competence and broaden their career opportunities. The program emphasizes the acquisition of knowledge and competencies in child development (birth through eight years), learning environments, developmentally appropriate curriculum, developmental and cultural diversity, and professional leadership. The coursework culminates in extensive field-based experience.

Admission requirements: All admitted students are expected to have had at least one course in child development at the upper-division level and at least 200 hours of supervised classroom experience with children from birth through eight years of age, or the equivalent.

Core requirements (30 credits): 941, Diversity and Child Development; 942, Sociocultural Perspectives on Teaching and Learning; 943, Changing Contexts in Early Education; 944, Inclusive Curriculum for Young Children; 948, Leadership and Advocacy in Early Childhood Education; one course selected from the special needs option courses offering (EDUC 860, 947, 951, 949); and two semesters (6 credits) of internship in EDUC 900B and 901B.

Electives (6 credits): Selected in consultation with the program adviser.

Concluding experience: A degree candidate must successfully complete one of the following: a comprehensive written and oral examination, or a research thesis.

Special Needs Option

Program information: John Horstein

The program is noncategorical in its approach to assessment and educational planning.

Core requirements (38 credits): identical to core requirements of early childhood program with the addition of 860, Introduction to Young Children with Special Needs; 947, Curriculum for Young Children with Special Needs: Evaluation and Program Design; and 949, Supporting Parents of Students with Special Needs.

Electives (4 credits): selected in consultation with the program adviser.

Concluding experience: A degree candidate must successfully complete one of the following: a comprehensive written and oral examination, or a research thesis.

These program requirements are subject to modification in order to reflect changes in New Hampshire state certification requirements for general special education.

Reading

Program information: Grant Gioffi, Paula Salvio, Ruth Wharton-McDonald

The graduate program in reading prepares reading and writing specialists and teachers to provide instruction and leadership in literacy in a variety of educational contexts. The instructional sequence integrates theory, research, and instructional practice, and incorporates field-based and clinical components. Particular emphasis is placed on the interrelationship of reading and writing. Graduates of the program provide direct instruction in literacy and offer leadership in organizing, managing, and evaluating literacy programs.

Core requirements (24 credits): 907, Foundations of Literacy Instruction; 908-909, Clinical Diagnosis and Remediation of Reading Difficulties and Disabilities; 910, Reading and Writing Methods in the Middle/Secondary School; 913, Field Practicum in Reading; 914, Seminar in Reading Research.

Electives (12 credits): selected in consultation with the program adviser; a student using the research thesis option as a concluding experience will use 8 credits for EDUC 899, Master’s Thesis.

Concluding experience: A degree candidate will successfully complete either a written examination or a research thesis.

Special Education

Program information: Vincent Connelly, Georgia Kerns, Jan A. Nisbet, William Wansart

The special education program prepares highly qualified educators who possess the knowledge, disposition, and skills necessary to take the lead in establishing effective teaching and learning environments for a diverse population of learners, who are capable of collaborating with classroom teachers as team leaders or consultants, and who utilize these skills within their school communities, and within the profession itself. The program meets current certification requirements in the state of New Hampshire in General Special Education, Learning Disabilities, Mental Retardation and Special Education Administration.

Degree Requirements

Prerequisites for General Special Education Certification:

1. All candidates are required to complete a course in mathematics teaching methods and a course in reading teaching methods. At UNH, courses that meet the reading requirement are EDUC 806, Introduction to Reading Instruction and EDUC 907, Foundations of Reading Instruction. Courses which meet the mathematics requirement are MATH 701, Exploring Math for Teachers I and MATH 702, Exploring Math for Teachers II. Equivalent courses
taken at another college or university may be substituted.

2. All students are required to complete EDUC 850, Introduction to Exceptionality and EDUC 851, Educating Exceptional Learners. Equivalent courses taken at another college or university may be substituted.

3. Credits for prerequisite courses will not count toward those needed for the M.Ed. degree.

Core Courses (32 credit hours)

Required courses for all students:
- EDUC 756/856 Supporting Families of Individuals with Exceptionalities 4 cr.
- EDUC 900C Internship and Seminar in Special Education 6 cr.
- EDUC 900C Internship and Seminar in Special Education 6 cr.
- EDUC 939 Advanced Seminar in Special Education 4 cr.
- EDUC 939 Assessment of Children with Learning Difficulties 4 cr.
- EDUC 940 Teaching Children with Learning Difficulties 4 cr.
- EDUC 981 Methods and Techniques of Educational Research 4 cr.

Elective Courses (12 credit hours minimum)
- EDUC 852 Contemporary Issues in Learning Difficulties 4 cr.
- EDUC 853 Contemporary Issues in Behavior Disorders 4 cr.
- EDUC 854 Contemporary Issues in Developmental Disabilities 4 cr.
- EDUC 855 Fostering Social Relationships for Students Who Experience Severe Disabilities 2 cr.
- EDUC 860 Introduction to Young Children with Special Needs 4 cr.
- EDUC 876 Reading for Children with Special Needs 4 cr.
- EDUC 908/909 Diagnosis and Remediation of Reading Difficulties 4 cr.
- EDUC 947 Curriculum for Young Children with Special Needs: Evaluation and Program Design 4 cr.
- EDUC 951 Laws and Regulations Affecting the Education of Individuals with Disabilities 4 cr.

Students will select elective courses in consultation with their adviser. At most, 4 credit hours of EDUC 899, Thesis may count as elective work.

Other courses may be included on recommendation from the adviser.

Core Courses for certification in Learning Disabilities in addition to those necessary for certification in General Special Education:
- EDUC 852 Contemporary Issues in Learning Disabilities 4 cr.
- EDUC 908/909 Diagnosis and Remediation of Reading Disabilities 4 cr.
- EDUC 910 Reading and Writing Methods in the Middle/Secondary School 4 cr.

Core Courses for certification in Mental Retardation (Inclusion Facilitator) in addition to those necessary for certification in General Special Education:
- EDUC 854 Contemporary Issues in Developmental Disabilities 4 cr.

Core Courses for Special Education Administration in addition to those necessary for certification in General Special Education:
- EDUC 951 Laws and Regulations in Special Education 4 cr.
- EDUC 956 Learning to Listen: Positive Behavioral Supports 4 cr.
- EDUC 961 Public School Administration 4 cr.
- EDUC 962 Educational Finance and Business Management 4 cr.
- EDUC 964 Human Resources in Education 4 cr.
- EDUC 974 Administrative Internship 6 cr.

Grades and Credit Hours

The M.Ed. degree requires a minimum of 44 hours of graduate level credits. The exact number of credit hours will depend on the student's background, competencies, and professional goals, and will be determined by the adviser.

Teacher Education Program

Program information: Michael Andrew, Ruth Eurenius

The teacher education program prepares teachers who possess the knowledge, dispositions, and skills necessary to take the lead in establishing effective teaching and learning environments within their own classrooms and school communities.

The Department of Education offers the master of arts in teaching degree in elementary and secondary education and the master of education degree in elementary and secondary education for those seeking initial teacher licensing. The master of education degree in teacher leadership is available for experienced teachers.

Applicants to teacher education programs are evaluated on the following criteria: undergraduate academic record, Graduate Record Examination (GRE) general test scores, personal statement, and letters of recommendation regarding academic ability, motivation, interpersonal skills, and potential for success as a teacher. Those seeking admission to programs leading to teacher licensing should also have a positive recommendation from EDUC 500, Exploring Teaching, or equivalent experience.

In our admissions process, we seek evidence that our students have the following knowledge, abilities, and dispositions: motives to teach that include a strong social commitment to contribute to society through education; a disposition to care for their students; an ability to interact positively with children and adults; a capacity to win the respect of their peers and be effective in group interaction, showing openness to the needs and views of others; 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; perceptiveness or the ability to identify and process the relevant details in their environment, especially in the context of a classroom; the ability to make reasonable judgments in a context of complex situations that change from moment to moment; the capacity for clear thinking and an ability to translate their thoughts into simple and clear explanations; superior academic skills, extensive knowledge of at least one major discipline, intellectual curiosity, the ability to be open to the unknown, and the willingness to tolerate uncertainty in the face of enormous pressure to deny it; a disposition to take charge of their own learning, which includes the active pursuit of feedback and the willingness to take thoughtful risks.

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 better.

Master of Arts in Teaching and Master of Education Programs for Those Seeking Teacher Licensure

These programs are designed for two types of students: UNH undergraduates who anticipate completing the Five-Year Teacher Preparation Program at UNH, and students who completed an undergraduate degree either at UNH or elsewhere with little or no coursework in education. The programs lead to teaching licensure at the elementary and secondary levels. Admission to these programs is competitive.

Licensure requirements that must be met prior to or as part of the master’s degree pro-
in either elementary or secondary education and elementary education is available (3 credits each).

Students pursuing teacher licensure requirements include two additional courses: 806, Introduction to Reading Instruction in the Elementary Schools, or 907, Foundations of Reading Instruction; and a mathematics course: MATH 701, Exploring Mathematics I, or MATH 702, Exploring Mathematics II (4 credits each), or the equivalent.

Students earning in the seven-week Live, Learn, and Teach summer program may be applied toward the master’s degree. Live, Learn, and Teach satisfies the EDUC 500/935, Exploring Teaching requirement through 4 credits of EDUC 935, Seminar and Practicum in Teaching; 4 credits of 800A, Educational Structure and Change; and 4 credits of 803H, Experiential Curriculum.

Preparation for licensure in general special education is available to those who complete the M.A.T. or M.Ed. programs in either elementary or secondary education. This licensure allows recipients to serve as general special education teachers. In order to qualify for licensure in general special education, students must complete 22 credits (18 of which may be used toward the M.Ed. degree, or 6 toward the M.A.T. degree); a reading methods course; a mathematics methods course; 850, Introduction to Exceptionality; 851, Educating Exceptional Learners; 939–940, Assessment and Teaching of Children with Learning Difficulties; 900C, 901C, Internship and Seminar (3 credits each).

Dual licensure in early childhood education and elementary education is available to those who are enrolled in the M.Ed. in Elementary Education. This dual licensure allows recipients to serve as early childhood and/or elementary teachers. The early childhood/elementary education dual-certification program option is intended for students who have majored in family studies with an option in child studies or young child/nursery-kindergarten, or the equivalent. Dual licensure requires three graduate courses in early childhood education to be selected in consultation with an adviser from the early childhood program. The three early childhood courses will count as a graduate concentration in the M.Ed. elementary program. Students will complete a full-year internship at the K-3 level under the auspices of the teacher education program.

Master of Arts in Teaching (Elementary and Secondary)
Students complete an Internship (12 credits) and an additional 20 credits. Of the 20 additional credits at the graduate level, three courses totaling 9 to 12 credits must be taken from a subject field outside education. The remaining 8-11 credits can be in education or in another department.

In consultation with his/her adviser, a graduate student in this program is strongly encouraged to develop a subject-area concentration consisting of at least 3 courses. A degree candidate must successfully complete a teacher education program portfolio and colloquium in conjunction with the internship.

Master of Education (Elementary and Secondary)
Students complete an Internship (12 credits) and an additional 20 credits. Of the 20 additional credits at the graduate level, 10 must be in education and 10 can be in either education or in another department.

In conclusion experience: A degree candidate must successfully complete a teacher education program portfolio and colloquium in conjunction with the internship.

Master of Education in Teacher Leadership
This program is designed for experienced teachers who wish to remain in the classroom but expand their leadership role in improving schools. Admitted students usually have three or more years of teaching experience. The program provides a context in which teachers can build upon their classroom experiences as teachers and leaders; expand their understanding of the roles of teachers in schools; develop tools of inquiry that enable them to investigate questions about teaching, learning, and school reform; inspire others to work toward institutional change; and collaborate effectively with other teachers, administrators, and parents in ways that move the teaching profession forward. Students must complete a minimum of 32 credits, 12 of which are a required core. At least four courses must be taken in the Department of Education.

Core requirements: 958, Analysis of Teaching; 953, Seminar in Curriculum Study; and one of the following: 981, Quantitative Inquiry: Methods and Techniques of Educational Research; 984, Teacher as Researcher; or 980, Research in the Teaching of Writing.

Concentration: A set of courses (three or more), which reflect a personal interest, need, or goal, is chosen by the student in consultation with his or her adviser. The concentration may be in or outside education. Potential areas of concentration include mentoring, curriculum, ESL, and increasing knowledge in subject matter fields.

Elective courses: Graduate-level courses in or outside education may be taken in addition to the concentration.

Concluding experience: A degree candidate must complete an inquiry project, which may be theoretical or empirical in nature. Theoretical projects focus on a problem or issue of interest to the candidate and require synthesis of professional experience, coursework, and professional literature. Empirical projects involve the systematic collection, analysis, and reporting of data using appropriate methodologies. Students may also develop a portfolio with a reflective essay (including portfolios developed for the National Board of Professional Teaching Standards). Students may choose to do a research thesis. Students choosing the research thesis must complete 6 credits, 4 of which will count toward their concentration.

Courses

EDUC 800 Educational Structure and Change 2 or 4 cr.
EDUC 801 Human Development and Learning: Educational Psychology 2 or 4 cr.
EDUC 803 Alternative Teaching Models 2 or 4 cr.
EDUC 805 Alternative Teaching Perspectives on the Nature of Education 2 or 4 cr.
EDUC 806 Introduction to Reading in the Elementary School 4 cr.
EDUC 807 Teaching/Reading through the Content Areas 2 cr.
EDUC 810A Concepts of Adult and Occupational Education 4 cr.
EDUC 810C Youth Organizations 4 cr.
EDUC 810F Investigations 1 to 4 cr.
EDUC 810G Seminar in Adult and Occupational Education 1 to 2 cr.
EDUC 817 Growing up Male in America 4 cr.
EDUC 818 Early Adolescent Development and Learning 4 cr.
EDUC 820 Introduction to Computer Applications for Education 4 cr.
EDUC 833 Introduction to the Teaching of Writing 4 cr.
EDUC 834 Children’s Literature 4 cr.
EDUC 835 Young Adult Literature 4 cr.
EDUC 841 Exploring Mathematics with Young Children 4 cr.
EDUC 850 Introduction to Exceptionality 4 cr.
EDUC 851A Educating Exceptional Learners: Elementary 4 cr.
EDUC 851B Educating Exceptional Learners: Secondary 4 cr.
EDUC 851C Educating Exceptional Learners: Related Services 4 cr.
EDUC 852 Contemporary Issues in Learning Disabilities 4 cr.
EDUC 853 Contemporary Issues in Behavioral Disabilities 4 cr.
EDUC 854 Contemporary Issues of Developmental Disabilities 4 cr.
EDUC 855 Fostering Social Relationships for Students who Experience Significant Disabilities 2 cr.
EDUC 856 Supporting Families of Individuals with Exceptionalities 4 cr.
EDUC 857 Contemporary Issues in Autism Spectrum Disorders 4 cr.
EDUC 860 Introduction to Young Children with Special Needs 4 cr.
EDUC 867 Students, Teachers, and the Law 4 cr.
EDUC 876 Reading for Learners with Special Needs 4 cr.
EDUC 877 Belize/New Hampshire Teacher Program 4 cr.
EDUC 881 Introduction to Statistics: Inquiry, Analysis, and Decision Making 4 cr.
EDUC 885 Educational Assessment 4 cr.
EDUC 886 Reading and Writing Methods in the Elementary Classroom 4 cr.
EDUC 887 Reading and Writing Methods in the Secondary Classroom 4 cr.
EDUC 888 Introduction to: Inquiry, Analysis, and Decision Making 4 cr.
EDUC 891 Methods of Teaching Secondary Science 4 cr.
EDUC 894 Proseminar in Teacher Leadership 2 cr.
EDUC 897 Seminar in Contemporary Educational Problems 1 to 4 cr.
EDUC 899 Master's Thesis 6 to 10 cr.
EDUC 900A Internship and Seminar in Teaching 3 or 6 cr.
EDUC 900B Internship and Seminar in Early Childhood Education 3 cr.
EDUC 900C Internship and Seminar in Special Education 3 or 6 cr.
EDUC 900D Internship and Seminar in Adult and Occupational Education 3 to 6 cr.
EDUC 901A Internship and Seminar in Teaching 3 or 6 cr.
EDUC 901B Internship and Seminar in Early Childhood Education 3 cr.
EDUC 901C Internship and Seminar in Special Education 3 or 6 cr.
EDUC 902 Doctoral Proseminar 4 cr.
EDUC 903 Normative Inquiry in Education 4 cr.
EDUC 904 Qualitative Inquiry in Education 4 cr.
EDUC 905 Critical Inquiry in Education 4 cr.
EDUC 907 Foundations of Literacy Instruction 4 cr.
EDUC 908 Clinical Diagnosis and Remediation of Reading Difficulties and Disabilities 4 cr.
EDUC 909 Clinical Diagnosis and Remediation of Reading Difficulties and Disabilities 4 cr.
EDUC 910 Reading and Writing Methods in the Middle/Secondary School 4 cr.
EDUC 912 Field Practicum in Reading 4 cr.
EDUC 914 Seminar in Reading Research 4 cr.
EDUC 918A Seminar on Research in Literacy Instruction 2 cr.
EDUC 918B Seminar on Research in Literacy Instruction 2 cr.
EDUC 918C Seminar on Research in Literacy Instruction 2 cr.
EDUC 918D Seminar on Research in Literacy Instruction 2 cr.
EDUC 919 Counseling Practicum: Professional and Ethical Orientation 4 cr.
EDUC 920 Counseling Theory and Practice 4 cr.
EDUC 921 Psychology of Career and Personal Development 4 cr.
EDUC 922 Assessment in Counseling 4 cr.
EDUC 923 Group Counseling 4 cr.
EDUC 924 Psychological Disorders and Variations in Human Development 4 cr.
EDUC 925 Counseling Internship I 4 cr.
EDUC 926 Counseling Internship II 4 cr.
EDUC 927 Human Growth & Development: Personality Theory 4 cr.
EDUC 929 Advanced Counseling Internship 4 cr.
EDUC 930 Research in Counseling 4 cr.
EDUC 931 Clinical Diagnosis and Treatment Planning in Counseling 4 cr.
EDUC 932 Society and Culture: Contemporary Issues in Counseling 4 cr.
EDUC 933 Developmental Models of Comprehensive School Guidance 4 cr.
EDUC 935A Seminar and Practicum in Teaching 4 cr.
EDUC 935B Seminar and Practicum in Teaching 4 cr.
EDUC 938 Advanced Seminar in Special Education 4 cr.
EDUC 939 Assessment and Teaching of Children with Learning Difficulties 4 cr.
EDUC 940 Assessment and Teaching of Children with Learning Difficulties 4 cr.
EDUC 941 Diversity and Child Development 4 cr.
EDUC 942 Sociocultural Perspectives on Teaching and Learning 4 cr.
EDUC 943 Changing Contexts in Early Education 4 cr.
EDUC 944 Inclusive Curriculum for Young Children 4 cr.
EDUC 947 Curriculum for Young Children with Special Needs: Evaluation and Program Design 4 cr.
EDUC 948 Leadership and Advocacy in Early Childhood Education 4 cr.
EDUC 950 Research in Culture, Behavior, and Development 4 cr.
EDUC 951 Laws and Regulations Affecting the Education of Students with Disabilities 4 cr.
EDUC 952 Inclusive Assessment, Curriculum, Instruction, and Communication Supports 4 cr.
EDUC 953 Seminar in Curriculum Study 4 cr.
EDUC 954 Leadership and Systems Change in Inclusive Education 4 cr.
EDUC 955 Learning to Listen: Developing Positive Behavior Supports for Students with Challenging Behaviors 4 cr.
EDUC 956 Collaborative Models of Supervision for Cooperating Teachers 4 cr.
EDUC 957 Analysis of Teaching 4 cr.
EDUC 960 Mentoring New Teachers 2 cr.
EDUC 961 Public School Administration 4 cr.
EDUC 962 Educational Finance and Business Management 4 cr.
EDUC 964 Human Resources in Education 4 cr.
EDUC 965 Educational Supervision and Evaluation 4 cr.
EDUC 967 School Law 4 cr.
EDUC 968 Collective Bargaining in Public Education 4 cr.
EDUC 969 Practicum in Educational Administration 4 cr.
EDUC 971 School Facilities Management 4 cr.
EDUC 972 Educational Program Evaluation 4 cr.
EDUC 973 Policy, Politics, and Planning in Education 4 cr.
EDUC 974 Administrative Internship and Field Project 6 cr.
EDUC 975 Administrative Internship and Field Project 6 cr.
EDUC 976 Leadership: The District Level Administrator 4 cr.
EDUC 978 Research in the Teaching of Writing 4 cr.
EDUC 981 Quantitative Inquiry: Methods and Techniques of Educational Research 4 cr.
EDUC 982 Issues and Methods in Ethnographic Research in Education 4 cr.
EDUC 983 Advanced Psychology of Human Learning 4 cr.
EDUC 984 Teacher as Researcher 4 cr.
EDUC 985 Contemporary Issues and Theories in Human Learning and Development 4 cr.
EDUC 986 Philosophy of Education 4 cr.
EDUC 988 Alternative Models of Teacher Development 4 cr.
EDUC 989C Programming in Adult Education 4 cr.
EDUC 990 Developmental Perspectives on Adulthood 4 cr.
EDUC 991 Curriculum Theory I 4 cr.
EDUC 992 Curriculum Theory II 4 cr.
EDUC 993 Epistemology and Education 4 cr.
EDUC 995 Independent Study 1 to 4 cr.
EDUC 998 Special Topics 1 to 4 cr.
EDUC 999 Doctoral Research 0 cr.

**Electrical and Computer Engineering (ECE)**

www.ece.unh.edu

**Professors:** Kent A. Chamberlin, Christian P. De Moustier, L. Gordon Kraft, John R. LaCourse, W. Thomas Miller III, Andrzej Rucinski, Kondaguntu U. Swapprasad

**Affiliate Professor:** Stuart M. Selikowitz

**Associate Professors:** Michael J. Carter, Allen D. Drake, Andrew L. Kun, Richard A. Messner

**Research Associate Professors:** Brian P. Calder, William H. Lenharth

**Affiliate Associate Professors:** Charles H. Bianchi, Paul W. Latham II

**Assistant Professors:** Jianqiu Zhang, Kuan Zhou

**Degrees Offered:** M.S., Ph.D.

The Department of Electrical and Computer Engineering offers a program of study leading to the master of science degree with a major in electrical engineering. An option in electrical engineering is available within the engineering Ph.D. program.

**Opportunities**

Advanced degrees in electrical engineering open the door to a wider variety of job opportunities, particularly with regard to
consulting, research and development, and positions in academia. Within the department, opportunities for formal study, research, and individual or team projects are available in the following areas: biomedical engineering; communication systems; digital signal processing; computer engineering; computer networks, digital systems, and logical synthesis; robotics and neural networks; image processing and pattern analysis; control systems; fiber optics; electromagnetics; space systems engineering; rapid prototyping technologies; VLSI circuits; reconfigurable, testable, and fault-tolerant computational structures; ocean engineering; and instrumentation.

**Admission Requirements**

An applicant should have completed a baccalaureate degree in electrical engineering or have comparable training, which includes courses in mathematics and physical science, network theory, digital systems, fields and waves, electronics, and electrical circuits, with appropriate laboratory experiences. Students with a baccalaureate degree from non-U.S. universities must take and submit current (within five years) general scores from the Graduate Record Examination.

**Degree Requirements**

**M.S. Degree Requirements**

Each student meets with a faculty adviser to set up a program of study. No specific course requirements are mandated. However, the student must consult their adviser before signing up for the courses.

Every student has to take a minimum of 24 credits of course work and 6 credits of thesis. Of the 24 credits, a minimum of 12 credits of 900-level courses is required. The student is allowed to take a maximum of 12 credits in the 800-level courses in the department or 700-level courses in other departments provided approval by the department and the dean of the Graduate School.

The department considers the development of professional communication skills through technical presentations a basic component of a graduate education. Every master's student is required to participate in seminars or course lectures as needed to satisfy the technical presentation requirement.

In addition to taking advanced coursework, students must demonstrate their ability to do independent work and report their results by taking 6 credits of thesis (ECE 899).

**Ph.D. Option Requirements**

Following entrance into the doctoral program, a guidance committee is appointed for the student by the dean of the Graduate School upon recommendation of the graduate coordinator. This committee assists students in outlining their programs and may specify individual coursework requirements.

To qualify for the Ph.D. in engineering, the student must successfully pass two separate examinations. The first exam is called the preliminary exam and is normally taken at the end of the first academic year unless it is petitioned by the student and approved by the graduate committee. This exam tests the student’s general electrical engineering knowledge at the undergraduate level and, based on performance, the student may be advised to take remedial courses, given a chance to retake the exam during the next semester, or discontinued from the program. This decision will be made by the department.

The comprehensive exam is normally given at the completion of all coursework and primarily involves the development and presentation of a research proposal to the guidance committee.

Typically, 24 credits of coursework beyond the M.S. are expected. A minimum cumulative grade-point average of 3.33 must be maintained. Upon the successful completion of all coursework and the comprehensive examination, the student is advanced to candidacy and, upon the recommendation of the graduate coordinator, a doctoral committee is appointed by the dean of the Graduate School. The doctoral committee conducts an annual review of the student’s progress, supervises and approves the doctoral dissertation, and administers the final dissertation defense.

**Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ECE 804</td>
<td>Electromagnetic Fields and Waves II</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 811</td>
<td>Digital Systems</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 814</td>
<td>Introduction to Digital Signal Processing</td>
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<tr>
<td>ECE 815</td>
<td>Introduction to VLSI</td>
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</tr>
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<td>ECE 817</td>
<td>Introduction to Digital Image Processing</td>
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</tr>
<tr>
<td>ECE 834</td>
<td>Network Data Communications</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 845</td>
<td>Environmental Acoustics I: Air and Water</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 857</td>
<td>Fundamentals of Communication Systems</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 858</td>
<td>Communication System Design</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 860</td>
<td>Introduction to Fiber Optics</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 872</td>
<td>Control Systems</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 874</td>
<td>Introduction to Neural Networks</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 875</td>
<td>Applications of Integrated Circuits</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 877</td>
<td>Collaborative Engineering I</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 881</td>
<td>Physical Instrumentation</td>
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<td>ECE 884</td>
<td>Biomedical Instrumentation</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 885</td>
<td>Environmental Acoustics II: Air and Water</td>
<td>4 cr.</td>
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<tr>
<td>ECE 896</td>
<td>Special Topics in Electrical or Computer Engineering</td>
<td>1 to 4 cr.</td>
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<td>ECE 899</td>
<td>Master’s Thesis</td>
<td>6 cr.</td>
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<td>ECE 900</td>
<td>Seminar</td>
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<td>ECE 901</td>
<td>Electromagnetic Wave Theory I</td>
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<tr>
<td>ECE 902</td>
<td>Electromagnetic Wave Theory II</td>
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<td>ECE 915</td>
<td>Advanced Active Circuits</td>
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<td>ECE 939</td>
<td>Statistical Theory of Communications</td>
<td>3 cr.</td>
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<td>ECE 940</td>
<td>Information Theory</td>
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<td>ECE 941</td>
<td>Digital Signal Processing</td>
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<td>ECE 944</td>
<td>Nonlinear Control Systems</td>
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<td>ECE 951</td>
<td>Advanced Control Systems I</td>
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</tr>
<tr>
<td>ECE 952</td>
<td>Advanced Control Systems II</td>
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<td>ECE 955</td>
<td>Estimation and Filtering in Control Systems</td>
<td>3 cr.</td>
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<tr>
<td>ECE 960</td>
<td>Computer Architecture</td>
<td>3 cr.</td>
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<tr>
<td>ECE 961</td>
<td>Test Engineering and Testable Design</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ECE 962</td>
<td>Fault Tolerant Computers</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ECE 972</td>
<td>Environmental Acoustics II: Air and Water</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ECE 973</td>
<td>Electromagnetic Wave Theory I</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ECE 974</td>
<td>Electromagnetic Wave Theory II</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ECE 975</td>
<td>Advanced Topics in Electrical Engineering</td>
<td>1 to 3 cr.</td>
</tr>
<tr>
<td>ECE 976</td>
<td>Advanced Topics in Computer Engineering</td>
<td>1 to 3 cr.</td>
</tr>
<tr>
<td>ECE 977</td>
<td>Advanced Topics in Systems Engineering</td>
<td>1 to 3 cr.</td>
</tr>
<tr>
<td>ECE 978</td>
<td>Independent Study</td>
<td>1 to 3 cr.</td>
</tr>
<tr>
<td>ECE 999</td>
<td>Doctoral Research</td>
<td>0 cr.</td>
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</tbody>
</table>

**Engineering Ph.D. Program (ENGR)**

**Degree Offered: Ph.D.**

The College of Engineering and Physical Sciences offers a program of study leading to the degree of doctor of philosophy in engineering. The program has seven options: chemical engineering, civil engineering, electrical engineering, materials science, mechanical engineering, ocean engineering, and systems design.

A student should consult specific course offerings and descriptions of each department and should consult the area coordinator associated with each option for additional information.

**Option in Systems Design**

**Barry K. Fussell, area coordinator**

The systems design option is an interdisciplinary program that addresses contemporary engineering and scientific problems that can be solved only through the cooperation of a variety of disciplines. Students in systems design can elect either one of two professional directions. The first develops professionals with the technical expertise of a Ph.D. and with the ability to work with and direct groups of people working on large-scale technical projects. The second
direction develops engineers with capabilities in the theory and analysis of large-scale complex systems. Concentration in an area of specific individual interest is combined with participation in a larger interdisciplinary project.

Admission Requirements

Qualified students with bachelor’s or master’s degrees in engineering, mathematics, or the physical sciences are eligible for admission to the program. Applicants must submit current scores (within five years) from the general test of the GRE. To be admitted, students must present evidence that they have sufficient background in the area in which they propose to specialize. They must also find a CEPS faculty member to serve as their adviser.

Degree Requirements

Following entrance into the program, a guidance committee is appointed for the student by the dean of the Graduate School upon recommendation of the student’s area coordinator. This committee assists students in outlining their program and may specify individual coursework requirements in addition to those required by the area of specialization. The committee also conducts an annual in-depth review of each student’s progress and, following substantial completion of a student’s coursework, administers the qualifying examination. This committee is also responsible for administering the language examination and/or research-tool proficiency requirements. Coursework and language requirements should normally be completed by the end of the second year of full-time graduate study and must be completed before the student can be advanced to candidacy.

Upon the successful completion of the qualifying examination and other proficiency requirements, the student is advanced to candidacy and, upon the recommendation of the student’s area coordinator, a doctoral committee is appointed by the dean of the Graduate School. The doctoral committee conducts an annual review of the student’s progress, supervises, and approves the doctoral dissertation, and administers the final dissertation defense.

To obtain a Ph.D. degree in engineering, a student must meet all of the general requirements as stated under academic regulations and degree requirements of the Graduate School. Students are normally expected to take coursework equivalent to two full-time academic years beyond the baccalaureate and to complete a dissertation on original research that will require at least one additional year of full-time study.

M.A. Degree Requirements

Literature Option

An M.A. candidate must complete 36 credit hours at the 800 or 900 level, including three seminar courses and a fourth seminar in literature or ENGL 998, Master’s Paper. At least six courses must be literature courses offered by the English department (distinct from courses in critical theory, linguistics, writing, or teaching methods); there are additional distribution requirements. If a student chooses the Master’s Paper option, the six-course requirement is reduced to five literature courses. Each M.A. candidate must also pass ENGL 925, The Graduate Study of Literature, and one course in literary theory. The literary theory requirement would normally be met by successful completion of ENGL 813, 814, or 926. As a general rule, all courses counting toward the M.A. degree should be taken in the English Department, but two courses may be taken in other departments with approval. No more than two literature courses should be taken in a combined 700/800 (split) level course.

M.A. candidates must pass a reading examination in a foreign language or demonstrate that they have passed a fourth-semester college-level language course with a grade of B or better. Students whose native language is not English may be exempt from this requirement.

English Language and Linguistics Option

Students who wish to specialize in any of the various areas of English language and linguistics may design an M.A. program to meet their interests. Specialties include applied linguistics and the teaching of English as a second language as well as the traditional subfields of linguistics. Psycholinguistics courses are offered through the psychology department.

To earn the M.A. degree, students must complete at least 32 credit hours at the 800 or 900 levels, including one seminar course, and 4 credits of ENGL 998, in which they are to produce a substantial scholarly paper. Unless the student already has a strong background in linguistic theory, the program of study must include one course in phonetics and phonology (ENGL 893) and one in syntax and semantics (ENGL 894). Reading knowledge of one foreign language is required. This may be demonstrated by passing a departmental examination or by receiving a grade of B or better in a fourth-semester college-level language course. Students whose native language is not English may be exempt from this requirement. The
student’s course of study must be approved by the program adviser.

**M.S.T. Degree Requirements**

The master of science for teachers is designed for high school teachers. No foreign language is required. Students must take the Writing Institute (part of the Literacy Institutes sponsored by the University of New Hampshire) or an equivalent course in the teaching of writing such as English 810 (4 cr. version). The student must complete 32 credit hours at the 800 or 900 levels. At least 24 of these credits must be in the Department of English. Courses taken outside the department must be approved by the student’s adviser.

The department offers special summer programs which can be taken to fulfill some or all of the course requirements for the M.S.T. degree. The New Hampshire Literacy Institutes are summer institutes that focus on the teaching of writing and reading in grades K–12. Summer institutes emphasize writing workshops in fiction, nonfiction, and poetry and may include courses in literature and composition theory and research.

**Master of Fine Arts in Writing**

In the fall of 2007, UNH launched a master of fine arts in writing, creating a 3-year, 48-credit program that aims to provide students with the intensive training in their craft that they’ll need to start their lives as professional writers. Students concentrate in fiction, nonfiction, or poetry and are taught by a faculty of nine working writers, each of whom specializes in one of these fields. Students learn in small workshops and in individual conferences with their teachers. Conference teaching is a cornerstone of the UNH graduate writing program.

Students are required to take five workshops in their major genre. In addition, students take one form and theory course in their major genre, four elective courses that may include additional writing courses or courses from the English department’s offerings in other fields (such as literature, linguistics, or composition studies), and 8 credit hours of the M.F.A. thesis. Teaching assistants are required to take English 910, Practicum in Teaching College Composition, as one of their electives. There is no foreign language requirement.

The M.F.A. thesis is a book-length, publishable manuscript. For fiction writers, the thesis could be a collection of short stories, a story cycle (linked stories), or a novel. For nonfiction writers, the thesis could be a collection of themed essays and/or magazine articles or a book of creative nonfiction. For poets, the thesis would be a book-length collection of poems. The minimum length of the thesis is 150 pages for fiction and nonfiction writers and 45 pages for poets. Students will work closely with a thesis adviser as they write and pass an oral defense of the thesis, a defense conducted by a three-member thesis committee of writing faculty. Students will also conduct a public reading of their thesis in an event organized by the writing faculty.

In addition, the M.F.A. program offers students opportunities to publish an online journal called *Barnstorm*, as well as intern at publishing houses and magazines and teach in the community at prisons, senior centers, and schools. A select number of students are chosen to teach UNH undergraduate writing courses and to work in the University’s Writing Center.

The program admits an average of 15 new students a year, which creates a writing community of 45 student writers.

**Ph.D. Degree Requirements**

The Ph.D. program combines the essential guidance and discipline of coursework with the equally essential freedom of independent study and research. To be admitted to the doctoral program, a student must hold an M.A. degree. Students choose between two areas: literature and composition studies. Students choosing either area or program must demonstrate basic proficiency in two languages or advanced proficiency in one. Basic proficiency may be demonstrated by passing a departmental examination or by receiving a grade of B or better in a fourth-semester college-level language course. Advanced proficiency is demonstrated by passing a rigorous departmental examination.

The doctoral program in literature is designed to train students to be teachers and scholars in the fields of literature and language. Students in this program will complete nine graduate courses of which four must be seminars. The other courses must be at the 800 or 900 levels and must include the Practicum in Teaching College Composition (ENGL 910), the Seminar in Literary Theory (ENGL 926), and the ungraded 2-credit course in Bibliography and Professional Practices (ENGL 924). In addition, students must pass a general examination in English and American literature, a more specialized qualifying examination, and the final oral defense of their dissertation.

The program in composition studies is designed to train experts in the teaching of composition who are also qualified to teach general courses in literature or linguistics. Students in composition studies will complete 10 graduate-level courses of which four must be seminars. The other courses must be at the 800 or 900 levels and include a Practicum in Teaching College Composition (ENGL 910) and Research Methods in Composition (ENGL 918). Students will take a combined general and qualifying examination that focuses both on the theory of composition and rhetoric, and on a secondary area of specialization. Their dissertation work will be on a topic in composition.

Ph.D. students normally hold assistantships and teach under supervision; such teaching is considered a vital part of the student’s professional training.
ENGL 868 Literature Later 18th Century 4 cr.
ENGL 869 English Romantic Period 4 cr.
ENGL 871 Victorian Prose and Poetry 4 cr.
ENGL 873 British Literature of the 20th Century 4 cr.
ENGL 874 British Literature of the 20th Century 4 cr.
ENGL 875 Irish Literature 4 cr.
ENGL 877 Postcolonial Novel 4 cr.
ENGL 879 Linguistic Field Methods 4 cr.
ENGL 880 English Drama to 1640 4 cr.
ENGL 881 English Drama from 1660 to 1800 4 cr.
ENGL 883 English Novel of the 18th Century 4 cr.
ENGL 884 English Novel of the 19th Century 4 cr.
ENGL 885 Major Women Writers 4 cr.
ENGL 890 Special Topics in Linguistics 4 cr.
ENGL 891 English Grammar 4 cr.
ENGL 892 Teaching Secondary School English 4 cr.
ENGL 893 Phonetics and Phonology 4 cr.
ENGL 894 Syntax and Semantic Theory 4 cr.
ENGL 897 Special Studies in Literature 2 to 6 cr.
ENGL 899 Master of Fine Arts in Writing Thesis 8 cr.
ENGL 901 Advanced Writing of Fiction 4 cr.
ENGL 902 Master Fiction Workshop 4 cr.
ENGL 910 Practicum in Teaching College Composition 4 cr.
ENGL 911 Writing for Teachers 4 cr.
ENGL 912 Historical and Theoretical Studies in Rhetoric 4 cr.
ENGL 913 Theory and Practice of Composition 4 cr.
ENGL 914 Special Topics in Composition and Rhetoric 2 to 6 cr.
ENGL 916 History of Composition 4 cr.
ENGL 918 Research Methods in Composition 4 cr.
ENGL 919 Teaching the Writing Process 1 to 6 cr.
ENGL 920 Issues in Teaching English and the Language Arts 1 to 6 cr.
ENGL 921 Practicum in Teaching English and the Language Arts 1 to 6 cr.
ENGL 922 Advanced Topics in Literacy Instruction 1 to 6 cr.
ENGL 923 Advanced Essay Writing 4 cr.
ENGL 924 Bibliography and Methods 2 cr.
ENGL 925 Graduate Study of Literature 4 cr.
ENGL 926 Seminar: Literary Theory 4 cr.
ENGL 927 Seminar: Feminist Criticism Theory and Practice 4 cr.
ENGL 932 Seminar: Folklore and Folklife 4 cr.
ENGL 935 Seminar: Studies in American Literature 4 cr.
ENGL 936 Seminar: Literature of Early America 4 cr.
ENGL 937 Seminar: Studies in 19th Century American Literature 4 cr.
ENGL 938 Seminar: Studies in 20th Century American Literature 4 cr.
ENGL 953 Seminar: Studies in Old English 4 cr.
ENGL 956 Seminar: Studies in Medieval Literature 4 cr.
ENGL 958 Seminar: Studies in Shakespeare 4 cr.
ENGL 959 Seminar: Studies in Milton 4 cr.
ENGL 960 Seminar: Studies in English Drama 4 cr.
ENGL 964 Seminar: Studies in 16th Century Literature 4 cr.
ENGL 965 Seminar: Studies in Early 17th Century Literature 4 cr.
ENGL 968 Seminar: Studies in 18th Century Literature 4 cr.
ENGL 970 Seminar: Studies in the Romantic Period 4 cr.

Environmental Education (ENED)
www.unh.edu/education/programs/environment/

Professors: Robert T. Eckert, Barrett N. Rock

Associate Professors: Eleanor D. Abrams, Mimi Larsen Becker, Elizabeth A. Finkel, E. Scott Fletcher, Joseph J. Onosko

Research Associate Professor: David M. Burdick

Degree Offered: M.A.

The part- or full-time program offers a master of arts degree with a major in environmental education. An innovative and collaborative effort of the Department of Education and the Department of Natural Resources, the program is dedicated to preparing educators who can effectively promote awareness, knowledge, and constructive participation in deliberation over the important environmental questions that we face. The program has flexible requirements and gives students the opportunity to work closely with an adviser to create an individualized course of study that meets their interests, reflects their prior experiences, and focuses on their professional goals. Students apply during the fall or spring terms and begin the program with an intensive four-week Summer Institute. The program also includes a field-based Practicum where students are given the opportunity to implement their educational ideas through a mentoring program at one of a variety of local environmental and educational organizations.

Admission Requirements

Applicants to the M.A. program in environmental education must possess a baccalaureate degree from an approved institution with a GPA of 2.7 or higher and have successfully completed a minimum of five life science or physical science courses at the undergraduate or graduate level. Applicants are required to submit the following materials for consideration: official transcripts from all relevant educational institutions; an essay outlining relevant interests, prior experience, and educational goals; and three letters of recommendation from individuals who possess detailed knowledge of the applicant’s ability to engage in graduate study. Documentation of other experiences or abilities as an educator is also welcome. Admissions decisions are made on a rolling basis by the executive committee of the program. The Graduate Record Exam (GRE) is optional. Promising students who fail to meet one or more of the preceding criteria may be admitted provisionally, with a plan appropriate to their specific needs.

Degree Requirements

The M.A. program in environmental education helps prepare educators who are able to integrate and put into practice the three focus areas that constitute the program’s academic core:

Curriculum and Pedagogy: an understanding of teaching as a critical, self-reflective, and inquiry-based activity, collaboratively undertaken in diverse communities

Environmental Science: an understanding of the physical and biological processes and relationships that constitute ecosystems

Environmental Values, Policy, and Planning: an understanding of the social (e.g., economic, political, and institutional) and ethical dimensions of environmental policy. The program requires 32 credits for graduation and is organized in three parts:

The Summer Institute (8 credits): Students enter the program by enrolling in an intensive Summer Institute that is coordinated and taught by an interdisciplinary team of UNH faculty. The curriculum involves a case study approach, integrating the three focus areas in an experiential setting. This experience gives students a foundation for creating a rigorous, coherent, and challenging program of study, which they begin (on a part- or full-time basis) during the following year.

Individualized Program of Study (20 credits): The three focus areas of the program provide the structure within which students pursue and integrate the courses that make up their individualized program of study. With the guidance of an adviser, students select a group of courses that balances depth and breadth. All individualized programs of study are approved by the program’s executive committee.
Practicum (4 credits): The field-based Practicum is taken as the final course in the program. Students work in an internship site demonstrating their ability to put into practice a thoughtful and effective vision of environmental education. In the seminar that accompanies the internship, students create and present a portfolio that reflects what they have achieved in the program. Completion of the program portfolio marks the fulfillment of the requirements for the master’s degree.

Courses
ENED 890 Environmental Education Summer Institute: Field Ecology, Human Communities, and Curriculum 8 cr.
ENED 900 Seminar and Practicum in Environmental Education 4 cr.

Family Studies (FS)
www.shhs.unh.edu/fs/

Associate Professors: Kristine M. Baber, Elizabeth M. Dolan, Barbara R. Frankel, Michael F. Kalinowski, Kerry Kazura, John W. Nimmo, Corinna Jenkins Tucker
Assistant Professor: Dora Wu Chen
Clinical Assistant Professor: Mark D. Moses

Degree Offered: M.S.

The Department of Family Studies offers two programs of study leading to a master of science degree in Family Studies. The goal of both programs is to provide students with an understanding of theory and methods relevant to child and family studies and to prepare them to work with families in therapeutic, educational, and community or corporate settings. The Core Areas of Study program has three foci: Adolescent Development; Child Advocacy and Family Policy; and Child Development. Students may elect a thesis or comprehensive exam. The Marriage and Family Therapy Program is accredited by the American Association for Marriage and Family Therapy and requires a minimum of two years of full-time study, including two summers.

Admission Requirements

Students in good standing with undergraduate degrees in any field and a specific interest in working with individuals and families are encouraged to apply. If a student’s undergraduate program does not include an introductory statistics course or the equivalent, successful completion of such a course is required before beginning graduate work. Students seeking admission must submit recent scores from the Graduate Record Examination general test unless a waiver has been approved by the department. Additional admissions information and personal interviews may be required of applicants.

The Family Studies Graduate Program will consider requests to waive the admissions requirement for recent GRE scores under the following circumstances:

- When a candidate has already earned a graduate degree in an accredited program and performed well in that program.
- When a candidate has demonstrated proficiency in at least 2-3 relevant graduate-level courses from an accredited program and/or institution.

The Family Studies Graduate Program will not consider requests to waive the admissions requirement for candidates who have a learning disability because the organization that administers GRE testing, Educational Testing Services, provides accommodations for test-takers with documented disabilities.

Core Areas of Study

Adolescent Development: This core area of study is designed to develop general competence in understanding and applying theory and research regarding adolescents within the context of their families and communities. Students are expected to participate in projects involving adolescents and their families and to complete a practicum in a program serving adolescents.

Child Advocacy and Family Policy: This core area of study is designed to develop general competence in understanding theory and research regarding advocacy and policy issues impacting children and families. Those accepted into the program for this core area of study will be expected to work with selected state, national, and international agencies as child advocacy interns, develop expertise on at least one advocacy issue, and conduct research on an advocacy related topic.

Child Development: This core area of study prepares students to work in a variety of social science positions, enter doctoral programs, and acquire early childhood leadership positions. Students gain understanding of children from infancy through the early school years. Students will complete an internship in an educational program serving young children.

Marriage and Family Therapy Program

The Marriage and Family Therapy Program specifically prepares students to work in mental health, family service, medical, and human service settings. The emphasis is on structural, strategic, and systemic approaches to marriage and family therapy. Clinical training is provided under the direction of an approved supervisor of the American Association for Marriage and Family Therapy in the department’s Marriage and Family Therapy Clinic. The clinical training emphasizes treating the individual, couple, and family in relationship to the larger systems that influence them. Supervised practice continues throughout the program. The program is fully accredited by the Commission on Accreditation for Marriage and Family Therapy Education (AAMFT) and meets the academic requirements for clinical membership in the American Association for Marriage and Family Therapy. AAMFT standards require five hundred (500) hours of clinical practice during the program. Additional hours of clinical practice under supervision will be required to meet AAMFT standards for clinical membership after graduation. See www.aamft.org for information on clinical membership.

M.S. Degree Requirements - Core Areas of Study

Program requirements for the Core Areas of Study include:

1) completion of the 12-credit core curriculum that includes FS 991, Professional Issues for Family Specialists; FS 993, Theoretical Approaches to Family Studies; and FS 994, Research Seminar;

2) twenty-two (22) hours of coursework including four (4) semester hours of practicum or internship (FS 807 or FS 911C), and a graduate-level statistics course; and

3) successful completion of a research thesis (6-10 credits in FS 899) OR a comprehensive written examination, plus eight credits of approved electives in place of FS 899. Students in the Child Advocacy and Family Policy core area of study must complete an additional four (4) hours of practicum/internship, for a total of eight (8) hours.

Thesis Option: Students electing to complete a research thesis must write and defend a thesis based on original research. Students must earn a minimum of six (6) credits of FS 899 (Master’s Thesis).

Comprehensive Examination: Students electing to complete a comprehensive examination must take an additional eight (8) credits of approved electives in place of thesis credits. The comprehensive examination consists of a timed, three-hour closed-book portion and a one-week take-home exam.
M.S. Degree Requirements-Option in Marriage and Family Therapy

Program requirements include:
1) the 12-credit core curriculum (FS 991, FS 993, and FS 994);
2) thirty-two (32) semester hours of coursework, including FS 841, Marital and Family Therapy; FS 846, Human Sexuality; FS 897, Special Problems (1 credit each in sexual problems, gender, larger systems, and children in marriage and family therapy); FS 942, Advanced Systems of Marital and Family Therapy; FS 945, Family Therapy Practicum I; FS 946, Critical Problems in Family Life; FS 947, Family Therapy Practicum II;
3) successful completion of at least twenty (20) credits of FS 898 (500 hours of supervised clinical practice); and
4) completion and presentation of an integrative paper and video representing the student’s theory of change

Courses
- FS 807 Practicum 1 to 6 cr.
- FS 808 Child and Family Center Internship 1 to 6 cr.
- FS 809 Child Study and Development Center Internship 1 to 6 cr.
- FS 833 Supervising Programs for Young Children 4 cr.
- FS 834 Curriculum for Young Children 4 cr.
- FS 841 Marital and Family Therapy 4 cr.
- FS 843 Families, Schools, and Community 4 cr.
- FS 846 Human Sexuality 4 cr.
- FS 850 Contemporary Issues in Adolescent Development 4 cr.
- FS 857 Race, Class, Gender, and Families 4 cr.
- FS 860 Family Programs and Policies 4 cr.
- FS 871 Observation and Assessment of Young Children 4 cr.
- FS 872 International Approaches to Child Advocacy 4 cr.
- FS 873 International Perspectives on Children and Families 4 cr.
- FS 876 Children, Adolescents and the Law 4 cr.
- FS 894 Families and the Law 4 cr.
- FS 897 Special Topics 1 to 4 cr.
- FS 898 Marriage and Family Therapy Practicum 1 to 8 cr.
- FS 899 Master’s Thesis 6 cr.
- FS 911 Graduate Internship 2 to 8 cr.
- FS 930 Child Development in Context 4 cr.
- FS 942 Advanced Systems of Marital and Family Therapy 4 cr.
- FS 945 Family Therapy Practice I 4 cr.
- FS 946 Critical Problems in Family Life 4 cr.
- FS 947 Family Therapy Practice II 4 cr.
- FS 952 Clinical Interventions in Couples Therapy 4 cr.
- FS 991 Professional Issues for Family Specialists 4 cr.
- FS 993 Theoretical Approaches to Family Studies 4 cr.
- FS 994 Research Seminar 4 cr.
- FS 995 Seminar and Special Problems 2 to 4 cr.
- FS 997 Advanced Research Seminar 4 cr.

Genetics (GEN)
genetics.unh.edu

Professors: Thomas M. Davis, Clyde L. Denis, J. Brent Loy, Subhash C. Minocha, Robert L. Taylor Jr.
Associate Professors: John J. Collins, Estelle M. Hrabak, Anita S. Klein, W. Kelley Thomas, Louis S. Tisa
Assistant Professors: Vaughn Cooper, Cheryl A. Whistler
Research Assistant Professor: Kevin Calligan

Degrees Offered (M.S., Ph.D.):
The interdepartmental genetics program offers graduate work leading to the degrees of master of science and doctor of philosophy. The program is conducted by faculty members from animal sciences, biochemistry and molecular biology, microbiology, plant biology, and zoology.

Admission Requirements
Qualified applicants are admitted with the approval of the genetics faculty. Undergraduate preparation should include mathematics through calculus, chemistry through organic, physics, animal or plant biology courses and laboratories, and genetics laboratory experience. Preparation in statistics and computer science are desirable. Applicants must submit current scores (within five years) from the general GRE test.

Degree Requirements

M.S. Degree Requirements
The program for the master of science degree is formulated by the student with the guidance committee. Students are required to take a minimum of 30 credits, including a core of at least three genetics courses, for a minimum of 10 credits (seminars and thesis excluded). Candidates for the degree will be required to complete a thesis and pass an oral examination covering graduate courses and thesis.

Ph.D. Degree Requirements
The chairperson of the genetics program, with the concurrence of the student’s thesis adviser, nominates the student’s guidance and doctoral committees, which administer the qualifying and final examinations. Specific course requirements are developed by the student and the guidance committee. Doctoral students are expected to have a broad exposure to genetics courses, exceeding that required of master’s students. Students must complete a dissertation on original research in genetics. The guidance committee for each graduate student determines whether a foreign language will be required.

Teaching Experience
All students are required to participate in at least one semester of directed teaching experience and are required to attend genetics seminars and present one seminar per year.

Courses
- GEN 804 Genetics of Prokaryotic Microbes 4 cr.
- GEN 805 Population Genetics 4 cr.
- GEN 806 Human Genetics 4 cr.
- GEN 811 Genomics and Bioinformatics 4 cr.
- GEN 815 Molecular Evolution 4 cr.
- GEN 823 Quantitative Genetics 4 cr.
- GEN 853 Cytogenetics 4 cr.
- GEN 854 Laboratory in Biochemistry and Molecular Biology of Nucleic Acids 5 cr.
- GEN 866 Environmental Genomics 4 cr.
- GEN 871 Molecular Genetics 4 cr.
- GEN 872 Evolutionary Genetics of Plants 4 cr.
- GEN 874 Plant Biotechnology and Genetic Engineering 3 cr.
- GEN 875 Plant Biotechnology and Genetic Engineering Lab 2 cr.
- GEN 895 Special Topics 2 to 4 cr.
- GEN 899 Master’s Thesis 6 to 10 cr.
- GEN 995 Special Topics 2 to 4 cr.
- GEN 996 Special Topics 2 to 4 cr.
- GEN 998 Genetics Seminar 1 cr.
- GEN 999 Doctoral Research 0 cr.

History (HIST)
www.unh.edu/history

Professors: Jeffry M. Diefendorf, Ellen Fitzpatrick, David Frankfurter, Cathy A. Frierson, Jan V. Golinski, J. William Harris, Janet L. Polasky, Harvard Sitkoff
Affiliate Professors: Stephen H. Hardy, Benjamin Harris, Robert L. Macieski, William R. Woodward
Associate Professors: Funso Afolayan, W. Jeffrey Bolster, Kurk Dorsey, Eliga H. Gould, Nicoletta F. Gullace, Yan Lu, Gregory McMahon, Julia E. Rodriguez, Lucy E. Salyer, Cynthia J. Van Zandt, Ethel Sara Wolper
Assistant Professors: David Bachrach, Marion Girard Dorsey, Amanda Wunder
Research Assistant Professor: Judith N. Moyer

Degrees Offered: M.A., Ph.D.
The Department of History offers the master of arts and doctor of philosophy degrees. The master of arts is offered in many fields. A formal option in museum studies is available. Doctoral dissertations may be written on the history of the United States or on
topics comparing the United States with other societies or areas.

**Admission Requirements**

The department usually requires evidence of substantial preparation in history at the undergraduate level, together with some preparation in other areas of humanities and social sciences.

Applicants for admission to any graduate program in history should have a minimum of a B average in history, allied humanities, and social sciences. In addition, applicants must submit current scores (within five years) from the general test of the GRE. The department assesses the student's entire application, including letters of recommendation, in making its decision on admission. Deficiencies in an undergraduate program may be rectified by coursework as a special student, but such coursework cannot be used to satisfy requirements for an advanced degree. The department also recommends that a beginning graduate student have some training in a foreign language. Students in seminar or reading courses in other than American history may be required to have a reading knowledge of at least one foreign language appropriate to the particular course. Applicants should include with their applications a personal statement indicating their reason for undertaking graduate study at the University of New Hampshire. Normally, an entering student intending to be a candidate for the doctorate will complete an M.A. program as a prerequisite. However, students with the M.A. from another institution, or with exceptionally strong preparation at the undergraduate level, can begin the doctoral program immediately. In addition, a student in residence can, with the consent of the department, omit the M.A. and proceed directly toward the Ph.D.

**Degree Requirements**

**M.A. Degree Requirements**

A master's student designs a specific program to meet one of three plans. Plan A allows substantial training and research in a single subfield of history but with within a foundation of broader coursework. Plan B allows substantial breadth over at least two subfields. The subfields in history include the following: the ancient world, medieval Europe, early modern Europe, modern Europe, European intellectual history, medieval England, early modern England, modern England, early modern France, modern France, early modern Germany, modern Germany, Iberia, Russia, early U.S., modern U.S., colonial Latin America, modern Latin America, the Far East, the Near East, sub-Saharan Africa, and the history of science. Plan C allows students who enter the doctoral program without an M.A. to pursue the M.A. and Ph.D. degrees simultaneously.

**Plan A** requires at least eight courses in history numbered 800 or above, including at least one research seminar, and a thesis in a single subfield (equivalent to two courses).

**Plan B** requires at least 10 courses in history numbered 800 or above, including at least one research seminar, and an oral examination demonstrating competence in two subfields of history.

**Plan C** requires at least 30 credits of coursework during preparation for the Ph.D. qualifying examinations, as described below; submission of a seminar or other research paper as a demonstration of competence in basic research techniques; and passing Ph.D. qualifying examinations.

**Museum Studies Option**

Students who are seeking or considering careers in the museum world, rather than in teaching and/or research, may pursue the option in museum studies. Students basically follow Plan B. Of the 10 required courses, students must take History 871, Museum Studies; History 872, Studies in Regional Material Culture; one research seminar; and two internships (taken for credit) in nearby museums or other historical institutions. The final requirement is either a one-hour oral exam or the completion of a major project related to the student's work in museum studies.

**Ph.D. Degree Requirements**

A doctoral student's program, which must be approved by the graduate committee of the department, shall include each of the following requirements: two research seminars, one in early U.S. history and one in modern U.S. history; two reading seminars, one in early U.S. history and one in modern U.S. history; a course in historical methods; correction of any deficiencies in the student's previous program; proficiency in one foreign language; History 970, Graduate Seminar in Teaching History (applies to all doctoral candidates awarded teaching assistantships); preparation through reading and coursework in the entirety of U.S. history, with accent upon either early or modern U.S.; preparation through reading and coursework of two subfields outside of U.S. history, one of which may be a cognate field outside of history entirely; qualifying exams; and dissertation and successful defense.

*Note:* in the definition of fields above, United States and U.S. are understood to mean the United States and its colonial antecedents.

**Apprenticeship**

The department considers that graduate work in history, and particularly doctoral work, is professional training. The department recognizes the dual concerns of the historian's life: teaching and research. When feasible, all doctoral students are expected to undertake teaching in the department during a part of their residence. Participation in proseminar and in teaching constitutes an apprenticeship in conjunction with formal study. Doctoral students may choose to pursue the Cognate in College Teaching offered through the Graduate School. All graduate students are reviewed annually by the faculty of the department. A student accumulating two course failures is automatically barred from continuing in any degree program in history, but the department reserves the right to exclude others whose overall performance does not give reasonable assurance of a successful program completion. Students are allowed no more than three attempts to meet any language requirement.

**Courses**

- **HIST 800** Advanced Explorations 1 to 4 cr.
- **HIST 801** Seminar in Historical Explorations 4 cr.
- **HIST 802** Holocaust: The War on Europe’s Jews 4 cr.
- **HIST 803** European Conquest of North America 4 cr.
- **HIST 805** Revolutionary America, 1750-1788 4 cr.
- **HIST 806** History of the Early Republic 4 cr.
- **HIST 809** United States Legal History Special Topics 4 cr.
- **HIST 811** Civil War Era 4 cr.
- **HIST 815** United States Progressivism to the New Deal 4 cr.
- **HIST 816** United States Since World War II 4 cr.
- **HIST 817** Vietnam War 4 cr.
- **HIST 818** American Environmental History 4 cr.
- **HIST 819** Foreign Relations of the United States 4 cr.
- **HIST 820** Foreign Relations of the United States 4 cr.
- **HIST 822** History of American Thought 4 cr.
- **HIST 824** Topics in Modern United States Social History 4 cr.
- **HIST 825** Southern History and Literature since the Civil War 4 cr.
- **HIST 826** Imperial Spain 4 cr.
- **HIST 831** History of Brazil 4 cr.
- **HIST 832** Topics in Latin American History 4 cr.
- **HIST 833** Medieval England 800-1300 4 cr.
- **HIST 834** Medieval Empires 4 cr.
- **HIST 840** Holy War in the Holy Land: The Medieval Crusades 4 cr.
- **HIST 841** Europe After the Black Death 4 cr.
- **HIST 842** Religious Conflict in Early Modern Europe 4 cr.
- **HIST 844** Victorian Britain 4 cr.
- **HIST 845** 19th Century European Great Powers - Diplomacy and International Law 4 cr.
- **HIST 847** Early Modern France 4 cr.
**HIST 848 Modern France** 4 cr.

**HIST 849 Comparative Topics in the History of Early Modern Europe** 4 cr.

**HIST 851 Topics in European Intellectual History** 4 cr.

**HIST 852 Topics in European Intellectual History** 4 cr.

**HIST 854 Topics in History of Science** 4 cr.

**HIST 856 20th Century Europe** 4 cr.

**HIST 861 England in the Tudor and Stuart Periods** 4 cr.

**HIST 862 England in the Tudor and Stuart Periods** 4 cr.

**HIST 864 Russia: Modernization through Soviet Empire** 4 cr.

**HIST 865 Themes in Women’s History** 4 cr.

**HIST 866 Environmental History of Northwest Atlantic Commercial Fisheries** 4 cr.

**HIST 869 Germany from 1918 to Present** 4 cr.

**HIST 870 Historical Thinking for Teachers** 4 cr.

**HIST 871 Museum Studies** 4 cr.

**HIST 872 Studies in Regional Material Culture** 4 cr.

**HIST 873 Early History of Ancient Greece** 4 cr.

**HIST 874 Historiography** 4 cr.

**HIST 875 Historical Methods** 4 cr.

**HIST 876 Classical and Hellenistic Greek Worlds** 4 cr.

**HIST 877 Roman Republic** 4 cr.

**HIST 878 Roman Empire** 4 cr.

**HIST 879 Workshop in History and Historical Methods** 1 to 6 cr.

**HIST 880 Special Topics in Museum Studies/ Material Culture** 4 cr.

**HIST 881 Topics History of Modern China** 4 cr.

**HIST 882 Cults and Charisma** 4 cr.

**HIST 884 History of Southern Africa since 1652** 4 cr.

**HIST 885 Modern Middle East** 4 cr.

**HIST 886 States and Societies in Precolonial West Africa** 4 cr.

**HIST 887 Quantitative Methods and Computers for Historians** 4 cr.

**HIST 888 African Religions** 4 cr.

**HIST 889 New Testament in Historical Context** 4 cr.

**HIST 892 Seminar in the History of Science** 4 cr.

**HIST 898 Internship in Museum Studies** 4 cr.

**HIST 899 Master’s Thesis** 6 cr.

**HIST 900 Readings in Early American History** 3 cr.

**HIST 901 Research Seminar in Comparative History** 3 cr.

**HIST 902 Colloquium in African History** 3 cr.

**HIST 903 Research Seminar in African, Latin American History** 3 cr.

**HIST 904 Research Seminar in African, Latin American History** 3 cr.

**HIST 905 Reading and Research** 1 to 6 cr.

**HIST 906 Qualitative Research Methods** 4 cr.

**HIST 907 Quantitative Research Methods** 4 cr.

**HIST 908 Graduate Seminar in Teaching History** 2 cr.

**HIST 909 Research Seminar in American History** 3 cr.

**HIST 910 Research Seminar in American History** 3 cr.

**HIST 911 Research Seminar in European History** 3 cr.

**HIST 912 Research Seminar in Comparative History** 3 cr.

**HIST 913 Research Seminar in African, Asian, Latin American History** 3 cr.

**HIST 914 Research Seminar in African, Asian, Latin American History** 3 cr.

**JUST 830 Theories of Justice** 4 cr.

**JUST 901 Internship** 4 cr.

**JUST 905 Quantitative Research Methods** 4 cr.

**JUST 906 Qualitative Research Methods** 4 cr.

**JUST 907 Applied Research Methods** 4 cr.

**JUST 908 Students, Teachers, and the Law** 4 cr.

**JUST 909 Quantitative Research Methods** 4 cr.

**JUST 910 Internship** 4 cr.

**JUST 911 Research Seminar in European History** 4 cr.

**JUST 912 Research Seminar in Comparative History** 4 cr.

**JUST 913 Research Seminar in African, Asian, Latin American History** 4 cr.

**JUST 914 Research Seminar in African, Asian, Latin American History** 4 cr.

**JUST 915 Research Seminar in African, Asian, Latin American History** 4 cr.

**JUST 916 Special Topics** 4 cr.

**JUST 995 Reading and Research** 1 to 4 cr.
Kinesiology (KIN)
www.unh.edu/kinesiology/

Professors: Ronald V. Croce, Michael A. Gass, Stephen H. Hardy
Associate Professors: Heather Barber, Robert W. Kenefick, John P. Miller, Timothy J. Quinn, Erik E. Swartz, Neil B. Vroman, Steven C. Wright
Assistant Professors: Brent J. Bell, Karen E. Collins, Michelle A. Grenier, Jayson O. Seaman

Degree Offered: M.S.
The Department of Kinesiology offers a master of science degree with the following areas of concentration: exercise science, outdoor education, and sport studies.

Admission Requirements
Admission is based on undergraduate preparation, academic record, Graduate Record Examination general test scores (current scores, within the last five years), and letters of recommendation. Applicants must be above-average students and show adequate preparation in the basic support courses of the selected concentration area. Applicants who have not met specific course prerequisites should expect to take additional undergraduate work without receiving graduate credit.

Degree Requirements
Students may follow either the thesis or the nonthesis plan. All degree candidates will be required to take KIN 900, Applied Statistics (or equivalent); KIN 901, Analysis of Professional Literature; the designated concentration core; and electives as required.

Exercise science core: KIN 804, Electrocardiography; KIN 805, Topics in Applied Physiology; and two semesters of KIN 902, Colloquium.

Sport studies core: KIN 880, Psychological Factors in Sport; one adviser-approved KIN elective at the 800 or 900 levels; and KIN 840, Athletic Administration or KIN 843, Sport Marketing.

Outdoor education core: KIN 884, Programs in Adventure Education; KIN 885, Foundations of Adventure Education; KIN 886, Management of Outdoor Education Programs; and KIN 986, Outdoor Education Seminar; one additional outdoor education graduate course.

Any remaining coursework in each concentration should be taken within the Department of Kinesiology; however, approval may be granted to take relevant courses outside the department.

Thesis plan: a minimum of 30 approved graduate credits including a thesis (24 graduate course credits plus 6 thesis credits), as well as an oral defense of the thesis, are required in the thesis plan.

Nonthesis plan: A minimum of eight approved graduate courses (with a minimum of 30 credits) are required in the nonthesis plan. Four credits of KIN 895, Advanced Studies, are required. A student may take KIN 895 only after completing at least three approved graduate courses including KIN 901. Exercise science students who elect this plan must take 6 credits of KIN 896, Advanced Research in Exercise Science. In addition, exercise science students must orally defend their research.

Courses
KIN 804 Electrocardiography 4 cr.
KIN 805 Topics in Applied Physiology 4 cr.
KIN 806 Neurology 4 cr.
KIN 807 Neurology Lab 2 cr.
KIN 824 Metabolic Adaptations to Exercise 4 cr.
KIN 836 Fitness and Graded Exercise Test and Prescription 4 cr.
KIN 840 Athletic Administration 4 cr.
KIN 841 Social Issues in Contemporary Sports 4 cr.
KIN 843 Sport Marketing 4 cr.
KIN 850 Theories of Motivation in Sport and Exercise 4 cr.
KIN 880 Psychological Factors in Sport 4 cr.
KIN 881 Inclusion in Physical Education 4 cr.
KIN 884 Programs in Outdoor Education 4 cr.
KIN 885 Foundations of Adventure Education 4 cr.
KIN 886 Organization and Administration of Outdoor Education 4 cr.
KIN 895 Advanced Studies 2 to 4 cr.
KIN 896 Advanced Research in Exercise Science 6 cr.
KIN 898 Special Topics 1 to 4 cr.
KIN 899 Master’s Thesis 6 cr.
KIN 900 Applied Statistics 4 cr.
KIN 901 Analysis of Professional Literature 4 cr.
KIN 902 Colloquium 1 to 2 cr.
KIN 910 Health Promotion and Programming in Schools 4 cr.
KIN 950 Internship 2 to 4 cr.
KIN 968 Outdoor Education Seminar 4 cr.
KIN 998 Special Topics 2 to 4 cr.

Liberal Studies (LS)
Web: In Development
Professors: David S. Andrew, Barbara T. Cooper, Michael K. Ferber, Barbara E. Houston, Mara R. Witzling

Degree Offered: M.A.L.S.
The program offers a master of arts in liberal studies (M.A.L.S.) degree. The master of arts in liberal studies is an innovative, interdisciplinary graduate program. Housed within the College of Liberal Arts but drawing its courses and instructors from across the University, the program makes available a diverse spectrum of offerings and a wealth of faculty expertise and resources.

The liberal studies curriculum is intended to promote broad intellectual comprehension and enrichment rather than vocational or professional training within a single field or discipline. Designed to address the particular interests of students who seek to deepen their knowledge, the program offers a challenging but flexible program of cross-disciplinary learning.

Admission Requirements
Admission to the master of arts in liberal studies is selective. A bachelor’s degree is required for admission. Students will be asked to provide relevant transcripts of their educational experience, a resume, and letters of recommendation. They will also be asked to submit a brief essay describing why they are particularly interested in this program and indicating the sort of interdisciplinary focus or area of learning in which they might like to concentrate their study. The Graduate Record Exam (GRE) is not required but is helpful.

Degree Requirements
The program consists of seven courses (30 credits) divided into three parts: a core seminar specifically designed for and required of every student, to be taken within one year of entrance to the program; a concentration made up of five elective courses chosen from various disciplines across the liberal arts that centers on an interdisciplinary theme or topic; and a master’s thesis or project, which is intended to act as an integrating capstone experience for liberal studies students.

Core seminar LS 800 (4 credits): Each liberal studies student is required to take one core seminar as an introduction to the program as a whole. The seminar must be taken within the first year of a student’s matriculation in the program, preferably in the first semester. Although all core seminars focus on interdisciplinary issues and themes, each is meant to introduce students to different topics and divergent disciplines from across the liberal arts such as literature, the arts, philosophy, history, women’s studies, political science, and sociology.

Concentration (20 credits): Students will work with the director of the program and a concentration and thesis adviser to develop an interdisciplinary concentration program
of study, which focuses on a significant topic, issue, perspective, or cultural development, and is made up of five graduate-level elective courses offered in various departments throughout the college and University. A concentration should constitute a sustained thematic exploration and may be selected from a menu of suggested concentrations or may be self-designed by each student with the help of his or her adviser. The five courses are to be selected from 700-900-level courses regularly offered within departments and colleges across the University, including up to three independent study courses carried out as a tutorial with particular faculty members (with permission). It is expected that a student's concentration will culminate in a concluding final project or thesis.

The following are typical examples of cross-disciplinary concentration programs of study: American studies, the humanities, ecology and values, justice studies, labor studies, religious studies, urban studies, and women's studies.

**LS 898 Project or LS 899 Thesis (6 credits):** With the support of their concentration and thesis adviser, students prepare a final project consistent with their concentration and interests. A capstone experience, the project can be a scholarly thesis or equivalent creative endeavor, which integrates the student's learning in a particular concentration. The director of the program will meet periodically with those students enrolled for thesis credit in order to provide a forum for discussing their research and writing.

**Courses**

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>LS 800</td>
<td>Core Seminar 4 cr.</td>
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<tr>
<td>LS 845</td>
<td>Special Topics 2 to 4 cr.</td>
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<tr>
<td>LS 846</td>
<td>Special Topics 2 to 4 cr.</td>
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<tr>
<td>LS 895</td>
<td>Independent Study 1 to 6 cr.</td>
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<tr>
<td>LS 896</td>
<td>Independent Study 1 to 6 cr.</td>
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<tr>
<td>LS 898</td>
<td>Master's Project 1 to 6 cr.</td>
</tr>
<tr>
<td>LS 899</td>
<td>Master's Thesis 6 cr.</td>
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</tbody>
</table>

**Degree Offered: M.O.T. in South Korea**

The M.S. in the Management of Technology is offered to candidates from a wide array of industries and functional backgrounds in Seoul, South Korea. The program is open to individuals who are interested in grafting the science of technology and management and is offered over a twelve-month period. The majority of the twelve courses are taught in residence in Seoul on an evening and weekend schedule. The final month of the program is taught in residence on the campus of the University of New Hampshire in Durham each summer.

**Admission Requirements: South Korea**

All applicants must have a minimum of a bachelor's degree from an accredited college or university and meet the admissions standards of the Graduate School. It is understood that some applicants will have advanced degrees in engineering or science fields. Normally a candidate will have significant work experience and be nominated by the company. Applicants are required to submit current GMAT scores. Please contact the department for details.

**Materials Science (MS)**

www.unh.edu/materials-science/

**Professors:** Olof E. Echt, Todd S. Gross, James M.E. Harper, James E. Krzanowski, Thomas Laue, Glen P. Miller, Donald Sundberg

**Associate Professors:** Carmela C. Amato-Wiera, Karsten Pohl, Igor I. Tsukrov

**Research Associate Professor:** Yvon G. Durant

**Degree Offered: M.S., Ph.D.**

The materials science program offers a master of science in materials science and a materials science option for the Ph.D. in engineering. The program offers research opportunities over a broad range of areas including synthesis and characterization of thin films, fullerenes and nanotubes, molecular templates, self-organizing nanostructures, polymers and polymer nanoparticles, using scanning probe microscopy, physical and chemical vapor deposition methods, micromechanics, molecular beam mass spectrometry, and computational methods.

**Admission Requirements**

Admission to the master of science and the doctor of philosophy degrees is based upon a strong undergraduate record. A minimum G.P.A. of 3.0 is required, but undergraduate students with exceptional experience or other mitigating factors will be considered. Except under special circumstances, applicants must submit current scores (within five years) from the general test of the GRE. Since materials science is an interdisciplinary field, students from mechanical engineering, chemical engineering, electrical engineering, chemistry, mathematics, physics and other engineering- and science-related disciplines will be considered. A suitable undergraduate program should contain: multivariable calculus and differential equations, two semesters of university (calculus-based) physics, one semester of thermodynamics or physical chemistry, one semester of computer programming, one semester
each of fluid mechanics and heat transfer or two semesters of solid mechanics, and one semester of materials science. Members of the faculty are available to evaluate each student’s undergraduate curriculum. A series of appropriate courses will be required for those students with deficiencies in their undergraduate program.

M.S. Degree Requirements
A student will meet the Graduate School’s requirements for the master’s degree (30 credits). There is a thesis option and a project option. In both options, the student is required to take MS 860, Thermodynamics and Kinetics of Materials I; MS 961, Thermodynamics and Kinetics of Materials II; one course each satisfying the areas of synthesis and processing, characterization, and structure-property relationships, and two semesters of MS 900, Materials Science Seminar. For the thesis option, the student will take one additional course (24 course credits) and 6 credits of MS 899, Master’s Thesis. For the project option, the student will take two additional courses (27 course credits) and 3 credits of MS 898, Master’s Project. All students are expected to take at least 6 course credits at the 900 level.

Ph.D. Option Requirements
Students must complete 39 postbaccalaureate course credits. The student is expected to take MS 860, Thermodynamics and Kinetics of Materials I; MS 961, Thermodynamics and Kinetics of Materials II; one course each satisfying the areas of synthesis and processing, characterization, and structure-property relationships, and two semesters of MS 900, Materials Science Seminar. In addition, the student must take five additional courses with at least 12 total credits at the 900 level (including those courses taken at the master’s level).

The student will be advanced to candidacy after he or she has completed an M.S. degree or 24 credits of graduate courses with at least 6 credits at the 900 level and the qualifying examination. The qualifying exam shall consist of two parts. The student must present a written proposal adhering to NSF guidelines, followed by an oral defense of that proposal. In addition, the student must submit a substantive review paper and an oral presentation on that paper. A materials science program faculty committee will determine the subject of the paper. A substantive record of publication in conjunction with an oral presentation at a conference may substitute for the review paper. A materials science program faculty committee will decide whether the previous publication record is substantive. The committee will evaluate the paper, the proposal, and the two oral presentations to determine whether the student is suitably prepared for graduate research at the Ph.D. level. The proposal and paper for the qualifying exam should normally be completed within six months of completing 24 credits of coursework.

Upon the successful completion of the qualifying examination, the student is advanced to candidacy and, upon the recommendation of the graduate coordinator, a doctoral committee is appointed by the dean of the Graduate School. The doctoral committee conducts an annual review of the student’s progress, supervises and approves the doctoral dissertation, and administers the final dissertation defense.

Courses
- MS 830 Mechanical Behavior Materials 4 cr.
- MS 831 Fracture and Fatigue Engineering Materials 4 cr.
- MS 844 Corrosion 4 cr.
- MS 860 Thermodynamics and Kinetics of Materials I 3 cr.
- MS 861 Diffraction and Imaging Methods in Materials Science 4 cr.
- MS 862 Electronic Materials Science 4 cr.
- MS 863 Thin Film Science and Technology 4 cr.
- MS 895 Special Topics 2 to 4 cr.
- MS 898 Master’s Project 3 to 4 cr.
- MS 899 Master’s Thesis 6 cr.
- MS 900 Seminar 1 cr.
- MS 905 Macromolecular Synthesis 3 cr.
- MS 910 Macromolecular Characterization 3 cr.
- MS 915 Processing and Properties of Polymer Fluids and Solids 3 cr.
- MS 961 Thermodynamics and Kinetics of Materials II 3 cr.
- MS 965 Advanced Surface and Thin Film Characterization 4 cr.
- MS 995 Graduate Special Topics 2 to 4 cr.
- MS 999 Doctoral Research 0 cr.

Mathematics and Statistics (MATH)
www.math.unh.edu

Professors: Albert B. Bennett Jr., Liming Ge, Karen J. Graham, Eric L. Grinberg, Donald W. Hadwin, Rita A. Hibschweiler, A. Robb Jacoby, Ernst Linder, Eric A. Nordgren, Samuel D. Shore, Kevin M. Short, Marianna A. Shubov

Associate Professors: Maria Basterra, David V. Feldman, William E. Geeslin, Edward K. Hinson, Berrien Moore III, Dmitri A. Nikshych

Assistant Professor: Linyuan Li

Degrees Offered: M.S., M.S.T., Ph.D.

The Department of Mathematics and Statistics offers programs leading to a master of science for teachers in mathematics, master of science in mathematics, master of science in mathematics with an option in applied mathematics, master of science in mathematics with an option in statistics, a doctor of philosophy in mathematics, and a doctor of philosophy in mathematics education. In general, the master’s degree programs offer the student a high level of preparation for professional employment as well as appropriate preparation for programs leading to the Ph.D. The Ph.D. programs prepare the student primarily for a career in university teaching and research.

The graduate programs have limited enrollment, allowing students to work closely with faculty members in their areas of expertise. Research within the department is currently being conducted in many areas of the mathematical sciences, including: operator theory, Hilbert spaces, geometric function theory, complex analysis, Radon transforms, integral geometry, ring theory, computational algebra, homological algebra, quantum groups, tensor categories, combinatorics, topology, algebraic topology, category theory, nonlinear dynamics and chaos, data compression, chaotic prediction and control, spectral analysis, asymptotic analysis, mathematical control theory, environmental statistics, spatial and spatio-temporal statistics, Bayesian and computational statistics, wavelets in statistics, teaching and learning of mathematics, teaching and learning of probability and statistics, mathematics curriculum and teacher education, calculus learning, K-12 mathematics education reform, and mathematics education.

Admission Requirements
Applicants for the M.S. and Ph.D. degrees must have completed significant undergraduate coursework in mathematics, preferably in algebra, analysis, and topology. Applicants for the M.S. with applied mathematics option must have completed significant coursework in analysis or applied analysis. Applicants for the M.S. with statistics option will typically have an undergraduate degree in the mathematical, physical, biological, or social sciences or in engineering; must have completed mathematical coursework at least through multivariate calculus; and must have knowledge of basic statistics and basic linear algebra at the undergraduate level. Applicants for the degree of master of science for teachers must have completed education courses sufficient for certification, or have
three years teaching experience, or currently hold a full-time teaching position.

M.S. Degree Requirements

This program requires ten semester courses approved by the department and chosen from courses in 801-888 and 931-998, with at least six of the courses in the 931-998 group. A comprehensive master’s examination is intended to allow the student maximum latitude in pursuing his or her mathematical interests.

Applied Mathematics Option

This program requires 30 credit hours, consisting of the courses MATH 931-932, two topics in applied mathematics courses (MATH 967/977), 6 credits of Master’s Thesis (MATH 899), and four elective courses. The elective courses need not be in mathematics, but must be at the 800 level or higher, and at least one must be a technical course in statistics or some other department. The broad elective flexibility allows the student’s application interests to have a substantial role in the content of the program. The student’s full program plan must be proposed in writing to the applied mathematics faculty and approved prior to the student’s second semester of study. The program includes a thesis, which must constitute original research in applied mathematics, conducted under the supervision of a faculty adviser. There is no comprehensive examination in this option.

Statistics Option

This program requires ten semester courses approved by the department, which includes completion of a project (MATH 898) consisting of a substantial application of statistical methodology to a real problem. Most of the courses will be taken from the department’s statistics courses in the range MATH 837-979 and must include all of MATH 839, 840, 855, and 856, unless some of these or equivalent courses were taken prior to enrollment in the program. At most, three of the required 10 courses may also be taken from the department’s approved nonstatistics courses (in the range MATH 837-979) and/or approved courses offered in other departments. MATH 898, the Master’s Project, is conducted under the supervision of a faculty adviser and concluded with a written report and a public oral presentation. MATH 898 may be taken for 3 to 6 credits, depending on the level of substantial research and methodological development required for project completion; the appropriate number of credits is determined by the statistics faculty. A master’s committee of at least two faculty members oversees the student’s progress and determines credit for the project. There is no comprehensive examination in this option.

M.S.T. Degree Requirements

The program requires 10 semester courses approved by the department. These will normally be taken from the courses numbered MATH 901-929 and will usually include the seven courses MATH 903-908 and MATH 925. A concluding experience consisting of a mathematics portfolio and a comprehensive problem set is required. The courses in this program are offered primarily during summer sessions.

Ph.D. Requirements

In each Ph.D. program, requirements 1 to 3 (below) must be completed for advancement to candidacy. Students in the Ph.D. program in mathematics who intend to write a dissertation in statistics must satisfy the alternate basic requirements 1 and 2, which replace basic requirements 1 and 2; all other Ph.D. students must satisfy requirements 1 and 2. The additional requirements 3 to 5 differ slightly for the mathematics and mathematics education Ph.D. programs; these are indicated below.

Basic degree requirements for the Ph.D. program:
1. all of the courses MATH 951, 952, 953, 954, 955;

Alternate basic degree requirements for mathematics Ph.D. students:
1. all of the courses MATH 839, 840, 855, 856, 951, 953, and 954;
2. passing written comprehensive examinations in statistical theory, statistical methods, analysis, and either applied mathematics or functional analysis.

Additional degree requirements for the Ph.D. in mathematics:
3. advanced coursework in a major field (that of the student’s intended dissertation work) and a minor field (usually within mathematics, but possibly in another area of the mathematical sciences) followed by qualifying examinations in each;
4. experience in teaching equivalent to at least half-time for one year;
5. a dissertation that includes original results in mathematics.

Additional degree requirements for the Ph.D. in mathematics education:
3. advanced coursework in the major field (mathematics education), including MATH 958, 968A, and 968B, and in a minor field (usually a related one, such as educational psychology or research methodology, but possibly in mathematics) followed by qualifying examinations in each;
4. experience in teaching equivalent to at least half-time for one year; and
5. a dissertation that includes original results in mathematics education.

Courses

Courses numbered MATH 903-929 may be applied to the master of science for teachers in mathematics and no other degree in mathematics.

Courses MATH 931-958 are introductory courses for the M.S. degree in mathematics and the Ph.D. degrees in mathematics and mathematics education.

Courses numbered MATH 961-979 are more specialized topics courses offered periodically in response to faculty and student interests. Their content may vary from year to year. With the permission of the instructor, these courses may be taken more than once.

A majority of the courses required for the M.S. degree in mathematics with option in statistics are now offered in synchronous mode (live) over the Internet.
### Mechanical Engineering (ME)

www.unh.edu/mechanical-engineering/

**Professors:** Kenneth C. Baldwin, Barbaros Celikkol, Barry K. Fussell, Todd S. Gross, Robert Jerard, Joseph C. Klewicki, James E. Krzanowski, M. Robinson Swift  
**Affiliate Professor:** Donald M. Esterling  
**Associate Professors:** Gregory P. Chini, Brad Lee Kinsey, John Philip McHugh, May-Win L. Thein, Igor I. Tsukrov

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<td>MATH 862</td>
<td>Linear Algebra</td>
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<td>MATH 867</td>
<td>One-Dimensional Real Analysis</td>
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<td>MATH 884</td>
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<td>MATH 888</td>
<td>Complex Analysis</td>
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<td>Master’s Thesis</td>
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<td>Theory of Numbers for Teachers</td>
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<td>Mathematical Proof and Problem Solving</td>
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<td>MATH 928</td>
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<td>MATH 958</td>
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<td>MATH 967</td>
<td>Topics in Applied Mathematics I</td>
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<td>MATH 968</td>
<td>Topics in Mathematics Education I</td>
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<td>MATH 969</td>
<td>Topics in Probability and Statistics I</td>
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<td>MATH 971</td>
<td>Topics in Algebra II</td>
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<td>MATH 973</td>
<td>Topics in Operator Theory</td>
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<td>MATH 977</td>
<td>Topics in Applied Mathematics II</td>
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<td>MATH 978</td>
<td>Topics in Mathematics Education II</td>
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<td>MATH 979</td>
<td>Research Topics in Statistics</td>
<td>3 cr.</td>
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<td>MATH 998</td>
<td>Reading Courses</td>
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<td>MATH 999</td>
<td>Doctoral Research</td>
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</tbody>
</table>

**Affiliate Associate Professor:** Vladimir Riabov  
**Assistant Professor:** Christopher M. White  
**Affiliate Assistant Professors:** Gary Lapham, Timothy Upton

### Degrees Offered: M.S., Ph.D.

The Department of Mechanical Engineering offers a degree program at both the master’s and doctoral levels. The department offers studies leading to specialization in the following areas: fluid mechanics, thermal science, solid mechanics, material science, controls, system modeling, dynamics, and design. The department offers the Ph.D. degree in four distinct subdisciplines: fluid and thermal science, material science, mechanics, and systems modeling.

### Admission Requirements

A bachelor of science degree in mechanical engineering is normally required for admission to the graduate program in mechanical engineering. Students from other disciplines may also be admitted to the program. However, in order to be properly prepared for graduate-level coursework, these students must have taken the equivalent of the UNH Mechanical Engineering undergraduate core courses listed below. Students who are deficient in three or fewer courses may be admitted to the department on a provisional basis. Students who are deficient in more than three courses must apply and enroll as an undergraduate student until they meet the core course requirement. It is department policy that engineering courses taken as part of an Engineering Technology program are generally not considered equivalent to any of the courses listed below. The decision on equivalence for any courses taken at an institution other than UNH is at the discretion of the Graduate Committee of the Mechanical Engineering Department.

Applicants must submit current scores (within five years) from the general test of the GRE.

Core courses required for admission to the M.S. in Mechanical Engineering degree program:

**Mathematics and Physics Courses:**

- MATH 425, Calculus I; MATH 426, Calculus II; MATH 527, Differential Equations; MATH 528, Multi-Dimensional Calculus; PHYS 407, General Physics; PHYS 408, General Physics II  

**Mechanics Courses:**

- ME 525, Mechanics I; ME 526, Mechanics II; ME 627, Mechanics III; ME 643, Elements of Design

### Thermal Sciences:

- ME 503, Thermodynamics; ME 608, Fluid Mechanics; ME 603, Heat Transfer

### Other Courses:

- ME 561, Materials Science; ME 670, Systems Modeling and Controls; EE 537, Circuits and Signals

### Degree Requirements

**M.S. Degree Requirements**

A candidate for the degree of master of science will satisfy the requirements of either a thesis plan or a project plan. The thesis plan requires 24 semester hours of coursework in addition to eight semester hours of ME 899, Master’s Thesis; the project plan requires 28 semester hours of coursework in addition to four semester hours of ME 992, Master’s Project. Individuals who can demonstrate accomplishments from professional engineering experience comparable to that expected from a master’s project may petition the department to substitute an additional 900-level course for the project requirement.

Two 900-level courses of at least 3 credits each must be earned in addition to ME 992, Master’s Project; ME 899, Master’s Thesis; or the 900-level course substituted for the master’s project course. No more than two graduate courses taken prior to admission to the Graduate School may be applied to the master’s degree. An oral examination covering the candidate’s graduate work will be given for both the thesis and project plans. All full-time graduate students are required to attend a weekly M.E. Graduate Seminar and make one presentation per year.

**Ph.D. Option Requirements**

Following admission into the program, a guidance committee is appointed for the student by the dean of the Graduate School upon recommendation of the graduate coordinator. This committee assists in outlining the student’s course of study and may specify individual coursework requirements.

A student entering with a B.S. degree must successfully complete at least twelve 3- or 4-credit courses with three at the 900 level. Students entering with a M.S. degree in engineering are required to take a minimum of five 3- or 4-credit courses with three at the 900 level, although the committee may determine that additional coursework is necessary. The guidance committee also administers the qualifying examination, which is two parts: written and oral. Upon successful completion of required coursework, the qualifiers and a dissertation proposal, the student may advance to candidacy. A
doctoral committee may be appointed once candidacy has been attained. The committee will have at least five members.

Each Ph.D. candidate must conduct research of sufficient originality and significance to warrant the awarding of the Ph.D. degree. The final examination (oral defense) is the defense of the student’s dissertation. This will be scheduled in accordance with the Graduate School rules. The candidate will be informed, in writing, by the dissertation chair of the results of the defense.

All full-time graduate students are required to attend a weekly M.E. Graduate Seminar and make one presentation per year.

Courses

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>ME 802</td>
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<td>ME 807</td>
<td>Analytical Fluid Dynamics</td>
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<td>ME 808</td>
<td>Gas Dynamics</td>
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<td>ME 809</td>
<td>Computational Fluid Dynamics</td>
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<td>ME 811</td>
<td>Coherent Optical Methods</td>
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<td>ME 812</td>
<td>Waves in Fluids</td>
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<td>ME 824</td>
<td>Vibrations Theory and Applications</td>
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<td>ME 827</td>
<td>Advanced Mechanics of Solids</td>
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<td>ME 835</td>
<td>Mechanics of Composite Materials</td>
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<td>ME 843</td>
<td>Satellite Systems, Dynamics, and Control</td>
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<td>ME 870</td>
<td>Design with Microprocessors</td>
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<td>ME 872</td>
<td>Control Systems</td>
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<td>ME 873</td>
<td>Electromechanical Analysis and Design</td>
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<td>Product Design</td>
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<td>ME 883</td>
<td>Geometric Modeling</td>
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<td>ME 885</td>
<td>Solid Mechanics in Manufacturing</td>
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<td>ME 886</td>
<td>Introduction to Finite Element Analysis</td>
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<td>ME 895</td>
<td>Special Topics</td>
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<td>ME 899</td>
<td>Master’s Thesis</td>
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<td>ME 906</td>
<td>Convection Heat Transfer</td>
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<td>ME 909</td>
<td>Viscous Flow</td>
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<td>ME 924</td>
<td>Vibrations of Continuous Media</td>
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<td>ME 926</td>
<td>Theory of Elasticity</td>
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<td>ME 927</td>
<td>Theory of Plasticity</td>
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<td>ME 935</td>
<td>Micromechanics of Composite and Porous Materials</td>
<td>4 cr.</td>
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<td>ME 944</td>
<td>Nonlinear Control Systems</td>
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<td>ME 951</td>
<td>Advanced Control Systems I</td>
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<td>ME 999</td>
<td>Doctoral Research</td>
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Degrees Offered: M.S., Ph.D.

The Department of Microbiology offers the master of science and the doctor of philosophy degrees. Research opportunities are available in a broad range of areas, including plant-microbe interactions, nitrogen fixation, signal transduction, microbial development, host-microbe interactions, microbial immunity, molecular mechanisms of pathogenesis, environmental and molecular virology, marine microbial ecology, physiology and biochemistry, biotechnology, and bioremediation.

Admission Requirements

Applicants are expected to have had adequate preparation in the biological and physical sciences. This typically includes general and organic chemistry, physics, one semester of calculus, a year of general biology, a semester or more of biochemistry, and general microbiology. Formal courses in quantitative analysis and statistics are recommended. Applicants with deficiencies in these background courses who are admitted to the program may be required to complete appropriate coursework without graduate credit. Applicants must submit current scores (within five years) from the general test of the GRE. Each applicant to the graduate program must be sponsored by a faculty member in the department. The sponsor’s decision is usually based on the Statement of Interest section of the Application to Graduate School form. Persons planning to apply to the program should contact the graduate program coordinator in microbiology to obtain information on the department.

M.S. Degree Requirements

Students admitted to the M.S. program are required to conduct an independent research project in conjunction with a faculty adviser and must submit a thesis based on this research to a graduate committee, which determines its acceptability. Specific coursework is determined in conjunction with the graduate committee. A minimum of 30 credits, including these credits, is required. In addition, the student must submit at least one manuscript for publication to a peer-reviewed journal.

Ph.D. Degree Requirements

Students with appropriate academic training at the baccalaureate or master’s level may be considered for admission to the doctoral program. Persons enrolled in the doctoral program are required to develop and execute an independent research project in conjunction with a faculty adviser; to pass a qualifying examination administered by the graduate committee; to complete one semester of teaching; and to complete and defend successfully a dissertation based on this research.

The department’s acceptance of the dissertation is contingent on its approval by the doctoral committee and evidence that at least two manuscripts based on the thesis research have been submitted to a peer-reviewed journal appropriate to the topic. All graduates are expected to enroll in MICR 997, Microbiology Seminar, each semester.

Courses

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<tr>
<td>MICR 802</td>
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<td>MICR 804</td>
<td>Genetics of Prokaryotic Microbes</td>
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<td>MICR 807</td>
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<td>MICR 808</td>
<td>Virology Lab</td>
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<td>Microbial Ecology and Evolution</td>
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<td>Public Health and Waterborne Diseases</td>
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<td>Immunology Laboratory</td>
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<td>Microbial Physiology</td>
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<td>MICR 818</td>
<td>Ethics and Issues in Microbiology</td>
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<td>Cell Culture</td>
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<td>MICR 893</td>
<td>Advanced Problems and Techniques in Microbial Cytology</td>
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Music (MUSI)

www.unh.edu/music

Professors: Christopher Kies, Nicholas N. Orowich, David E. Seiler, Robert Stibler, Peggy A. Vagts

Affiliate Professor: Clark Terry

Associate Professors: Michael J. Annichiarico, Lori E. Dobbins, Daniel Beller-McKenna, Andrew A. Boysen, Jenni Carbaugh Cook, Mark S. DeTurk, Robert W. Eshbach, William G. Kembert, David K. Ripley, Peter W. Urquhart, Larry J. Veal

Assistant Professor: Robert Haskins

Degree Offered: M.A.

The Department of Music offers programs leading to the degree of master of arts with options in music studies and music education. The program is flexible, allowing the student to emphasize any of a variety of areas, and is built around a core curriculum stressing a broad knowledge of music.
Graduates have established successful careers in performance, conducting, public school teaching, college teaching, and research. The program also serves as excellent preparation of doctoral study.

**Admission Requirements**

For the music studies option, a bachelor's degree in music, or its equivalent, from an accredited institution is required for admission; for the option in music education, the requirement is a bachelor's degree in music education, or a bachelor’s degree in music and teacher certification. Graduate Record Exams are not required. However, a placement examination covering music theory, aural skills, and music history will be administered to incoming students prior to registration. In the music studies option, a reading knowledge of both German and French is strongly recommended for candidates who intend to continue on for a Ph.D. in musicology.

Applicants planning to enter the music studies option should contact the graduate coordinator concerning additional application requirements. Applicants for the music education option must arrange for an interview with the music education coordinator. Graduate students interested in earning teacher certification in music should apply for the Master of Arts in Teaching offered through the Department of Education.

**Degree Requirements**

**Music Studies Option**

This option offers the opportunity for indepth study of music history and literature. The option has also proven valuable to students who wish to augment undergraduate degrees in performance and/or music education with more intensive studies in music theory, composition, music literature, instrumental and vocal performance, historical performance practices, and conducting.

Required courses are MUSI 955, 956, 957, 958, 991, and 994. A written essay of a substantive nature on a topic of the candidate's special interest is also required, as approved by the adviser.

**Music Education Option**

The goal of the option in music education is to develop a broad knowledge at the graduate level in the fields of music education, performance, history, and theory. Required courses are MUSI 955, 994, and two courses selected from MUSI 805, 807, 809, 811, 813, 815, 956, 957, and 958. Also required are MUED 996 and either MUED 983 or 984. In this option, each candidate will also complete an independent project (MUED 995) of a substantive nature in an area of the candidate's special interest as approved by the adviser.

For both options, courses at the 800 and 900 levels in music, or at the 700, 800, and 900 levels in other departments, may be elected with the approval of the student's adviser, to augment the required courses for a minimum total of 30 credits. For completion of the program in both options, a comprehensive oral examination is required.

**Courses**

- MUSI 803 Music of the Renaissance 3 cr.
- MUSI 805 Music of the Baroque 3 cr.
- MUSI 807 Music of the Classical Period 3 cr.
- MUSI 809 Music of the Romantic Period 3 cr.
- MUSI 911 Music of the 20th and 21st Centuries 3 cr.
- MUSI 913 Art Song 3 cr.
- MUSI 911 Advanced Instrumental Conducting 2 cr.
- MUSI 912 Advanced Choral Conducting 2 cr.
- MUSI 936 Graduate Early Wind Instruments 1 to 4 cr.
- MUSI 841 Graduate Piano 1 to 4 cr.
- MUSI 845 Graduate Voice 1 to 4 cr.
- MUSI 846 Graduate Violin 1 to 4 cr.
- MUSI 847 Graduate Viola 1 to 4 cr.
- MUSI 848 Graduate Cello 1 to 4 cr.
- MUSI 849 Graduate Bass 1 to 4 cr.
- MUSI 851 Graduate Flute 1 to 4 cr.
- MUSI 852 Graduate Clarinet 1 to 4 cr.
- MUSI 853 Graduate Saxophone 1 to 4 cr.
- MUSI 854 Graduate Oboe 1 to 4 cr.
- MUSI 855 Graduate Bassoon 1 to 4 cr.
- MUSI 856 Graduate French Horn 1 to 4 cr.
- MUSI 857 Graduate Trumpet 1 to 4 cr.
- MUSI 858 Graduate Trombone 1 to 4 cr.
- MUSI 859 Graduate Euphonium 1 to 4 cr.
- MUSI 860 Graduate Tuba 1 to 4 cr.
- MUSI 861 Graduate Percussion 1 to 4 cr.
- MUSI 862 Graduate Keyboards 1 to 4 cr.
- MUSI 863 Graduate Jazz Guitar 1 to 4 cr.
- MUSI 864 Graduate Drum Set 1 to 4 cr.
- MUSI 871 Counterpoint 3 cr.
- MUSI 875 Composition 3 cr.
- MUSI 876 Composition 3 cr.
- MUSI 877 Advanced Composition 3 cr.
- MUSI 879 Orchestration 3 cr.
- MUSI 881 Analysis: Form and Structure 3 cr.
- MUSI 882 Analysis: Form and Structure 3 cr.
- MUSI 885 Electronic Sound Synthesis 4 cr.
- MUSI 895 Special Studies 1 to 4 cr.
- MUSI 955 Introduction to Bibliography 3 cr.
- MUSI 956 Readings in Music History: Antiquity to 1600 3 cr.
- MUSI 957 Readings in Music History: 1600 to 1820 3 cr.
- MUSI 958 Readings in Music History: 1820 to the Present 3 cr.
- MUED 991 Research Seminar 1 to 4 cr.
- MUED 994 Theory Seminar 3 cr.
- MUED 995 Independent Study in the History and Theory of Music 1 to 4 cr.
- MUED 841 Techniques and Methods in Choral Music 2 cr.
- MUED 843 Materials and Methods in Piano Music 2 cr.

**Natural Resources (NR)**

www.unh.edu/natural-resources/


**Research Professor:** Frederick T. Short

**Associate Professors:** Mimi Larsen Becker, Mark J. Ducey, Serita D. Frey, Kelly L. Giraud, George C. Hurrut, Paul C. Johnson, Thomas D. Lee, Jonathan R. Pennock

**Research Associate Professors:** David M. Burdick, Stephen H. Jones

**Assistant Professor:** Scott V. Ollinger

**Research Assistant Professor:** Adrienne I. Kovach

**Degree Offered:** M.S.

The Department of Natural Resources offers a master of science in natural resources along with options in five areas.

**Natural Resources: General**

This program is designed for students whose work crosses disciplinary boundaries within the natural resources and does not easily fit within one of the existing options. Students can later choose to specify one of the five options if their research interests change or if they become specific to one individual area.

**Natural Resources: Forestry**

Areas of interest include forest resource economics and management, biometrics, genet-
ics, forest ecosystem dynamics, spatial data analysis (remote sensing and GIS).

**Natural Resources: Environmental Conservation**

Areas of interest include natural resource policy, conservation biology, sustainability, ecological ethics and values, international environmental affairs, and spatial data analysis (remote sensing and GIS).

**Natural Resources: Soil Science**

Areas of interest include soil biology and biogeochemistry.

**Natural Resources: Water Resources**

Areas of interest include wetlands, land-water interactions, groundwater chemistry, and biogeochemistry.

**Natural Resources: Wildlife**

Areas of interest include field and laboratory aspects of wildlife energetics, wildlife use of managed and unmanaged forest systems, habitat management and fragmentation, conservation biology, wetland wildlife ecology, population dynamics.

**Admission Requirements**

Applicants are expected to have completed either an undergraduate degree in the field in which they plan to specialize or show adequate preparation in the basic support courses of the field. Students with good undergraduate records who lack a background in a particular field may be admitted to a program, provided they are prepared to correct any deficiencies. All entering students must have taken at least one statistics course or do so at the graduate level. Applicants must submit current scores (within five years) from the general test of the GRE.

Students entering the forestry option may elect to develop concentrations within any of the above-listed areas. Applicants are expected to have backgrounds in forestry or related biological sciences. Entering students in soil science and water resources are required to have adequate preparation in chemistry and mathematics as well as biological or earth sciences. Students interested in wildlife are expected to have adequate preparation in biological sciences, chemistry, and mathematics. Students interested in environmental conservation should have a background appropriate for their area of interest. Since environmental conservation covers such a broad area, applicants are always reviewed carefully on an individual basis.

Prior to submitting an application, applicants should contact one or more graduate faculty advisors to discuss programs and funding, and secure a commitment of a faculty member to serve as graduate advisor.

**Degree Requirements**

An M.S. degree is conferred upon successful completion a program of not less than 30 credits, including the following course requirements or equivalents: NR 993, Seminar; NR 903, Approach to Research; and NR 996, Natural Resource Education; and NR 998, Directed Research, or NR 899, Thesis and a formal presentation of the thesis or directed research results.

**Cooperative Doctoral Program**

The Department of Natural Resources participates in the Natural Resources and Earth System Science Ph.D. Program (NRESS), an interdepartmental degree offered at UNH. For further details on this program, please visit the NRESS program page.

**Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR 801</td>
<td>Ecological Values and Ethics</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 802</td>
<td>Workshops</td>
<td>1 to 4 cr.</td>
</tr>
<tr>
<td>NR 803</td>
<td>Watershed Water Quality Management</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 806</td>
<td>Soil Ecology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 810</td>
<td>Endangered Species Seminar</td>
<td>2 cr.</td>
</tr>
<tr>
<td>NR 811</td>
<td>Wetland Ecology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 813</td>
<td>Quantitative Ecology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 816</td>
<td>Wetland Delineation</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 818</td>
<td>Law of Natural Resources and Environment</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NR 819</td>
<td>Wetlands Restoration and Mitigation</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NR 820</td>
<td>International Environmental Politics and Policies for the 21st Century</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 821</td>
<td>Ecology of Polluted Waters</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 824</td>
<td>Resolving Environmental Conflicts</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 830</td>
<td>Terrestrial Ecosystems</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NR 831</td>
<td>Ecosystem Based Governance: Policies and Management Strategies</td>
<td>4 cr.</td>
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<tr>
<td>NR 832</td>
<td>Chemistry of Soils</td>
<td>4 cr.</td>
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<tr>
<td>NR 835</td>
<td>Land Conservation Principles and Practices</td>
<td>4 cr.</td>
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<td>NR 837</td>
<td>Wildlife Population Dynamics</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 838</td>
<td>Wildlife Policy and Management</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 844</td>
<td>Biogeochemistry</td>
<td>4 cr.</td>
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<td>NR 845</td>
<td>Forest Management</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 857</td>
<td>Photo Interpretation and Photogrammetry</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 859</td>
<td>Digital Image Processing for Natural Resources</td>
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</tr>
<tr>
<td>NR 860</td>
<td>Geographic Information Systems in Natural Resources</td>
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<td>NR 865</td>
<td>Community Ecology</td>
<td>4 cr.</td>
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<td>NR 867</td>
<td>Earth System Science</td>
<td>4 cr.</td>
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<tr>
<td>NR 880</td>
<td>Earth as a System for Educators</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 882</td>
<td>Monitoring Forest Health</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 883</td>
<td>Forest Communities of New Hampshire</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 884</td>
<td>Sustainable Living</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 885</td>
<td>Systems Thinking for Sustainable Living</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 897</td>
<td>Special Topics</td>
<td>1 to 4 cr.</td>
</tr>
<tr>
<td>NR 899</td>
<td>Master’s Thesis</td>
<td>6 to 10 cr.</td>
</tr>
<tr>
<td>NR 902</td>
<td>Ecological Ethics and Values</td>
<td>4 cr.</td>
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<tr>
<td>NR 903</td>
<td>Approach to Research</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 910</td>
<td>Forest Stand Dynamics</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NR 912</td>
<td>Sampling Techniques</td>
<td>2 to 4 cr.</td>
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<td>NR 947</td>
<td>Current Issues in Ecosystem Ecology</td>
<td>1 to 4 cr.</td>
</tr>
<tr>
<td>NR 993</td>
<td>Natural and Environmental Resources Seminar</td>
<td>1 or 2 cr.</td>
</tr>
<tr>
<td>NR 995</td>
<td>Investigations</td>
<td>1 to 4 cr.</td>
</tr>
<tr>
<td>NR 996</td>
<td>Natural Resource Education</td>
<td>1 cr.</td>
</tr>
<tr>
<td>NR 997</td>
<td>Special Topics</td>
<td>1 to 4 cr.</td>
</tr>
<tr>
<td>NR 998</td>
<td>Directed Research</td>
<td>4 cr.</td>
</tr>
</tbody>
</table>

**Natural Resources and Earth Systems Ph.D. Program (NRESS)**

www.unh.edu/nressphd/index.html


**Research Professors:** Janet W. Campbell, Changsheng Li, Frederick T. Short, Robert W. Talbot, Charles J. Vorosmarty

**Affiliate Professors:** Michael Keller, Rakesh Minocha


**Research Associate Professors:** David M. Burdick, Jack E. Dibb, Mark A. Fahnestock, Stephen E. Frohling, Pingguo He, Stephen H. Jones, Huiting Mao, Barkley C. Sive, Douglas Vandemark, Cameron P. Wake, Larry G. Ward, Xiangming Xiao

**Affiliate Associate Professor:** David Y. Hollinger

**Assistant Professors:** David P. Brown, Julia G. Bryce, Joel E. Johnson, Joseph M. Liciardi, Scott V. Ollinger

**Research Assistant Professors:** Bobby H. Braswell, Andrew B. Cooper, Troy Hartley, Erik A. Hbbie, Mary E. Martin, J. Ruairidh Morrison, Ruth K. Varner

**Affiliate Assistant Professors:** John L. Campbell, Richard Hallett, Annette Schloss, Mary E. Westfall
Degree Offered: Ph.D.
The graduate program in Natural Resources and Earth Systems Science is an interdisciplinary program offering only the Ph.D. degree for interdisciplinary work in areas related to the understanding and management of the environment in the broadest context. Areas of study include, but are not limited to, ecosystem science, biogeochemical cycling, geospatial systems, atmospheric science, environmental philosophy, forestry, geologic science, hydrology, marine science, oceanography, social science, environmental policy and ethics, environmental education, and multidisciplinary natural resources management.

Two degrees are offered under the NRESS Program:
• Ph.D. in Natural Resources and Environmental Studies (NRES)
• Ph.D. in Earth and Environmental Science (EES)

Students within the program will choose the degree that best suits their area of study. Formal requirements for both degrees are identical.

Admission Requirements
Applicants to the NRESS Program come from a wide range of undergraduate majors and masters degree concentrations. Individuals are judged as to the quality of their work and its relevance to the particular area of study they propose to pursue.

Students are expected to have completed a master’s degree before entering the program, although this is not a requirement. Many students will first complete a master’s degree in a related department and then continue on in the NRESS Program.

All applicants must identify an adviser before being admitted, and this faculty member must agree to serve as the applicant’s adviser. Certain applicants may be admitted with deficiencies identified by their adviser and/or by the executive committee. These deficiencies normally must be corrected in the first year of the program. Applicants whose bachelor’s degree is from a non-U.S. university must submit GRE scores.

Degree Requirements
The requirements of the doctoral program are flexible to accommodate the diverse interests and needs of students. All students in the NRESS program must meet the requirements listed below.

Committees and Coursework
The Ph.D. guidance and dissertation committees must be interdisciplinary, and must consist of at least five members, three of whom are usually NRESS faculty or members of the UNH Graduate School faculty. The committee chair must be a member of the NRESS faculty. Committee members must be from more than one department, and students are encouraged to include at least one off-campus member. Off-campus committee members must be approved by the student’s adviser, the program chair, and the dean of the Graduate School. Students should select their guidance committee and submit a Committee Nomination Form in a timely manner, within one year of matriculation for full-time students and two years for part-time students.

Core Area Course Requirements
All students will take one pre-approved course in each of three core areas while enrolled in the program: natural sciences, ethics/policy/law, and seminar. Any course used to satisfy the natural sciences and ethics/policy/law core areas must be a classroom course of at least 3 credits. The seminar course must be interactive and must be at least 1 credit. Independent study courses may not be used to satisfy core requirements. Students must complete a Coursework Approval Form, which summarizes all courses to be taken, and obtain signatures from their adviser, committee members, and the NRESS program chair once the coursework is completed.

Students Entering the Program without a Masters Degree
Students entering the program without a master’s degree are expected to complete a minimum of 36 credit hours. There is not a specific credit requirement beyond the required three core courses for students who have completed a M.S. or M.A. degree in a related field. Students enter the NRESS program with diverse backgrounds and preparation in their particular area of study. Therefore, final credit requirements are determined by the guidance committee and may include additional coursework necessary to enhance the student’s selected field of study and/or correct any deficiencies in the student’s previous program. Students may apply a maximum of 12 credits of independent study and/or seminar courses to their total course requirement.

Transfer of Credits
Graduate-level courses taken prior to admission may be transferred into the program and applied to the total only if they were not taken while matriculated in another degree program. These courses may not be used to meet the core course requirements. The graduate school allows 12 credits from UNH or 8 credits from other institutions. Transfer of credits must be approved by the adviser, the guidance committee, and the graduate school. Please consult the Graduate School catalog for more information on the regulations governing transfer of credits and other regulations applicable to Ph.D. students.

Language Proficiency
Language proficiency may be required at the discretion of the student’s adviser/committee. If required, a student will need to show proficiency in one foreign language or one computer language.

Examinations
Each student is required to pass three examinations, each of which has both a written and oral component. Additional preliminary examinations may be administered before the three required exams as the committee deems necessary. Performance on such an exam will determine areas where the student needs additional coursework or could result in the student’s removal from the program.

Comprehensive exam: The student must prepare an extensive written answer to one question from each committee member that covers the concepts and factual material deemed essential for the student’s program. Three weeks are allowed for completion of the exam, after which the student gives an oral presentation to the committee. This exam is taken within three years of initiation of graduate study in the program. The committee may require a student to repeat part or all of the comprehensive exam if the student’s performance is deemed unsatisfactory.

Proposal exam: The student must present to the committee a written proposal on the dissertation research topic. Once the proposal is written, the student will complete a public oral presentation of the proposed research followed by an oral examination by the committee.

Final exam: The student must complete a written Ph.D. dissertation prior to the final exam. Once written, the student is required to complete an oral defense of the dissertation, which will include both a public presentation and oral examination by the committee.

A student may be required to take additional courses following either the comprehensive or proposal exam, or may be removed from the program following failure of any of the required exams. Students are advanced to candidacy after successfully completing the
comprehensive exam, proposal exam, and all coursework required by the guidance committee as summarized on the Coursework Approval Form.

Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>NRES 995 Independent Study</td>
<td>1 to 4 cr.</td>
</tr>
<tr>
<td>NRES 999 Doctoral Research</td>
<td>0 cr.</td>
</tr>
</tbody>
</table>

Nursing (NURS)

www.unh.edu/nursing

Associate Professors: Lynette A. Ament, Pamela P. Dinapoli, Susan J. Fetzer, Gene E. Harkless, Raelene Shippee-Rice, Carol L. Williams-Barnard

Assistant Professors: Catherine H. Bernosky-Flores, Christine W. Saltzberg, Gerard A. Tobin, Susanne M. Tracy

Degrees Offered: M.S.

The Department of Nursing offers the master of science degree in nursing under two programs: Graduate Program in Nursing and Direct Entry Master’s in Nursing. The Graduate Program in Nursing currently offers four clinical practice tracks: adult nurse practitioner (ANP), family nurse practitioner (FNP), clinical nurse leader (CNL), and evidence-based nursing. Within the evidence-based nursing track, students can complete a program of study in clinical nursing education. All tracks prepare nurses for evidence-based practice through critical inquiry using a variety of instructional modalities.

The Direct Entry Master’s in Nursing Program culminates in the CNL track for the master of science degree in nursing.

Admission Requirements

Graduate Program in Nursing: Registered nurses (RNs) who hold a baccalaureate degree in either nursing or another field are considered for admission. Applicants are required to have a good academic record and completion of coursework in statistics and research. RNs whose baccalaureate degree is in a discipline other than nursing are considered. The program of study is individualized based on evaluation of competency statements and resume submitted with the application form. RNs without a B.S.N. should contact the Graduate Nursing Office for a copy of the competency statement form.

Direct Entry Master’s in Nursing: Direct entry applicants are required to have a solid academic record and satisfactory completion of coursework in statistics, anatomy and physiology I and II, and microbiology with a grade of B or better. This program is for applicants with a bachelor’s degree or higher in a field other than nursing.

M.S. Degree Requirements

The requirements for the Graduate Program in Nursing for the master of science degree includes a total of 42 credit hours for the adult nurse practitioner (ANP), 45 credit hours for the family nurse practitioner (FNP), 34 credit hours for the clinical nurse leader (CNL), and 32 credit hours for the evidence-based nursing track. All tracks are designed to be completed in three to four semesters of full-time study including summer. Individual plans of study are available for those wishing to pursue part-time study. Although no guarantees are given, we do try to accommodate student requests to the extent possible.

The Direct Entry Master’s in Nursing Program is a two-year, 73-credit, full-time course of study. Students are provisionally admitted to the M.S. program. Provision will be removed once the RN license is received. Students will be eligible to take the NCLEX-RN after completing four semesters of accelerated study (including summer), a total of 65 credits. Students are eligible to take the CNL (Clinical Nurse Leader) Certification Examination upon completion of the degree. The curriculum design begins in January and includes two summer sessions.

Core Courses

All master’s degree students complete the following 9 credits of core courses: 900, The Discipline of Nursing; 901, Nursing and Change in Health Services; and 905, Research.

Specialty courses for the Graduate Program in Nursing (23-36 credits) required for each area of specialization:

For adult nurse practitioner (ANP): 810, Families in Health and Illness; 907, Pharmacology; 908, Clinical Application of Human Physiology; 909, Health and Illness Appraisal; 935, Primary Care of the Adult; 936, Practicum in Primary Care of Adults (168 clinical hours); 937, Primary Care of Children; 938, Practicum in Primary Care of Children (112 clinical hours); 939, Seminar and Practicum in Primary Care of Families (336 clinical hours); 945, Clinical Decision Making in Health Care; and one, 3-credit elective related to program of study.

For clinical nurse leader (CNL): 908, Clinical Application of Human Physiology; 925, Health Care Systems and Leadership; 951, Clinical Epidemiology and Decision Analysis; 952, Clinical Nursing Leadership I (300 clinical hours); 953, Promoting Quality Management; 954, Clinical Nursing Leadership II (112 clinical hours); and 956, Capstone Project Seminar.

For evidence-based nursing: 908, Clinical Application of Human Physiology; 925, Health Care Systems and Leadership; 951, Clinical Epidemiology and Decision Analysis; 953, Promoting Quality Management; 955, Practicum in Advanced Nursing Practice (300 clinical hours); 956, Capstone Project Seminar; and one, 3-credit elective related to program of study.

Concluding Experience

For the nurse practitioner tracks, NURS 939 (FNP) or NURS 946 (ANP), which require 336 hours of precepted clinical experience, integrates advanced practice knowledge and skills in the final semester of study and serves as the capstone course.

For clinical nurse leader (CNL) and evidence-based nursing tracks, the capstone course, NURS 956, requires students to complete a scholarly project which synthesizes advanced practice knowledge and skills to address substantive nursing practice issues. CNL students may elect to complete a thesis, NURS 899 (6 credits), as the capstone course in place of NURS 956. If a student opts to do a thesis, the student should discuss this option with a faculty adviser early in the program of study.

Direct Entry Courses (73 credits); all courses are required and sequenced:

Spring 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>NURS 806 Clinical Inquiry</td>
<td>4 cr.</td>
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<tr>
<td>NURS 807 Pathophysiology and Pharmacology</td>
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</tr>
<tr>
<td>NURS 813 Health Assessment and Clinical Nursing</td>
<td>5 cr.</td>
</tr>
<tr>
<td>NURS 825 Collaborative Care I: Care of Older Adult</td>
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<tr>
<td>NURS 900 Discipline of Nursing</td>
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Summer I

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>NURS 826 Caring for People with Severe &amp; Persistent Mental Illness</td>
<td>4 cr.</td>
</tr>
<tr>
<td>NURS 827 Collaborative Care II: Managing Acute &amp; Complex Care of Individuals</td>
<td>6 cr.</td>
</tr>
<tr>
<td>NURS 901 Nursing &amp; Change in Health Services</td>
<td>3 cr.</td>
</tr>
</tbody>
</table>
The master’s degree prepares students for entry-level occupational therapy practice. Students gain the knowledge and skills to work with people of all ages to enable their participation within their natural environments and daily life activities, including education, work, self-care, home management, and leisure.

The program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE). ACOTE is located at the American Occupational Therapy Association, 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220. ACOTE’s telephone number is (301) 652-2682.

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 certified 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.

Applicants need a minimum overall grade point of 3.0 for undergraduate course work and a minimum 3.0 G.P.A. in the following prerequisite courses: human anatomy and physiology (two semesters with labs), neurology, abnormal psychology, human development, and statistics.

Additionally, applicants need to have completed a minimum of 40 hours of volunteer hours or work experience in health and human service settings. Three letters of reference must accompany the application. Two of these must address the applicant’s educational abilities/performances. One letter must address the applicant’s interpersonal/communications skills as observed in a volunteer or paid-employment setting.

Advanced-standing Professional Master’s Degree Students: Students who have completed a baccalaureate degree in occupational therapy at UNH as part of a combined B.S./M.S. program will take the first year of the two-year professional master’s program as part of their senior year B.S. degree requirements. These students will be identified as advanced-standing students in the professional master’s program and will need to complete three additional semesters of coursework, which includes fieldwork, to meet the M.S. degree requirements. Students in the combined B.S./M.S. program must apply for admission to the Graduate School to enter into the professional master’s degree program. An overall minimum grade point of 3.0 and a minimum of 3.0 G.P.A. in prerequisite courses is required for admission in the master’s degree program.

Degree Requirements

The master’s degree requires the completion of 62 graduate-level credits, which includes 19 credits of fieldwork. The program consists of two years (five semesters) of professional course. One level II fieldwork placement occurs during the summer between the first and second year or after the second year. Required OT courses include: 841, 851, 852, 854, 855, 856, 857, 861, 862, 863, 865, 871, 872, 875, 885, 892.
Students must earn a minimum of B- in all required courses and receive a passing criterion score on the American Occupational Therapy Association Fieldwork Evaluation for the Occupational Therapist. Specific requirements are delineated in the OT Department Policy and Procedure Manual that is distributed to all new students. Curriculum review and revision is undertaken annually. The Department of Occupational Therapy works closely with students during academic advising sessions and throughout the academic year. Students are also expected to take an active role in verifying expectations and should check with their departmental advisers each September for updated policies and requirements.

Fieldwork experiences are scheduled in centers that are approved by the department. Students are responsible for transportation to off-campus fieldwork sites and other community learning experiences and must purchase personal liability insurance for coverage for the practical components of the curriculum. Students are responsible for meeting the health clearances established by their fieldwork sites. Proof of immunizations such as poliomyelitis, rubella, and hepatitis B may also be required. For level II fieldwork, health insurance and a physical examination, including a tuberculin test, are required. After completing both level II fieldwork requirements, graduates will be eligible to sit for the certification examination as described above. Consistent with NBCOT expectations, students must sit for the certification examination within two years of completion of coursework and fieldwork. A felony conviction may affect a graduate’s ability to sit for the NBCOT certification examination and/or obtain licensure.

Curriculum design: Classes will be scheduled during weekdays throughout the day and early evening. Many courses require experiential learning activities, which students need to work into their weekly schedules.

<table>
<thead>
<tr>
<th>Courses</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>OT 822</td>
<td>Introduction to Assistive Technology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>OT 824</td>
<td>Assistive Technology and Physical Disabilities</td>
<td>4 cr.</td>
</tr>
<tr>
<td>OT 826</td>
<td>Assistive Technology and Sensory, Communicative, and Cognitive Disabilities</td>
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<tr>
<td>OT 841</td>
<td>Human Occupation</td>
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<tr>
<td>OT 846</td>
<td>Transitions: Student to Professional</td>
<td>2 cr.</td>
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<tr>
<td>OT 851</td>
<td>Mind Body Systems/Neurologically-based Function and Dysfunction</td>
<td>4 cr.</td>
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<tr>
<td>OT 852</td>
<td>Human Movement and Environmental Effects on Everyday Occupations</td>
<td>4 cr.</td>
</tr>
<tr>
<td>OT 854</td>
<td>Level II Fieldwork, I</td>
<td>8 cr.</td>
</tr>
<tr>
<td>OT 855</td>
<td>Level II Fieldwork, II Online Discussion</td>
<td>1 cr.</td>
</tr>
<tr>
<td>OT 856</td>
<td>Level II Fieldwork, II</td>
<td>8 cr.</td>
</tr>
<tr>
<td>OT 857</td>
<td>Level II Fieldwork, II Online Discussion</td>
<td>1 cr.</td>
</tr>
<tr>
<td>OT 862</td>
<td>Evaluation Principles and Methods</td>
<td>4 cr.</td>
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<tr>
<td>OT 863</td>
<td>Occupational Therapy Intervention</td>
<td>3 cr.</td>
</tr>
<tr>
<td>OT 864</td>
<td>Occupational Therapy Intervention Lab</td>
<td>2 cr.</td>
</tr>
<tr>
<td>OT 865</td>
<td>Occupational Therapy Practice and Professional Reasoning</td>
<td>3 cr.</td>
</tr>
<tr>
<td>OT 871</td>
<td>Enabling Participation in Community Groups</td>
<td>4 cr.</td>
</tr>
<tr>
<td>OT 872</td>
<td>Occupation, Health, and Community Programming</td>
<td>4 cr.</td>
</tr>
<tr>
<td>OT 875</td>
<td>Leadership in Occupational Therapy Systems of Practice</td>
<td>3 cr.</td>
</tr>
<tr>
<td>OT 885</td>
<td>Research Methods and Application to Practice</td>
<td>3 cr.</td>
</tr>
<tr>
<td>OT 892</td>
<td>Level I Fieldwork</td>
<td>1 cr.</td>
</tr>
<tr>
<td>OT 893</td>
<td>Special Topics</td>
<td>2 to 4 cr.</td>
</tr>
<tr>
<td>OT 895</td>
<td>Readings and Research in Occupational Therapy</td>
<td>1 to 6 cr.</td>
</tr>
<tr>
<td>OT 897</td>
<td>Graduate Project</td>
<td>1 to 6 cr.</td>
</tr>
<tr>
<td>OT 898</td>
<td>Capstone</td>
<td>2 cr.</td>
</tr>
<tr>
<td>OT 899</td>
<td>Master's Thesis</td>
<td>6 cr.</td>
</tr>
</tbody>
</table>

Ocean Engineering (OE)

www.unh.edu/oe


Research Professors: Lee Alexander, Jim Gardner, Lloyd Huff, James Irish

Affiliate Professors: Andrew Armstrong, Barbara Kraft, Kurt Schwehr, Allen D. Drake

Research Associate Professors: Brian P. Calder, Yurii Rizhanov

Affiliate Associate Professor: David Monahan

Research Assistant Professors: Luciano Fonseca, Barbara Kraft, Kurt Schwehr, Thomas Weber

Affiliate Assistant Professor: John Kelley

Degrees Offered: M.S., Ph.D.

Ocean Engineering (OE) offers programs leading to the master of science and an option in the doctor of philosophy degree program in engineering. Programs in OE are by definition interdisciplinary and require the students to interact with the ocean science community as well as the traditional engineering disciplines. Students are exposed to the broad-based issues of working engineering problems in the ocean environment, as well as discipline specifics. In these programs they will be trained to develop responsible solutions to problems that will lead to sustainable activity and life in the ocean.

A master of science in ocean engineering option in ocean mapping is also available. There is a more structured path through this program, which incorporates all aspects of hydrography as required by the International Hydrographic Organization (IHO) and is approved by the IHO. Focus is on the engineering aspects of hydrography. The general purpose of these programs is to prepare engineering students for professional careers in ocean-related fields.

Admission Requirements

Applicants should have completed a baccalaureate degree in either chemical, civil, electrical, or mechanical engineering or have an equivalent background.

Degree Requirements

M.S. Degree Requirements

Each student is required to take one oceanography course: ESCI 852, Chemical Oceanography; ESCI 858, Introductory Physical Oceanography; ESCI 859, Geologic Oceanography; or ZOOL 850, Biological Oceanography; as well as OE 990, 991, Ocean Engineering Seminar I, II. In addition, each student must select three of the following core courses: OE 871, Geodesy and Positioning for Ocean Mapping; OE 810, Ocean Measurements Laboratory; OE 854, Ocean Waves and Tides; OE 870, Fundamentals of Ocean Mapping; OE 845, Environmental Acoustics I; and OE 885, Environmental Acoustics II. Students are also required to take a minimum of 12 credits of additional coursework and complete a master’s thesis for 6 credits.

Ocean Mapping Option

This option is offered in conjunction with the Joint Hydrographic Center/Center for Coastal and Ocean Mapping. Each student is required to take these core courses: ESCI 858, Physical Oceanography; OE 990, 991, Ocean Engineering Seminar I and II; OE 810, Ocean Measurements Lab; OE 845, Environmental Acoustics I; OE 885, Environmental Acoustics II; OE 870, Fundamentals of Ocean Mapping; OE/ESCI 871, Geodesy and Positioning for Ocean Mapping; and OE/ESCI 972, Hydrographic Field Course. In addition, each student must select at least 6 additional credits from these electives: OE 854, Ocean Waves and Tides; ESCI 859, Geological Oceanography; OE 954, Ocean Waves and Tides II; ESCI 907, Geostatistics; OE/ESCI 973, Seafloor Characterization; OE/CS 867, Interactive Data Visualization; EOS 824, Introduction to Ocean Remote Sensing; NR 857, Photo Interpretation and Photogrammetry; NR 860, Geographic Information Systems in Natural Resources;
OE 995, Graduate Special Topics; or OE 998, Independent Study. Students are also required to complete a master’s thesis for 6 credits. Other related courses may be taken with approval.

Ph.D. Option

Students admitted to this Ph.D. option come from traditional engineering degree programs, physics, mathematics, computer science, and in some cases marine science programs. Those entering the Ph.D. option with a B.S. degree from an engineering program should be prepared to enter the Ph.D. option directly. Those coming from a B.S. in physics, mathematics, or computer science will have their transcripts more carefully reviewed on an individual basis, as additional courses may be required.

A student in the ocean engineering option in the Engineering Ph.D. program will be expected to take a minimum of 12 courses (exclusive of dissertation research) beyond those required for a B.S. degree.

Required Courses

One course in oceanography or ocean science: ESCI/ZOOL 850, Biological Oceanography; ESCI 852, Chemical Oceanography; ESCI 858, Introductory Physical Oceanography; or ESCI 859, Geological Oceanography

Three core courses in ocean engineering: OE 810, Ocean Measurements Lab; OE 844, Corrosion; OE 854, Ocean Waves and Tides; OE 856, Principles of Naval Architecture and Model Testing; OE 857, Coastal Engineering and Processes; OE 845, Environmental Acoustics I; OE 885, Environmental Acoustics II; OE 873, Seafloor Characterization; OE 870, Introduction to Ocean Mapping; OE 871, Geodesy and Positioning for Ocean Mapping; or OE 872, Hydrographic Field Course

Two courses in advanced OE topics (two at 900 level): OE 937, Advanced Hydrodynamics; OE 954, Ocean Waves and Tides II; OE 956, Dynamics of Moored Systems; or ESCI 959, Data Analysis Methods in Ocean and Earth Sciences

Two courses (one at the 800 level; one at the 900 level): MATH 845, MATH 846, Foundations of Applied Mathematics; MATH 853, Introduction to Numerical Methods; MATH 854, Introduction to Scientific Computing; MATH 856, Principles of Statistical Inference; MATH 888, Complex Analysis; MATH 931, MATH 932, Mathematical Physics; ME 881, Mathematical Methods in Engineering Science I; ME 982, Mathematical Methods in Engineering Science II; ME 876, Introduction to Finite Element Analysis; or ME 986 Advanced Finite Element Analysis

Four electives (two at 800 level; two at 900 level): CS 867, Interactive Data Visualization; ME 807, Analytical Fluid Dynamics; ME 809, Computational Fluid Dynamics; ME 886, Introduction to Finite Element Analysis; ME 909, Viscous Flow; ME 910, Turbulent Flow Analysis; ME 911, Theory of Hydrodynamic Stability; ME 827, Advanced Mechanics of Solids; ME 824, Introduction to Vibration; ME 823, Advanced Dynamics; ME 922, Continuum Mechanics; ME 924, Elasticity; ME 926, Plasticity; CIE 861, Foundation Engineering; CIE 862, Introduction to Geotechnical Earthquake Engineering; CIE 863, Geotechnical Engineering; CIE 883, Matrix Structural Analysis and Modeling; CIE 942, River Mechanics; CIE 961, In situ Geotechnical Testing; ESCI 907, Geostatistics; ESCI 958, Dynamical Oceanography; ECE 814, Introduction to Digital Signal Processing; ECE 817, Introduction to Digital Image Processing; ECE 845, Acoustics; ECE 857, Fundamentals of Communication; ECE 860, Introduction to Fiber Optics; ECE 939, Statistical Communication Theory; ECE 940, Information Theory; ECE 941, Digital Signal Processing; ECE 955, Estimation and Filtering; ECE 965, Introduction to Pattern Recognition; or ECE 970, Introduction to Optical Signal Processing

The general progress of a student through this option is expected to follow the time frame listed:

Year 1: Coursework, qualifier at the end of the year
Year 2: More coursework, thesis proposal presentation at the end of the year
Year 3: Research
Year 4: Research/thesis defense
Year 5: Research/thesis defense

The course selection and sequencing will be established in consultation with the student’s guidance committee. There will be a qualifying examination on the student’s specific area of interest after the first year, but no later than the end of the second year. The goal of this exam is to test the breadth of a student’s knowledge in topic areas essential to ocean engineering and the student’s area of interest. For each student there will be a list of must-know topics; i.e., physical oceanography, underwater acoustics, fluid dynamics, mathematics. A formal Ph.D. proposal will then be written and presented in a seminar, which constitutes an oral exam. After successful completion, the student will be advanced to candidacy and work on the dissertation. The dissertation will be defended in a public forum when completed.

Courses

OE 810 Ocean Measurements Laboratory 4 cr.
OE 844 Corrosion 4 cr.
OE 845 Environmental Acoustics I: Air and Water 4 cr.
OE 854 Ocean Waves and Tides 4 cr.
OE 856 Principles of Naval Architecture and Model Testing 4 cr.
OE 867 Interactive Data Visualization 3 cr.
OE 870 Fundamentals of Ocean Mapping 4 cr.
OE 871 Geodesy and Positioning for Ocean Mapping 3 cr.
OE 885 Environmental Acoustics II: Air and Water 4 cr.
OE 895 Special Topics 2 to 4 cr.
OE 899 Master’s Thesis 6 cr.
OE 954 Ocean Waves and Tides II 4 cr.
OE 972 Hydrographic Field Course 4 cr.
OE 973 Seafloor Characterization 3 cr.
OE 990 Ocean Seminars I 1 cr.
OE 991 Ocean Seminars II 1 cr.
OE 995 Graduate Special Topics 2 to 4 cr.
OE 998 Independent Study 1 to 4 cr.
OE 999 Doctoral Research 0 cr.

Painting (ARTS)

www.arts.unh.edu

Professors: David S. Andrew, Grant Drumheller, Patricia A. Emison, Craig A. Hood, Scott Schnepf, David R. Smith, Mara R. Witzling

Associate Professors: Brian W.K. Chu, Eleanor M. Hight, Jennifer K. Moses, Langdon C. Quin

Assistant Professor: Benjamin S. Cariens

Degree Offered: M.F.A.

The Department of Art and Art History offers a program of courses leading to a master of fine arts degree in painting.

Admission Requirements

A bachelor of fine arts degree in painting or the equivalent in undergraduate coursework (minimally this means 60 credit hours in studio art and 16 credit hours in art history) is required for admission to this program. Additionally, a minimum undergraduate G.P.A. of 2.6 is required. Prospective students must submit 20 slides of recent work to be reviewed by the graduate faculty of the Department of Art and Art History.

Degree Requirements

Each student in the master of fine arts degree in painting program shall complete 60 credit hours of work. Twenty-eight credits
Admission Requirements

Applicants to the master of science and doctor of philosophy programs are expected to have a bachelor’s degree in science, with at least 24 credits in physics and closely allied fields. Applicants must submit current scores (within five years) from the general test of the GRE.

Degree Requirements

M.S. Degree Requirements

The courses required for the master of science in physics include PHYS 805, 931, 939, 941, and 943. Students in the M.S. program are not required to take the Ph.D. comprehensive examination. Students may select one of the following plans: complete 30 semester hours of courses chosen in consultation with the graduate adviser, or complete 24 semester hours of courses chosen in consultation with the graduate adviser, complete a thesis representing the equivalent of six semester hours’ work, and pass an oral examination on the thesis.

Ph.D. Degree Requirements

The courses required for a doctor of philosophy degree in physics include PHYS 805, 931, 935, 939, 941-942, and 943-944, and any additional four courses at the 900 level, excluding 999. With appropriate additional work, a student may petition to receive credit for two of the following courses: PHYS 808, 810, 812, 818, 820, 864, and courses from other departments.

For students doing Ph.D. research in astrophysics or space physics, two of their four elective courses must be PHYS 951 and PHYS 940. These students must also take either 810 or 812.

Admission to candidacy for the degree is based primarily on demonstrated ability in formal coursework; experience in teaching, equivalent to at least half time for one year; passing a written comprehensive examination; and passing an oral defense of a proposed thesis topic. The comprehensive examination is normally taken during the first year and must be passed by the middle of the second year. Upon completion of a dissertation, doctoral candidates will take an oral examination based on the area of their research.

Interdisciplinary Research

The department encourages research in areas related to physics or applied physics. If students desire to do research in a field related to physics, special provisions may be made. Contact the department chairperson or graduate adviser for details.

Painting, Physics, Plant Biology

Degrees Offered: M.S., Ph.D.

The Department of Physics offers the degrees of master of science and the doctor of philosophy. Areas of specialization are space physics and astrophysics, experimental nuclear physics, biomedical imaging, theoretical nuclear and high-energy physics, experimental physics of solids and nanomaterials, and string theory.

Degrees Offered: M.S., Ph.D.

The Department of Plant Biology offers the master of science and doctor of philosophy degrees. Research opportunities are available in basic and applied areas of plant biol-
ogy, including breeding and genetics, cell biology, cell and tissue culture, ecology, molecular biology, genetic engineering, marine and freshwater biology, morphology and anatomy, pathology, psychophysics, physiology, systematic botany, crop production, and environmental horticulture.

Admission Requirements

Applicants are expected to have adequate preparation in plant biology and in the physical sciences. They must submit current scores (within five years) from the general test of the GRE.

Degree Requirements

M.S. Degree Requirements

Students will meet the Graduate School’s requirements for the degree (minimum of 30 credits). Students will be required to write and defend a thesis (6–10 credits) based on field or laboratory research.

Ph.D. Degree Requirements

Students will complete a program of study as determined by their guidance committee. Students will be advanced to candidacy after successfully completing comprehensive written and oral qualifying examinations. Candidates must successfully defend a dissertation based on original research in plant biology. For some program areas, a foreign language may be required at the discretion of the student’s guidance committee.

Teaching Requirements

Teaching experience is required of all M.S. and Ph.D. degree students. The requirement may be fulfilled by enrolling in a supervised teaching course, by serving as a teaching assistant, or by having previous professional teaching experience.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PBIO 801</td>
<td>Plant Physiology</td>
<td>3 cr.</td>
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<tr>
<td>PBIO 802</td>
<td>Plant Physiology Laboratory</td>
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<td>PBIO 809</td>
<td>Plant Stress Physiology</td>
<td>3 cr.</td>
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<tr>
<td>PBIO 813</td>
<td>Biochemistry of Photosynthesis</td>
<td>4 cr.</td>
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<tr>
<td>PBIO 814</td>
<td>Electron Microscopy</td>
<td>2 cr.</td>
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<tr>
<td>PBIO 815</td>
<td>Electron Microscopy Lab</td>
<td>3 cr.</td>
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<tr>
<td>PBIO 817</td>
<td>Lake Ecology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>PBIO 819</td>
<td>Field Studies in Lake Ecology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>PBIO 821</td>
<td>Microscopic Algae</td>
<td>4 cr.</td>
</tr>
<tr>
<td>PBIO 822</td>
<td>Marine Phycology</td>
<td>4 cr.</td>
</tr>
<tr>
<td>PBIO 825</td>
<td>Marine Ecology</td>
<td>4 cr.</td>
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<tr>
<td>PBIO 826</td>
<td>Integrated Pest Management</td>
<td>4 cr.</td>
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<tr>
<td>PBIO 827</td>
<td>Algal Physiology</td>
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<td>PBIO 832</td>
<td>Lake Management: A Multidisciplinary Approach</td>
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<td>PBIO 847</td>
<td>Aquatic Higher Plants</td>
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<td>PBIO 851</td>
<td>Cell Culture</td>
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<td>PBIO 852</td>
<td>Mycology</td>
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<td>PBIO 853</td>
<td>Cytogenetics</td>
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<tr>
<td>PBIO 854</td>
<td>Laboratory in Biochemistry and Molecular Biology of Nucleic Acids</td>
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<td>PBIO 858</td>
<td>Plant Anatomy</td>
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<tr>
<td>PBIO 861</td>
<td>Biodiversity: Phytogeographic Perspective</td>
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<td>PBIO 872</td>
<td>Evolutionary Genetics of Plants</td>
<td>4 cr.</td>
</tr>
<tr>
<td>PBIO 874</td>
<td>Plant Biotechnology and Genetic Engineering</td>
<td>3 cr.</td>
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<td>Plant Biotechnology and Genetic Engineering Lab</td>
<td>2 cr.</td>
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<td>PBIO 899</td>
<td>Master’s Thesis</td>
<td>6 to 10 cr.</td>
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<tr>
<td>PBIO 985</td>
<td>Advanced Topics</td>
<td>1 to 6 cr.</td>
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<td>PBIO 995</td>
<td>Investigations</td>
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<td>PBIO 997</td>
<td>Graduate Seminar</td>
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<tr>
<td>PBIO 999</td>
<td>Doctoral Research</td>
<td>0 cr.</td>
</tr>
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</table>

Political Science/Public Administration (POLT)

www.unh.edu/political-science/

Professors: Marla A. Brettschneider, Melvin J. Dubnick, Marilyn Hoskin, Mark W. Huddleston

Associate Professors: Warren R. Brown, John R. Kayser, Aline M. Kuntz, Lawrence C. Reardon, Dante J. Scala, Susan J. Siggelakis, Andrew E. Smith, Stacy D. VanDeveer, Clifford J. Wirth

Affiliate Associate Professor: S. Alan Ray

Assistant Professors: Roslyn Chavda, Alyna J. Lyon, Mary Malone, Jeannie L. Sowers

Research Associate Professor: Charles Putnam

Degrees Offered: M.A., M.P.A.

The Department of Political Science at UNH offers two graduate degrees: the Master of Arts in Political Science and the Master of Public Administration. Both provide advanced study in political science, public policy, and public administration for students interested in professions in the fields of government, public service, nonprofit management, electoral politics, education and research, or as preparation for Ph.D. programs. Our degree programs give students the flexibility to tailor their coursework to individual interests within a curriculum that ensures a strong foundation in research methodology, management, and other needed skills in the professions. Our faculty engage in teaching and research activities encompassing the fields of American politics, political thought, comparative/international politics, and public administration.

Both programs are offered to full and part-time students. The M.P.A. program offers evening courses for working professionals at Durham and Manchester.

Admission Requirements

Applicants are expected to have majored in political science or a related field, or have worked in government or the nonprofit sector. Where undergraduate preparation has been insufficient, applicants may be admitted provided that they follow a program of study approved by the chairperson. The GRE general test is required for the M.A. M.P.A. applicants are strongly encouraged to include GRE test results with their application, but it is required only for those M.P.A. applicants requesting consideration for graduate assistant or tuition assistance awards.

Degree Requirements

M.A. Degree Requirements

Masters students must complete a minimum of 36 credits for the degree: eight courses and a 6 credit master’s thesis. Of the eight courses, two are required seminars-Pro-Seminar (POLT 900) and Introduction to Statistical Analysis (POLT 903)-to be taken during the student’s first semester. The remaining six electives must include two courses in the student’s major subfield, one course in one of the three other subfields, and electives in political science or a related discipline (with adviser’s approval). Working closely with their thesis director and adviser, students can tailor coursework to specialize in a particular area, or to broaden their expertise in the discipline overall.

M.P.A. Degree Requirements

Master of public administration students must complete a minimum of 36 or 39 credits and a comprehensive examination for the degree. Required courses include:

• 4 Core Curriculum courses in foundations, organization and management, statistical analysis in public administration, and the Capstone internship or project (POLT 905, 906, 909, and the 908 Capstone) 12-15 credits

• 3 Management Core Curriculum courses in finance and budgeting, human resources, labor relations, management, or legal and policy-making environments (POLT 907, 911, 912 or 914) 9 credits

• Electives in public administration, political science, or related discipline with adviser’s approval. 15 credits

The Capstone internship or project is the culmination of the student’s graduate work, applying academic knowledge with practical experience. Students without prior public or nonprofit sector professional experience are required to complete the internship component of the Capstone.
Courses

POLT 801 Courts and Public Policy 3 cr.
POLT 803 Urban and Metropolitan Politics 3 cr.
POLT 804 Policy and Program Evaluation 3 cr.
POLT 806 State and Local Government 3 cr.
POLT 807 Criminal Justice Administration 3 cr.
POLT 808 Administrative Law 3 cr.
POLT 811 Public Opinion and Survey Research 3 cr.
POLT 812 Leadership Theory and Practice 3 cr.
POLT 815 Art of Negotiation 3 cr.
POLT 818 Special Topics - Public Administration 1 cr.
POLT 821 Feminist Political Theory 3 cr.
POLT 825 Politics and Literature 3 cr.
POLT 843 Comparative Political Economy 3 cr.
POLT 850 Politics of Poverty 3 cr.
POLT 851 Comparative Environmental Politics and Policy 3 cr.
POLT 860 Theories of International Relations 3 cr.
POLT 862 International Political Economy 3 cr.
POLT 878 International Organization 3 cr.
POLT 880 International Environmental Politics, Policy and Law 3 cr.
POLT 897B Seminar in American Politics 3 cr.
POLT 897C Seminar in Comparative Politics 3 cr.
POLT 897E Seminar in International Politics 3 cr.
POLT 897F Seminar in Public Administration 3 cr.
POLT 897I Seminar in Political Thought 3 cr.
POLT 898B Seminar in American Politics 3 cr.
POLT 898C Seminar in Comparative Politics 3 cr.
POLT 898E Seminar in International Politics 3 cr.
POLT 898F Seminar in Public Administration 3 cr.
POLT 898I Seminar in Political Thought 3 cr.
POLT 899 Master's Thesis 6 cr.
POLT 900 Political Science Pro-Seminar 3 cr.
POLT 905 Introduction to Statistical Analysis 3 cr.
POLT 906 Foundations and Theories of Public Administration 3 cr.
POLT 907 Legal and Policy-Making Environment on Public and Non-profit Sectors 3 cr.
POLT 908A Capstone in Public Administration 3 cr.
POLT 908B Capstone in Public Administration 6 cr.
POLT 909 Organization and Management in Public and Non-profit Sectors 3 cr.
POLT 911 Public Management Techniques 3 cr.
POLT 912 Human Resource Management in Public and Non-profit Sectors 3 cr.
POLT 914 Financial Management and Budgeting in Public and Non-profit Sectors 3 cr.
POLT 915 Collective Bargaining and Labor Relations 3 cr.
POLT 918 Non-Profit Management 3 cr.
POLT 995 Reading and Research 1 to 3 cr.
POLT 996 Reading and Research 1 to 3 cr.

Psychology (PSYC)
www.unh.edu/psychology/


Associate Professors: Victoria L. Banyard, Robert C. Drugan, Michelle D. Leichtman, John E. Limber, Carolyn J. Mebert, William Wren Stine, Daniel C. Williams

Affiliate Associate Professors: Kathleen A. Kendall-Tacket, Julie E. Williams

Assistant Professors: J. Pablo Chavajay, Brett M. Gibson, Andrew B. Leber, Jill A. McGaughy

Research Assistant Professors: Melissa K. Holt, Lisa M. Jones, Kimberly J. Lema

Affiliate Assistant Professor: Zorana Ivecic

Degree Offered: Ph.D.

Department of Psychology offers a four- or five-year program of study leading to the doctor of philosophy degree. The basic goal of the program is the development of behavioral scientists who have a broad knowledge of psychology, can teach and communicate effectively, and can carry out sound research in an area of specialization. Although some students seek employment outside academia, the program is oriented toward developing the skills required by the research psychologist who intends to become a college or university teacher.

Areas in which the student may specialize are brain, behavior, and cognition; developmental psychology; history of psychology; or social psychology/personality. The department does not offer training in clinical or counseling psychology.

Distinctive Features of the Program

All psychology graduate students in the Ph.D. program receive a stipend and a full tuition waiver for at least five years. A low graduate student/faculty ratio provides opportunities to work closely with one or more faculty mentors. Graduates typically acquire tenure-track academic or postdoctoral positions at colleges and universities across the U.S.

The Department of Psychology is a national model for preparing future faculty. All graduate students teach Introduction to Psychology while taking a year-long seminar in the teaching of psychology, as well as one or two undergraduate survey courses in statistics and/or in the student's area of specialization. In addition, through a partnership with the University's Preparing Future Faculty program, students may simultaneously earn a master of science for teachers or a Cognate in College Teaching.

The UNH Department of Psychology is the only program in the U.S. that offers a Ph.D. in the History of Psychology. In addition, there are active research laboratories in all areas represented in the graduate program. The department has strong partnerships with such nationally recognized programs as UNH's Child Study and Development Center and the Family Research Laboratory. UNH also has a Center for Teaching Excellence to help graduate students and faculty improve the quality of their teaching.

Admission Requirements

In addition to meeting the requirements for admission to the Graduate School, applicants must intend to be full-time students working toward the doctoral degree (not just the master's degree), and they must submit Graduate Record Examination general test scores. along with other standard application forms. The subject test in psychology is recommended. Scores must be current, within five years.

Degree Requirements

Ph.D. Degree Requirements

Required courses include two semesters of the graduate proseminal (PSYC 901-902), three semesters of research methods and statistics (PSYC 905, 906, 907 or 908), eight graduate seminars, and two semesters of the practicum and seminar in the teaching of psychology (PSYC 991-992). One course outside the department is also included in each student's program. Depth in a particular area is obtained through participation in advanced seminars and by independent reading and research conducted under the supervision of a faculty member.

Prior to the doctoral dissertation, the student carries out original research that culminates in either a master's thesis or a paper of publishable quality. A master's degree is awarded upon the successful completion of a program approved by the department and dean of the Graduate School. This typically takes place by the end of the second year.

The third year of the program is dedicated to the practicum and seminar in the teaching of psychology in conjunction with the teaching of introductory psychology.

Advancement to candidacy for the Ph.D. degree depends on receiving the master's degree, passing a specialist examination in one of the department's areas of specialization, and identifying a topic for doctoral research. Advancement to candidacy is usually accomplished by the end of a student's fourth year in the program. During the fourth year, students typically begin dissertation research and teach an introductory course in their specialty area. Most students complete the Ph.D. degree in the fifth year.
The M.P.H. program is accredited by the Commission on Accreditation of Educational Programs (CAPHE). This program is designed to provide students with the knowledge and skills necessary to perform the 10 essential services of public health: (1) identifying health problems; (2) assessing the public's health; (3) linking people to needed services; (4) developing policies and plans; (5) evaluating effectiveness; (6) providing clinical services; (7) ensuring safety and security; (8) conducting public health practice; (9) conducting public health research; and (10) ensuring socially just practices. The program is only offered at the University of New Hampshire Manchester campus through the Center for Graduate and Professional Studies. Academic classes are offered in semester units and each course is eight weeks in length and offered one evening per week for four hours. Working professionals can complete the M.P.H. program on a part-time basis over two years and have up to six years to complete the degree requirements.

**M.P.H. Admission Requirements**

(please note that since these are part-time programs, international applicants are not eligible to apply)

Admissions to the UNH Graduate School for both fall and spring semesters. The program encourages applications from persons who hold a baccalaureate degree from an accredited college or university. Students are expected to have completed courses in public health policy and management and public health systems, epidemiology, environmental health, biostatistics, and social and behavioral health). Students must also complete five additional courses for all students (admission to the M.P.H. program can apply to enter the M.P.H. program.

**Certificate of Public Health Requirements**

Admissions to the UNH Graduate School for both fall and spring semesters. Certificate program applicants must possess a baccalaureate degree from an accredited college or university. Students are expected to have completed courses in public health policy and management and public health systems, epidemiology, environmental health, biostatistics, and social and behavioral health). Students must also complete five additional courses for all students (admission to the M.P.H. program can apply to enter the M.P.H. program.

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**Recreation Management and Policy (RMP)**

www.unh.edu/rmp/index.shtml

**Professors:** Lou G. Powell, Janet R. Sable

**Associate Professors:** Robert J. Barcelona, Ann L. Morgan

**Assistant Professor:** Joshua Carroll

### Degree Offered: M.S.

The Department of Recreation Management and Policy offers the master of science degree in recreation administration or therapeutic recreation administration. The Department of Recreation Management and Policy is accredited by the American Alliance of Leisure and Recreation/National Recreation and Park Association (AALR/NRPA) Council on Accreditation. An atmosphere of collegiality and collaboration fosters interactions between faculty and students. Faculty and students are actively engaged in applied research.

### Admission Requirements

Admission is based on a personal history that demonstrates academic achievement and/or exemplary work experience, as well as the applicant’s ability to articulate in the personal statement his or her potential and desire for graduate study in recreation administration or therapeutic recreation administration. Generally, students must have earned a minimum grade-point average of 3.00 to be considered for admission. Applicants are required to submit copies of prior academic records, current scores (within five years) from the general test of the GRE, three references, a written personal statement, and a complete Graduate School application. A baccalaureate degree must be conferred prior to beginning the program. Interviews are encouraged but not required for all applicants. Students who wish to apply for a graduate assistantship should contact the department’s graduate coordinator for an application. Admission to the program is selective and limited, so it is in the applicant’s best interest to apply early.

### Degree Requirements

#### Recreation Administration Option

The recreation administration option prepares professionals with advanced knowledge and skills to plan and administer recreation services. Positions in the field of recreation administration are diverse and numerous. Examples of postgraduate opportunities include directors of town and municipal recreation departments, YMCAs, resort programs, camps, campus/intramural sports, fitness centers, youth services agencies, and sports and recreation facilities as well as outdoor recreation planners for the U.S. Forest Service, National Park Service, and state park systems.

#### Therapeutic Recreation Administration Option

The therapeutic recreation administration option prepares advanced personnel for administrative responsibilities in clinical-based practice and administrative leadership in community-based recreation services that meet the needs of individuals with disabilities. Graduate education serves therapeutic recreation specialists who wish to move into administrative positions such as recreation therapy supervisor/manager/director, senior therapist, treatment coordinator, assisted-living manager, and senior center supervisor.

Students without an academic or clinical background in therapeutic recreation may use the M.S. program to satisfy the academic requirements for the national credentialing examination used by the National Council on Therapeutic Recreation Certification (NCTRC). While the graduate program does not require prerequisite courses to qualify for admission, the credentialing examination does require coursework outside the M.S. curriculum requirements and the department may require leveling coursework upon acceptance to the M.S. program.

In both options, students are required to complete 30 credits detailed in the following program outline. Individuals seeking a career change to recreation or therapeutic recreation administration with an undergraduate degree in a related field may be admitted to the Graduate School as a provisional student, with the expectation that they complete any required prerequisites prior to, or concurrent with, graduate courses. A specially designed curriculum is available to provisionally admitted students.

#### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>RMP 800</td>
<td>Concepts of Recreation and Leisure</td>
<td>3 cr.</td>
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<tr>
<td>RMP 805</td>
<td>Management and Policy in Therapeutic Recreation</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RMP 806</td>
<td>Recreation Administration and Organizational Behavior</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RMP 811</td>
<td>Recreation Resource Management</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RMP 830</td>
<td>Camp Administration and Leadership</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RMP 843</td>
<td>Cultural Environmental Interpretation</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RMP 860</td>
<td>Community Sport Organizations: Administration and Development</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RMP 870</td>
<td>Management and Design of Recreation and Park Facilities</td>
<td>3 cr.</td>
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<td>RMP 872</td>
<td>Law and Public Policy in Leisure Services</td>
<td>3 cr.</td>
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<tr>
<td>RMP 875</td>
<td>Entrepreneurial and Commercial Recreation</td>
<td>3 cr.</td>
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<tr>
<td>RMP 897</td>
<td>Master's Project</td>
<td>3 cr.</td>
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<tr>
<td>RMP 899</td>
<td>Master's Thesis</td>
<td>6 cr.</td>
</tr>
<tr>
<td>RMP 910</td>
<td>Conceptual Issues and Trends in Therapeutic Recreation</td>
<td>3 cr.</td>
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<td>RMP 912</td>
<td>Non-Profit Administration and Leadership</td>
<td>3 cr.</td>
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<tr>
<td>RMP 964</td>
<td>Graduate Internship</td>
<td>3 cr.</td>
</tr>
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<td>RMP 970</td>
<td>Teaching Practicum</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RMP 980</td>
<td>Independent Study</td>
<td>1 to 3 cr.</td>
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<tr>
<td>RMP 995</td>
<td>Colloquium Seminar</td>
<td>3 cr.</td>
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<tr>
<td>RMP 998</td>
<td>Special Topics</td>
<td>2 to 4 cr.</td>
</tr>
</tbody>
</table>

### Resource Administration and Management (RAM)

www.dred.unh.edu

**Professors:** John E. Carroll, Russell G. Congalton, Robert T. Eckert, Richard W. England, John M. Halstead, Lawrence C. Hamilton, Theodore E. Howard, Bruce E. Lindsay

**Associate Professors:** Mimi Larsen Becker, Kelly L. Giraud, Ju-chin Huang, Alberto B. Manalo, Douglas E. Morris, Robert A. Robertson

### Degree Offered: M.S.

The Department of Resource Economics and Development coordinates the interdisciplinary master of science degree program in resource administration and management. Students may specialize in manage-
ment of publicly and privately owned natural resources or in administration of natural resource laws and policies.

Admission Requirements

Applicants are expected to have completed either an undergraduate degree in the field in which they plan to specialize or show adequate preparation in the basic support courses of the field. A minimum of one course in each of the areas of ecology or natural resources, intermediate microeconomics, and introductory statistics is required. Persons having professional experience in resource administration, management, or related areas receive priority for admittance to the program. An applicant is required to submit an essay of up to 2,000 words describing his or her background and goals.

Applicants with good undergraduate records who lack a background in a particular field may be admitted to a program, provided they are prepared to correct the deficiencies. Applicants must submit current scores (within five years) from the general test of the GRE.

Degree Requirements

M.S. Degree Requirements

The master of science degree in resource administration and management is conferred upon successful completion of a program amounting to not less than 34 credits including the following course requirements or equivalent: NR 903, Approach to Research, 3 cr.; quantitative methods or analytical techniques, 3-4 cr.; RAM 911, Natural and Environmental Resource Management, 4 cr.; advanced course in environmental policy, 3-4 cr.; and RAM 898, Directed Research, 4-6 cr., or RAM 899, Thesis, 6-10 cr.; and a final oral and/or written examination.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>RAM 805</td>
<td>Ecotourism: Managing for the Environment</td>
<td>4 cr.</td>
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<tr>
<td>RAM 820</td>
<td>Community-Based Natural Resource Management: Lessons from the Field</td>
<td>3 cr.</td>
</tr>
<tr>
<td>RAM 841</td>
<td>Critical Issues in Solid Waste Management</td>
<td>2 cr.</td>
</tr>
<tr>
<td>RAM 867</td>
<td>Social Impact Assessment</td>
<td>4 cr.</td>
</tr>
<tr>
<td>RAM 877</td>
<td>Topics in Community Planning</td>
<td>4 cr.</td>
</tr>
<tr>
<td>RAM 896</td>
<td>Investigations</td>
<td>2 to 4 cr.</td>
</tr>
<tr>
<td>RAM 898</td>
<td>Directed Research</td>
<td>4 to 6 cr.</td>
</tr>
<tr>
<td>RAM 899</td>
<td>Master’s Thesis</td>
<td>6 to 10 cr.</td>
</tr>
<tr>
<td>RAM 900</td>
<td>Resource Administration and Management Internship</td>
<td>4 cr.</td>
</tr>
<tr>
<td>RAM 911</td>
<td>Natural and Environmental Resource Management</td>
<td>4 cr.</td>
</tr>
<tr>
<td>RAM 993</td>
<td>Natural and Environmental Resources Seminar</td>
<td>1 cr.</td>
</tr>
</tbody>
</table>

Resource Economics (RECO)

www.dred.unh.edu

Professors: Lyndon E. Goodridge, John M. Halstead, Bruce E. Lindsay
Associate Professors: Kelly L. Giraud, Alberto B. Manalo, Douglas E. Morris

Degree Offered: M.S.

The Department of Resource Economics and Development offers the master of science degree in resource economics with specializations in agricultural economics, community and regional economics, land economics, water economics, and environmental economics.

Admission Requirements

Applicants are expected to have completed either an undergraduate degree in the field in which they plan to specialize or show adequate preparation in the basic support courses of the field. Four or more undergraduate courses in economics or resource economics, including intermediate microeconomics and intermediate macroeconomics, are required, as well as calculus and statistics. Applicants with good undergraduate records who lack background in a particular field may be admitted to a program, provided they are prepared to correct the deficiencies. Applicants must submit current scores (within five years) from the general test of the GRE.

M.S. Degree Requirements

The master of science degree in resource economics is conferred upon successful completion of a program amounting to not less than 30 credits including the following course requirements or equivalent: RECO 993, Seminar, 1 cr.; NR 903 or equivalent, Approach to Research; ECON 926, Econometrics I, or ECON 927, Econometrics II; RECO 808, Environmental Economics, or RECO 856, Rural and Regional Economic Development; RECO 815, Linear Programming and Quantitative Models; ECON 976, Microeconomics I, or equivalent; and RECO 898, Directed Research, 2-4 cr., or RECO 899, Thesis, 6-10 cr.; and a final oral and/or written examination.

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<tr>
<td>RECO 800</td>
<td>Marketing Communications Research: Methodological Foundations</td>
<td>4 cr.</td>
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<tr>
<td>RECO 808</td>
<td>Environmental Economics</td>
<td>4 cr.</td>
</tr>
<tr>
<td>RECO 815</td>
<td>Linear Programming and Quantitative Models</td>
<td>4 cr.</td>
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<tr>
<td>RECO 856</td>
<td>Rural and Regional Economic Development</td>
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<tr>
<td>RECO 895</td>
<td>Investigations</td>
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</table>

Social Work (SW)

www.unh.edu/social-work/

Associate Professors: Mary Banach, Linda Rene Bergeron, Cynthia Anne Broussard, Robert E. Jolley, Jerry D. Marx, Sharyn J. Zunz
Assistant Professors: Vernon Brooks, Carter, Anita Tucker, Melissa Wells
Clinical Assistant Professors: Susan A. Lord, Sharon B. Murphy

Degree Offered: M.S.W.

The Department of Social Work offers a master of social work (M.S.W.) degree. This program develops advanced professional knowledge and skill for persons interested in pursuing careers in the field of social work. The M.S.W. program is accredited by the Council on Social Work Education (CSWE). It requires two years of full-time study or three-to-four years of part-time study. The full-time program is available in Durham only; the part-time program is available in Durham or Manchester. The Manchester academic classes are delivered in a weekend model. All students complete a foundation-year course of study, then elect a second-year concentration either in direct/clinical practice or community/administrative practice. Both concentrations require classroom work and two year-long field internships. Field internship hours are typically completed during normal business hours.

Admission Requirements

The department encourages applications from persons who hold a baccalaureate degree from an accredited college or university; have attained an overall grade-point average of “B” or better in undergraduate coursework; have completed courses in a broad range of liberal arts and science disciplines; have acceptable recommendations from three individuals, one of whom must be a member of an academic faculty; and have completed a personal statement of interest in pursuing graduate education in the field. Although not required, significant volunteer and/or work experience in the field is strongly recommended. Students who do not meet the liberal arts and science expectations...
may be asked to complete additional coursework prior to or during the first year of their enrollment in the program. Standardized graduate examinations are not required, but results of such tests may be submitted to supplement other admission materials.

Students applying for advanced standing must hold a B.A. from an accredited S.W./B.S.W. program with a minimum overall grade-point average of 3.2 (4.00 point scale). This coursework must have been completed within five years of the date of M.S.W. matriculation. Advanced-standing applicants must also submit a reference from a B.S.W. faculty member and the undergraduate field supervisor or field coordinator.

The M.S.W. program concentrates on strengths and empowerment models that encourage individuals and families and communities and organizations to realize their full potential. The department supplies the students with a social and community systems context and promotes practice skills that are responsive to diversity issues. The program is housed in the newly renovated Pettie Hall with access to interview observation rooms and state-of-the-art classrooms and computer labs.

Financial aid opportunities in the department include grants for students interested in the child welfare field or in work with developmentally disabled children and their families. The department also offers graduate research assistantships to a few second year students. Graduates of the program are employed in a wide variety of social and human service agencies as direct practitioners and in managerial roles.

**M.S.W. Degree Requirements**

An M.S.W. candidate must complete 62 credit hours of 800- or 900-level courses including two, two-semester field internships, comprising a total of 1,100 hours in the field. Grades below the B-level in a graded course or a “fail” in a credit/fail course are considered failing grades for the purposes of determining academic standing. Repeating a course does not remove the original failing grade from the record. Graduate students receiving failing grades in 6 or more credits, received either in two courses or in one course taken twice, will be dismissed from the M.S.W. program.

Although a significant portion of the curriculum is required, students will be able to complete three elective courses. At least one of these must be taken from among Department of Social Work course offerings. Students select a second-year concentration in direct/clinical practice or community/administrative practice. Each concentration requires that three courses and the second-year field internship be completed in the student's area of concentration.

Advance-standing students complete a minimum of 35 credits for graduation. This includes a 10-week summer practicum and seminar, which students must take prior to their advanced practice and field placement. Additional information may be obtained by contacting the coordinator of graduate admissions in the department office.

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<tr>
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<td>Women and Aging</td>
<td>3 cr</td>
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<tr>
<td>SW 805</td>
<td>Child and Adolescent Risks and Resiliency:</td>
<td>3 cr</td>
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<td></td>
<td>Program, Policy and Practice</td>
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<td>SW 812</td>
<td>Understanding Developmental Disabilities</td>
<td>3 cr</td>
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<tr>
<td>SW 814</td>
<td>Introduction to Addiction: Assessment and</td>
<td>3 cr</td>
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<td></td>
<td>Intervention</td>
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<td>SW 815</td>
<td>Practice with Gay, Lesbian, Bisexual, and</td>
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<td></td>
<td>Transgender People</td>
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<tr>
<td>SW 820</td>
<td>Social Welfare Policy I</td>
<td>3 cr</td>
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<tr>
<td>SW 830</td>
<td>Social Work Practice I</td>
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<td>SW 831</td>
<td>Social Work Practice II: Practice in Small</td>
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<td>Groups and Community Organizations</td>
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<tr>
<td>SW 840</td>
<td>Implications of Race, Culture, and Oppression for</td>
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<td>Social Work Practice</td>
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<td>SW 850</td>
<td>Human Behavior and the Social Environment I</td>
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<tr>
<td>SW 851</td>
<td>Human Behavior and the Social Environment II</td>
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<td>SW 860</td>
<td>Research Methods in Social Work</td>
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<td>SW 880</td>
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<td>SW 881</td>
<td>Field Internship II</td>
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<td>SW 885</td>
<td>Study Abroad: Comparative Social Welfare Systems</td>
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<td>SW 897</td>
<td>Special Topics in Social Work and Social Welfare</td>
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<tr>
<td>SW 900</td>
<td>Advanced Standing Practice and Field Seminar</td>
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<td>SW 926</td>
<td>Social Welfare Policy II</td>
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<td>SW 932</td>
<td>Direct Practice III: Clinical Assessment and</td>
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<td>Intervention</td>
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<td>SW 933</td>
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<td>Community Organization and Political Strategies</td>
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<td>SW 937</td>
<td>Community and Administrative Practice IV:</td>
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<td>Management of Human Service Organizations</td>
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<td>SW 952</td>
<td>HB/SE III: Mental Health Practice and Policy</td>
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<td>SW 957</td>
<td>Program and Resource Development in the Social</td>
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<td>Service Arena</td>
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<td>SW 962</td>
<td>Research II Statistics</td>
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<td>SW 965</td>
<td>Research III: Program and Practice Evaluation</td>
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<td>SW 974</td>
<td>Social Work Supervision</td>
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<td>SW 975</td>
<td>Theory and Practice of Family Therapy</td>
<td>3 cr</td>
</tr>
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<td>SW 979</td>
<td>Social Work and the Law</td>
<td>3 cr</td>
</tr>
<tr>
<td>SW 982</td>
<td>Field Internship III</td>
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<td>SW 983</td>
<td>Field Internship IV</td>
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<tr>
<td>SW 992</td>
<td>Special Projects and Independent Study</td>
<td>1 to 3 cr</td>
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</table>
logical Methods I (901), Sociological Methods II (902), Sociological Theory I (911), three elective graduate seminars, and at least six credits of Master’s Thesis work (899). Students must also register for 1 credit of thesis work during the second semester of residence and submit a draft of a proposal to the thesis committee by the end of the semester, submit for approval a report of a research endeavor to the thesis committee, and register for a total of 6-10 thesis credits.

Ph.D. Degree Requirements

Students must complete a minimum of three years in residence, and take a minimum of sixteen courses in sociology (at least eight as seminars) other than thesis or dissertation research, including the Proseminar in Sociology (900, 2 cr.), Sociological Theory I and II (911 and 912), Sociological Methods I, II, III, and IV (901, 902, 903, 904), four courses in a major area, and five elective courses. Students must pass written examinations in the major area of sociological specialization and in advanced theory and methodology, and write and defend the doctoral dissertation.

Degree Offered: M.A.

The program in Spanish in the Department of Languages, Literatures, and Cultures offers a master of arts degree in Spanish with courses in the following four areas: Medieval and Golden Age literature and culture, Modern Peninsular literature and culture, Latin American literature and culture, and Hispanic linguistics and foreign language pedagogy. The program also supports work in interdisciplinary Hispanic Cultural Studies.

Admission Requirements

Applicants shall have received a bachelor’s degree from an accredited institution with an undergraduate major in Spanish or its equivalent.

Degree Requirements

To obtain the degree, the candidate must fulfill a minimum of 30 credits. The candidate must also pass a comprehensive examination based on the master’s degree reading list. To satisfy the course requirements, the candidate must successfully complete ten graduate courses, eight of which should be from the offerings of the Spanish program; two of the ten courses can be taken in allied fields approved by the department; take four of the ten courses as graduate seminars; or write an acceptable thesis in lieu of two courses. If a thesis option is selected, it must embody the results of independent investigation and be written in Spanish in a form acceptable to the Spanish faculty and the Graduate School.

In addition, master of arts degree candidates must take Spanish 901 (a 1-credit course dealing with bibliography and methods of research) during their first year of study. Preparation of a bibliographical essay in this course is the final requirement for graduation. Graduate assistants teaching in the department must take Spanish 903 (a 1-credit course in applied linguistics).

Courses

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>SOC 815</td>
<td>Criminological Theory</td>
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<td>SOC 820</td>
<td>Sociology of Drug Use</td>
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<td>SOC 840</td>
<td>Sociology of Mental Health</td>
<td>4 cr.</td>
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<td>SOC 841</td>
<td>Social Change and Development</td>
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<td>SOC 842</td>
<td>Sociology and Social Policy</td>
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<td>SOC 845</td>
<td>Race, Ethnicity, and Inequality</td>
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<td>SOC 854</td>
<td>Sociology of Religion</td>
<td>4 cr.</td>
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<tr>
<td>SOC 860</td>
<td>Aging and Late Life Family</td>
<td>4 cr.</td>
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<tr>
<td>SOC 870</td>
<td>Social Stress and Health</td>
<td>4 cr.</td>
</tr>
<tr>
<td>SOC 873</td>
<td>Sociology of Childhood</td>
<td>4 cr.</td>
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<tr>
<td>SOC 876</td>
<td>Family Violence Research Seminar</td>
<td>4 cr.</td>
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<td>SOC 880</td>
<td>Social Conflict</td>
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<td>SOC 892</td>
<td>Research Internship</td>
<td>4 cr.</td>
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<td>SOC 894</td>
<td>Evaluation of Social Programs</td>
<td>4 cr.</td>
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<tr>
<td>SOC 897</td>
<td>Special Topics</td>
<td>4 cr.</td>
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<tr>
<td>SOC 899</td>
<td>Master’s Thesis</td>
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<td>SOC 900</td>
<td>Proseminar</td>
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<td>SOC 901</td>
<td>Sociological Methods I: Intermediate Social Statistics</td>
<td>4 cr.</td>
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<tr>
<td>SOC 902</td>
<td>Sociological Methods II: Research Design</td>
<td>4 cr.</td>
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<tr>
<td>SOC 903</td>
<td>Sociological Methods III: Advanced Social Statistics</td>
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<tr>
<td>SOC 904</td>
<td>Sociological Methods IV: Qualitative and Historical Research Methods</td>
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</tr>
<tr>
<td>SOC 911</td>
<td>Sociological Theory I</td>
<td>4 cr.</td>
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<td>SOC 912</td>
<td>Sociological Theory II</td>
<td>4 cr.</td>
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<tr>
<td>SOC 921</td>
<td>Crime and Conflict</td>
<td>4 cr.</td>
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<td>SOC 975</td>
<td>Sociology of the Family</td>
<td>4 cr.</td>
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<td>SOC 980</td>
<td>Social Stratification</td>
<td>4 cr.</td>
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<tr>
<td>SOC 988</td>
<td>Medical Sociology: Health, Healing, and Society</td>
<td>4 cr.</td>
</tr>
<tr>
<td>SOC 990</td>
<td>Teaching Sociology Seminar</td>
<td>4 cr.</td>
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<tr>
<td>SOC 995</td>
<td>Reading and Research</td>
<td>2 to 8 cr.</td>
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<th>Course</th>
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<td>SOC 996</td>
<td>Reading and Research</td>
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<td>SOC 997</td>
<td>Advanced Special Topics</td>
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<td>SOC 999</td>
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Spanish (SPAN)

[www.unh.edu/spanish/graduate.html](http://www.unh.edu/spanish/graduate.html)

**Professor:** Janet Gold

**Associate Professors:** John M. Chaston, Carmen García de la Rasilla, Marco Dorfman, Lori Hopkins, Lina Lee, Jaume Martí-Olivella

**Degree Offered:** M.A.

The program in Spanish in the Department of Languages, Literatures, and Cultures offers a master of arts degree in Spanish with courses in the four following areas: Medieval and Golden Age literature and culture, Modern Peninsular literature and culture, Latin American literature and culture, and Hispanic linguistics and foreign language pedagogy. The program also supports work in interdisciplinary Hispanic Cultural Studies.

**Admission Requirements**

Applicants shall have received a bachelor’s degree from an accredited institution with an undergraduate major in Spanish or its equivalent.

**Degree Requirements**

To obtain the degree, the candidate must fulfill a minimum of 30 credits. The candidate must also pass a comprehensive examination based on the master’s degree reading list. To satisfy the course requirements, the candidate must successfully complete ten graduate courses, eight of which should be from the offerings of the Spanish program; two of the ten courses can be taken in allied fields approved by the department; take four of the ten courses as graduate seminars; or write an acceptable thesis in lieu of two courses. If a thesis option is selected, it must embody the results of independent investigation and be written in Spanish in a form acceptable to the Spanish faculty and the Graduate School.

In addition, master of arts degree candidates must take Spanish 901 (a 1-credit course dealing with bibliography and methods of research) during their first year of study. Preparation of a bibliographical essay in this course is the final requirement for graduation. Graduate assistants teaching in the department must take Spanish 903 (a 1-credit course in applied linguistics).

**Courses**

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<tr>
<th>Course</th>
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<th>Credits</th>
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<tr>
<td>SPAN 833</td>
<td>History of the Spanish Language</td>
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<td>SPAN 856</td>
<td>Modern Spanish Poetry</td>
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</tr>
<tr>
<td>SPAN 871</td>
<td>Latin American Drama</td>
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</tr>
<tr>
<td>SPAN 872</td>
<td>Latin American Novel</td>
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</tr>
<tr>
<td>SPAN 873</td>
<td>Latin American Short Story</td>
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<tr>
<td>SPAN 881</td>
<td>Summer Study Abroad in Mexico</td>
<td>8 cr.</td>
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<tr>
<td>SPAN 882</td>
<td>Summer Seminar for Spanish Teachers</td>
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<td>SPAN 890</td>
<td>Grammatical Structure of Spanish</td>
<td>3 cr.</td>
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<tr>
<td>SPAN 897</td>
<td>Special Studies in Spanish Language and Literature</td>
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<td>SPAN 898</td>
<td>Special Studies in Spanish Language and Literature</td>
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<tr>
<td>SPAN 901</td>
<td>Bibliography and Methods of Research</td>
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<td>SPAN 903</td>
<td>Applied Linguistics</td>
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<td>SPAN 995</td>
<td>Independent Study</td>
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<tr>
<td>SPAN 997</td>
<td>Graduate Seminar</td>
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Zoology (ZOOL)

[zoology.unh.edu/](http://zoology.unh.edu/)


**Research Professors:** Raymond E. Grizzle, Michael P. Lesser

**Affiliate Professor:** Ann C. Bucklin

**Associate Professors:** David L. Berlinsky, Jessica A. Bolker, James E. Byers

**Research Associate Professor:** Maryellen M. Lutcavage

**Affiliate Associate Professor:** Pingguo He

**Affiliate Assistant Professor:** Michele Dionne

**Clinical Associate Professor:** Mary Katherine Lockwood

**Degrees Offered:** M.S., Ph.D.

The Department of Zoology offers M.S. and Ph.D. degrees in zoology.

**Admission Requirements**

Applicants ordinarily must have completed an undergraduate major in biology or zoology. A basic array of courses including general biology, development, general ecology, genetics, morphology, and physiology is normally required. Additionally, organic chemistry and a semester each of calculus and physics are necessary. Applicants who are deficient in any of these requirements may be admitted to graduate status but may be required to remedy their deficiencies by taking courses that do not give graduate credit. Applicants must submit current scores (within five years) from the general test and subject biology scores from the Graduate Record Examination.
M.S. Degree Requirements

Students plan a program of study (minimum of 30 credits) in conjunction with a faculty advisory committee. Students complete a thesis of 6 to 10 credits that is acceptable to the thesis-examining committee. Prior to the receipt of the master's degree, all candidates must pass a thesis defense, which will include questions covering general knowledge in zoology in addition to specific questions relevant to the student's research at UNH.

Ph.D. Degree Requirements

Students plan a program of study in conjunction with a faculty guidance committee. All doctoral students must demonstrate proficiency in one foreign language. The student will present to the committee a research proposal in which the soundness, originality, and feasibility of the investigative ideas are clearly revealed, and which, when approved, will serve as the basis of the doctoral dissertation. After the successful completion of all required courses, and the approval of the proposal, students who wish to be admitted to doctoral candidacy must demonstrate, in a qualifying examination, a broad basic knowledge of their major and minor fields and their ability to carry out basic research in zoology. All students must complete an original dissertation project, present the results at a public seminar, and pass an oral defense consisting of questions put forth by members of the dissertation committee.

Teaching Requirement

All graduate students are encouraged to obtain appropriate teaching experience, preferably as a teaching assistant.

Research and Facilities

The zoology graduate program is enhanced by courses and research in other biological science departments and institutes at the University. These include the Marine Program and its associated centers and programs, the Center for Marine Biology, the Center for Ocean Sciences, the Center for Ocean Engineering, N.H. Sea Grant Program, the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), the Center of Excellence in Coastal Ocean Observation and Analysis (COOA), the Institute for the Study of Earth, Oceans, and Space (EOS), UNH Center for Coastal and Ocean Mapping (CCOM), and the Joint Hydrographic Center, Ocean Processes Analysis Laboratory (OPAL), and the Cooperative Institute for New England Mariculture and Fisheries (CINEmar), including the UNH Open Ocean Aquaculture Demonstration Project. There are five marine laboratories: Jackson Estuarine Lab, Coastal Marine Lab, Anadromous Fish and Aquatic Invertebrate Research Lab (AFAIR), the Aquaculture Research Center (ARC) and Shoals Marine Lab and two specialized research facilities, the Polynucleotide Sequencing and the Image Analysis Lab.

In addition, the Center for Freshwater Biology (CFB) jointly administers (with the UNH Cooperative Extension) the Lakes Lay Monitoring Program, which is dedicated to the preservation and sound management of lakes through citizen-based monitoring and research. The Hubbard Center for Genomic Studies provides training and research in comparative and environmental genomics, with a special emphasis on novel model species. It provides expertise in constructing DNA libraries, DNA sequencing, fragment analysis, and the analysis of gene expression.

Courses

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<td>ZOOL 801</td>
<td>Conservation Biology</td>
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<td>ZOOL 808</td>
<td>Stream Ecology</td>
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<tr>
<td>ZOOL 810</td>
<td>Ichthyology</td>
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<tr>
<td>ZOOL 811</td>
<td>Zooplankton Ecology</td>
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<tr>
<td>ZOOL 812</td>
<td>Mammalogy</td>
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<tr>
<td>ZOOL 813</td>
<td>Animal Behavior</td>
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<td>ZOOL 817</td>
<td>Lake Ecology</td>
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<td>ZOOL 819</td>
<td>Field Studies in Lake Ecology</td>
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<td>ZOOL 825</td>
<td>Marine Ecology</td>
<td>4 cr.</td>
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<tr>
<td>ZOOL 832</td>
<td>Lake Management: A Multidisciplinary Approach</td>
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<td>ZOOL 833</td>
<td>Behavioral Ecology</td>
<td>4 cr.</td>
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<tr>
<td>ZOOL 845</td>
<td>Biology and Diversity of Insects</td>
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<td>ZOOL 850</td>
<td>Biological Oceanography</td>
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<tr>
<td>ZOOL 872</td>
<td>Fisheries Biology</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ZOOL 873</td>
<td>Physiology of Fish</td>
<td>4 cr.</td>
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<tr>
<td>ZOOL 877</td>
<td>Neurobiology and Behavior</td>
<td>4 cr.</td>
</tr>
<tr>
<td>ZOOL 895</td>
<td>Advanced Studies</td>
<td>1 to 4 cr.</td>
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<tr>
<td>ZOOL 896</td>
<td>Advanced Studies</td>
<td>1 to 4 cr.</td>
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<tr>
<td>ZOOL 899</td>
<td>Master's Thesis</td>
<td>6 to 10 cr.</td>
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<td>ZOOL 901</td>
<td>Research Methods</td>
<td>2 cr.</td>
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<td>ZOOL 997</td>
<td>Seminar</td>
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<td>ZOOL 998</td>
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</tr>
<tr>
<td>ZOOL 999</td>
<td>Doctoral Research</td>
<td>0 cr.</td>
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</tbody>
</table>
The University is ideally located within easy driving distance to the White Mountains, the Seacoast Area of New Hampshire, and Boston, and enrolls more than 13,000 students in Durham and has a full-time faculty of more than 600. A comprehensive research university, the University of New Hampshire retains the look and feel of a New England liberal arts college with a faculty dedicated to teaching.

UNH is a land-, sea-, and space-grant research university. It comprises the following academic units: the College of Engineering and Physical Sciences; College of Liberal Arts; College of Life Sciences and Agriculture, which includes the Thompson School of Applied Science; College of Health and Human Services; Whittemore School of Business and Economics; University of New Hampshire at Manchester; and the Graduate School.

The University System of New Hampshire, of which UNH is a member, also includes Keene State College, Plymouth State University, and Granite State College.

The University awarded its first Ph.D. in 1896, placing it among the earliest American universities to award that degree. Doctoral programs in their present form began in the 1950s.

Graduate Education

The mission of the Graduate School is to provide innovative, responsive, and accessible master’s and doctoral programs of the highest quality to graduate students. Our programs foster a close interdependence between research and classroom teaching. The 550 graduate faculty members and 2,400 graduate students at UNH work together to develop new theoretical and empirical knowledge, design innovative methods and technologies to discover and disseminate that knowledge, and engage in undergraduate and graduate state-of-the-art teaching. The Graduate School is a source of intellectual capital for the University, the region, and the nation.

UNH is the primary institution within the University System of New Hampshire responsible for providing graduate programs that meet state, regional, and national needs and the only one at which doctoral programs are offered. Other units of the University System do offer some master’s programs.

The Graduate School is led by the dean, who implements the policies of the graduate faculty. The dean is advised by the Graduate Council, which is composed of elected faculty members and graduate student representatives.

Master’s Programs

The University offers master’s degree programs in a wide variety of disciplines, which can serve either as professional terminal degrees or as intermediate degrees for those intending to pursue further graduate study. In many programs, students can elect options that will permit them to study one aspect of a discipline in depth by preparing a thesis or to gain a broader mastery of a discipline by electing to take coursework in lieu of a thesis.

Doctoral Programs

The University offers doctoral programs in those disciplines that have both the faculty and facilities to support high-quality advanced graduate education. Care has also been taken to ensure that the programs will make a significant contribution to the opportunities for doctoral education in the New England region. Doctoral education properly focuses upon preparing the student to contribute to the growth of knowledge through research. Most doctoral programs also provide opportunities for students to work as teaching assistants and to participate in seminars on teaching led by experienced faculty members. After receiving a dual grounding in the development and communication of knowledge, graduates from UNH doctoral programs have gone on to find excellent teaching and research positions.

Interdisciplinary Programs

The Graduate School encourages and supports interdisciplinary study within existing programs and in the form of new and innovative graduate curricula. While self-designed courses of study are not available at the University, many of our programs offer a range of electives, cross-disciplinary study, and independent projects that allow students to tailor their work to reflect individual interests. This is especially true at the doctoral level. In addition, the Graduate School oversees intercollege programs that involve faculty and coursework from more than one school or college. Intercollege programs offer students the opportunity to pursue new and emerging fields of study that draw upon multiple disciplines, leading to solid disciplinary foundations as well as cross-disciplinary skills useful for solving new social and scientific problems. Opportunities for interdisciplinary research are also available in the institutes and centers at the University.

Center for Graduate and Professional Studies

The Graduate School extends its programs and services into central and southern New Hampshire through the Center for Graduate and Professional Studies, located at our urban campus in Manchester’s historic mill yard. The center offers a wide range of post-baccalaureate programs for professionals in business, counseling, education, social services, health care, government, and related fields. All graduate programs supported by the center are directed by UNH faculty. The mission of the center is to bring the resources and expertise of the University of New Hampshire to the population and economic center of the state, to focus and extend UNH’s professional education programs, and to further distinguish professional graduate education at UNH.
The University’s research and scholarly activities range from highly specialized investigations in the physical and biological sciences to broad interdisciplinary studies. Graduate students are intimately involved in these activities, and are expected to be familiar with the policies and procedures outlined by the Office of Sponsored Research and the Office of Research Partnerships and Commercialization.

Research and educational activities are conducted not only in individual departments but also in multidisciplinary research centers and institutes.

**Office of Sponsored Research**
www.unh.edu/osr/
The Office of Sponsored Research (OSR) fosters and facilitates research and scholarly activity, serves as a steward for externally sponsored programs, and promotes accountability and compliance. Research is conducted according to ethical principles provided by professional associations, and federal regulations and guidelines. Accordingly, UNH has institutional policies governing the conduct of research and scholarly activities, including but not limited to the use of animal subjects, human subjects, hazardous materials, misconduct, and financial conflict of interest.

**Office of Research Partnerships and Commercialization**
www.orpc.unh.edu/
The Office of Research Partnerships and Commercialization (ORPC) is charged with the responsibility for managing UNH’s intellectual property in accordance with UNH’s Intellectual Property Policy.

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**Centers and Institutes**

**Agricultural Experiment Station**
www.colsa.unh.edu/aes/
One of the largest research and service units at the University, the New Hampshire Agricultural Experiment Station is responsible for areas of research ranging from the innovation of agricultural technology to a deeper understanding of natural resources; it is a part of the College of Life Sciences and Agriculture. This research is funded jointly by the state of New Hampshire and the U.S. Department of Agriculture as well as grants from other federal and private agencies.

**Biomolecular Interaction Technologies Center**
www.bitc.unh.edu/
The Biomolecular Interaction Technologies Center (BITC) is a National Science Foundation Industry/University Cooperative Research Center established to carry out research in coordination with pharmaceutical and biotechnology companies.

**The Carsey Institute**
www.carseyinstitute.unh.edu/
The Carsey Institute conducts research and analysis on the challenges facing families and communities in New Hampshire, Northern New England, and the nation, providing information to policymakers, practitioners, the media, and the general public.

- **Center for Integrative Regional Problem Solving**
cirps.sr.unh.edu/
A project of the Carsey Institute, the Center for Integrative Regional Problem Solving (CIRPS) facilitates ecologically based, innovative approaches for securing quality of life and addressing land use challenges in northern New England through integrated research, outreach, education, and multidisciplinary partnerships.

**CATlab**
www.project54.unh.edu/
The CATlab project is a collaborative research and development effort between the University of New Hampshire and the New Hampshire Department of Safety and is supported by the U.S. Department of Justice. The faculty and students of CATlab work on introducing advanced technologies into the operations of the New Hampshire State Police and other law enforcement agencies.

**Center for Business and Economic Research**
wsbe.unh.edu/Centers_CBER/contact.cfm
Supporting applied research on business and economic affairs, the Center for Business and Economic Research especially encourages the linkages between public policy and regional economic development. The center also helps clients find qualified business and economic consultants and hosts visiting scholars from around the world.

**The Center for Coastal and Ocean Mapping/Joint Hydrographic Center**
www.ccom-jhc.unh.edu/
The Center for Coastal and Ocean Mapping (C-COM)/Joint Hydrographic Center (JHC) is a national center for expertise in ocean mapping and hydrographic sciences. The University’s graduate degree program in ocean mapping has been awarded Category A Recognition by the International Federation of Surveyors/International Hydrographic Organization (FIG/IHO) Advisory Board on Standards of Competence for Hydrographic Surveyors.

**Center for Clean and Renewable Energy Research**
The purpose of the center is to enhance public recognition of the role of chemical engineering in the area of clean and renewable energy sources.

**Center for Family Business**
www.familybusiness.unh.edu/
The Center for Family Business assists the entrepreneurial family in finding solutions to unique business challenges and concerns.

**Center for Freshwater Biology**
cfb.unh.edu/
New Hampshire’s lakes and streams are among the state’s most valuable and delicate resources. Maintaining the quality of these aquatic ecosystems for present and future generations requires an understanding of the potential problems and their solutions. The center promotes training, research, and outreach activities concerning freshwater systems with the state, region, and world.

**Center for High-rate Nanomanufacturing**
www.nano.unh.edu
CHN is developing a set of new templates (nanotemplates) that enable the guided self-assembly and transfer of nanoscale objects at high rates and over large areas.

**Center for the Humanities**
www.unh.edu/humanities-center/
The center inspires and nurtures innovative research, teaching, and public service in the fields that are the heart of a liberal education. Its fundamental concerns are to create an environment in which excellent humanities research and teaching, broadly defined, flourish at the University, as well as to share the accomplishments and intellectual riches of humanities faculty with the community beyond the University campus.
Center for New England Culture  
www.neculture.org/  
Part of the Center for the Humanities, the Center for New England Culture promotes understanding of the region's diverse culture and rich history, and fosters an appreciation of the value of regional culture in contemporary American life.

Center for Teaching Excellence  
unh.edu/teaching-excellence/  
The goal of the Center for Teaching Excellence is to assist faculty and teaching graduate students who wish to become more effective and efficient teachers. It is a service-oriented, University-wide program staffed and administered by faculty for faculty, future faculty; and graduate students. Peer commitment and support are essential to its success. The center collaborates with the Graduate School's college teaching programs, e.g., the national Preparing Future Faculty (PFF) Program and UNH's unique Cognate, Certificate, and Master's degree programs in college teaching.

Center for Venture Research  
wsbe2.unh.edu/center-venture-research  
The center's principal area of expertise is in the study of early stage equity financing for high-growth ventures. Research is disseminated internationally.

Center for Xenon Imaging  
www.xenon.unh.edu/  
The Center for Xenon Imaging investigates the properties and utility of hyperpolarized xenon, particularly as a contrast agent in magnetic resonance imaging.

Center to Advance Molecular Interaction Sciences  
www.camis.unh.edu/  
The center develops new tools and techniques to characterize and control the interaction of biological molecules, knowledge that is essential in biochemical and biomaterials research. CAMIS serves academia and the pharmaceutical, biotechnology, and material science industries.

Child Study and Development Center  
csdc.unh.edu/  
A laboratory school affiliated with the Department of Family Studies, the Child Study and Development Center has both an early care and education mission as well as an academic mission. Children attending the center, and the UNH students working at the center, benefit from the highly trained teaching staff and from the family studies faculty.

Cooperative Institute for Coastal and Estuarine Environmental Technology  
ciceet.unh.edu/  
The Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) supports the scientific development of innovative technologies for understanding and reversing the impacts of coastal and estuarine contamination and degradation.

Cooperative Institute for New England Mariculture and Fisheries  
www.cinemar.unh.edu/  
The Cooperative Institute for New England Mariculture and Fisheries (CINEMAR) is a regional program established in 2000 by the National Oceanic and Atmospheric Administration (NOAA) and the University of New Hampshire (UNH) that provides scientific research, technology development, and outreach for marine resource management and seafood production.

Crimes against Children Research Center  
www.unh.edu/ccrc/  
The Crimes against Children Research Center (CCRC) combats crimes against children by providing high-quality research and statistics to public policy makers, law enforcement personnel, and other child welfare practitioners.

Dairy Teaching and Research Center  
www.colsa.unh.edu/aes/facilities.html  
The Dairy Teaching and Research Center is a key component in UNH's efforts to provide the state with a well-prepared agricultural work force. A state-of-the-art center supports research on the nutritional needs of dairy cows through the Department of Animal and Nutritional Sciences.

Enterprise Integration Research Center  
wsbe.unh.edu/Centers_EIRC/home.cfm  
The center focuses on developing an innovative solution to help reduce the uncertainty surrounding the use of intellectual property as collateral, facilitate the leveraging of intangible assets, and increase access to capital at lower costs and unlock related wealth creation.

Environmental Research Group  
www.unh.edu/erg/  
The Environmental Research Group's (ERG) principal mission is applied and fundamental environmental engineering and science research. ERG specializes in seven research areas represented by the research centers and program listed below, each an important issue to New Hampshire, New England communities, private sector firms, and the nation.

• Contaminant Monitoring and Remediation Center  
www.unh.edu/erg/cmrc/index.htm  
The Contaminant Monitoring and Remediation Center (CMRC) comprises three current research projects/centers: the Bedrock Bioremediation Center (BBC); the Coastal Response Research Center (CRRC); and the Center for Spills in the Environment (CSE).

• Bedrock Bioremediation Center  
www.unh.edu/erg/bbc/  
The Bedrock Bioremediation Center specializes in multidisciplinary research on bioremediation of organically contaminated bedrock aquifers.

• Coastal Response Research Center  
www.crcc.unh.edu/  
The Coastal Response Research Center focuses on developing new approaches to spill response and restoration in marine and estuarine environments through research and synthesis of information. A partnership between the National Oceanic Atmosphere Administration (NOAA) and the University of New Hampshire, the center stimulates innovation in spill preparedness, responses, assessment, and implementation of optimum spill recovery strategies.

• Electrotechnologies Research Program  
The Electrotechnologies Research Program examines the applications of ultraviolet light, pulsed ultraviolet light, electric fields, pulsed electric fields, electron beams, sonic waves and other emerging technologies for treatment of hazardous wastes and air pollution and for the disinfection of drinking water and wastewater.

• New England Water Treatment Technology Assistance Center  
www.unh.edu/erg/wttac/  
The New England Water Treatment Technology Assistance Center is one of eight technology assistance centers in the United States funded by the U.S. Environmental
Protection Agency. The mission of the Technology Assistance Center is to form a network with the common goal to protect public health, improve water system sustainability, and enhance compliance.

- **Recycled Materials Resource Center**
  www.rmrc.unh.edu/
  The Recycled Materials Resource Center is a national center created to promote the wise use of recycled materials (pavements, secondary waste, byproduct materials) in the highway environment.

- **UNH Center for Contaminated Sediment Research**
  www.unh.edu/erg/ccsr/
  The UNH Contaminated Sediments Center was developed in response to regional and national needs to characterize, treat and manage contaminated dredged materials from ports, harbors and waterways.

- **UNH Stormwater Center**
  www.unh.edu/erg/cstev/
  The UNH Stormwater Center studies stormwater-related water quality and quantity issues by evaluating and verifying the performance of stormwater management devices and technologies.

**Family Research Laboratory**
www.unh.edu/frl/
The Family Research Laboratory (FRL) devotes itself to understanding family violence and the impact of violence on families. Researchers at the FRL provide reliable information to public and professional audiences and have brought international recognition to the FRL.

**Glycomics Center**
www.glycome.unh.edu/
The UNH Glycomics Center focuses on sophisticated proteomic analysis.

**Hubbard Center for Genome Studies**
hcgs.unh.edu/
The Hubbard Center concentrates on comparative and environmental genomics, with a special emphasis on novel model species. The center provides technical assistance, plays a leading role in education and training in genomics, and engages partners to promote the development of the biotechnology industry in the region.

**Institute for the Study of Earth, Oceans, and Space**
www.eos.unh.edu/
The Institute for the Study of Earth, Oceans, and Space (EOS) at the University is a multidisciplinary scientific research institute dedicated to understanding the integrated behavior of the Earth and its surrounding universe. Established in 1985, the institute has become a world leader in the fields of space science, terrestrial ecosystems, oceanography, atmospheric science, and global climate change. The Institute for Scientific Information ranks UNH first in geoscience research citations and fourth in environmental science citations.

- **Climate Change Research Center**
  www.ccrccsr.unh.edu/
The Climate Change Research Center studies the chemical and dynamical environment of the Earth’s atmosphere using sophisticated observational and modeling tools. Center research is focused on understanding the fundamental properties of the atmosphere and how they have been affected by human activities and will continue to be so in the future. Center faculty, staff, and students are involved in major field measurement programs ranging from the collection of regional ice cores and other paleoclimate records in North America, the Pacific Rim and Asia, to New England air quality and climate studies, to global-scale airborne science missions.

- **Complex Systems Research Center**
  www.cscsr.unh.edu/
The Complex Systems Research Center is dedicated to understanding the Earth as an integrative system. Its mission is to explore the physical, chemical, and biological processes that shape the Earth’s Environment with emphasis on the unique role humans as an agent of change. Through a combination of field studies, space-based observations, data integration, and modeling, the center pursues interdisciplinary studies of global environmental change from both scientific and policy perspectives. The public interest is served by providing a scientific basis for informed decision-making at local, state, and national and global levels. The center also serves as a platform for educating the next generation of Earth Systems scientists and environmental managers.

- **Ocean Process Analysis Laboratory**
  www.opal.sr.unh.edu/
Research in the Ocean Process Analysis Laboratory focuses on a range of physical, geochemical, and biological processes in the Gulf of Maine, Gulf Stream, North Atlantic, and California Current. Current research areas include bio-optical oceanography and remote sensing, physical oceanography, estuarine and coastal chemistry, plankton ecology and fisheries oceanography, and fish behavior and gear technology.

- **Space Science Center**
  www.eos.unh.edu/Resctr/SSC/
The Space Science Center fosters research and graduate education in all of the space sciences, with studies ranging from the ionosphere, to the Earth’s magnetosphere, to the local solar system, out to the farthest reaches of the universe. Investigations of the Earth’s environment in the solar system utilize space as a laboratory for plasma physics. Both theoretical and satellite investigations are conducted of the solar-terrestrial radiation environment. High energy astrophysics investigations involve the sensing of energetic astrophysical objects with ground, balloon, and satellite detectors. Upcoming missions for which EOS is building instruments are: IBEX (launch date 2008), NPOESS (launch date 2012), and MMS (launch date 2013). The Space Science Center is also a Center of Excellence in theoretical solar-terrestrial research.

- **Institute on Disability**
  www.iod.unh.edu/
The Institute on Disability (IOD) provides a coherent University-based focus for the improvement of knowledge, policy, and practices related to the lives of persons with disabilities and their families. The institute’s mission is to promote the full inclusion of people with disabilities into their communities.

- **International Private Enterprise Center**
  www.unh.edu/ipec/
The center studies, evaluates, and proposes public policies and managerial strategies to enhance private sector’s contributions to economic growth. It distributes information through publications and symposiums about economic and financial policies that foster the development and viability of the private sector.

- **InterOperability Laboratory**
  www.iol.unh.edu/
The InterOperability Lab (IOL) has two distinct missions: to provide testing services for vendors of computer communications devices; and to provide educational and employment opportunities for qualified UNH undergraduate and graduate students.
Joan and James Leitzel Center for Mathematics, Science, and Engineering Education
leitzelcenter.unh.edu/

The Joan and James Leitzel Center works to transform education in mathematics, science, and engineering in colleges and universities, in elementary and secondary schools, and in informal settings through high-quality research, carefully examined practice, and interdisciplinary collaboration.

Justiceworks
www.justiceworks.unh.edu/

Justiceworks is a research and development group in justice studies at the University of New Hampshire. Founded in 1999 as a collaborative consortium of academicians and professionals, Justiceworks offers an array of balanced, nonpartisan services addressing issues in crime, safety, security, and the administration of justice.

Large Pelagics Research Center
www.largepelagics.unh.edu/

The mission of the Large Pelagics Research Center is to improve the management of large pelagic marine species by enhancing biological information needed to manage these resources within a biological, oceanographic and fisheries science framework.

Marine Program
marine.unh.edu/

The UNH Marine Program supports research, education, and service projects involving the estuarine, coastal, and deep ocean environments. Laboratories and facilities that support and enhance the work of the Marine Program include: the Jere A. Chase Ocean Engineering Laboratory, Coastal Marine Laboratory, Jackson Estuarine Laboratory, Ocean Process Analysis Lab, DNA Facility, Anadromous Fish and Aquatic Invertebrate Research Laboratory, Shoals Marine Laboratory, and the Institute for the Study of Earth, Oceans, and Space. The Marine Program includes the following units http://marine.unh.edu/research_centers/MPCenters.html:

• Center for Marine Biology
The Center for Marine Biology fosters excellence in marine biological research and education. Its primary goals are to strengthen and focus research and graduate education in modern marine biology and to encourage the development of high-quality undergraduate programs in all aspects of marine biology.

• Center for Ocean Engineering
The Center for Ocean Engineering integrates academic and research missions in Ocean Engineering. The center is concerned with the effective and wise use of the coastal ocean.

• Center for Ocean Sciences
The Center for Ocean Sciences addresses critical questions concerning the coupled atmosphere/ocean/land system. The center’s research programs emphasize both direct and remote observation of the oceans and atmosphere, as well as integration of those observations with modeling efforts.

Marriage and Family Therapy Center
www.shhs.unh.edu/fs/mft.html

The Marriage and Family Therapy Center provides assistance to individuals, couples, and families experiencing a wide range of personal or relationship problems.

Nanostructured Polymers Research Center
www.unh.edu/apl/nprc.htm

The center fosters the development of complex polymeric materials based on multiple phases with significant structure at the nanometer scale. The center comprises three laboratories: the Polymer Research Group, the Polymer Nanoparticle Laboratory, and the Advanced Polymer Laboratory. Beyond a primary mission of fostering research in nanostructured polymers, the center takes an active role in the education and training of professionals.

• Polymer Research Group
www.unh.edu/prg/

The Polymer Research Group, part of the Materials Science Program, focuses on synthesis of single and multiphase polymers with an interest in characterizing both their micro and macro properties.

• Polymer Nanoparticle Laboratory

The research focus of the Polymer Nanoparticle Laboratory is the development of new synthetic strategies for producing polymers in water and biphasic environments where water is the continuous medium. The PNL addresses interdisciplinary problems at the interface of organic, organometallic, colloidal, and polymer chemistry.

• Advanced Polymer Laboratory
www.unh.edu/apl/

This laboratory solves challenging problems relevant to both the academic and industrial world by combining engineering and chemistry in the context of polymer science.

New England Academic Center for Emergency Preparedness and Response
www.ece.unh.edu/nehs/public/

The center provides a national resource for both basic and applied research specifically focused on providing emergency responders with the proper tools necessary to perform their functions.

New Hampshire Estuaries Project
www.nhep.unh.edu/

The New Hampshire Estuaries Project strives to improve the water quality and overall health of New Hampshire’s estuaries; support regional development patterns that protect water quality, maintain open spaces and important habitat, and preserve estuarine resources; track environmental trends through the implementation of a long-term monitoring program to assess indicators of estuarine health; and, develop broad-based popular support for the implementation of the NHEP Management Plan by encouraging involvement of the public, local government, and other interested parties in its implementation.

New Hampshire Industrial Research Center
www.nhirc.unh.edu/

The New Hampshire Industrial Research Center’s (NHIRC) mission is to assist New Hampshire industry in becoming more competitive, and thereby retain and increase industrial employment. By providing state support and cooperation the NHIRC helps New Hampshire companies upgrade old products or develop new products. With NHIRC support, University-industry collaboration will foster innovation and help to preserve and increase the number of jobs in New Hampshire.

New Hampshire Institute for Health Policy and Practice
www.nhhealthpolicyinstitute.unh

The New Hampshire Institute for Health Policy and Practice (NHIIPP) creates new knowledge and a more cost-effective community health system through innovation, production, use, and dissemination of information. To do that constructively, the NHI-IPP focuses on both population health, which yields the greatest results and personal care that consumes the greatest portion of the health care dollar. Only by addressing both these aspects of community health is significant and sustainable progress possible.
New Hampshire Sea Grant College Program  
www.seagrant.unh.edu/  
New Hampshire Sea Grant provides support, leadership and expertise for marine research, education and extension. It is one of a network of 30 National Sea Grant College Programs promoting the understanding, development, wise use, and conservation of our ocean and coastal resources.

New Hampshire Small Business Development Center  
www.nhsbdc.org/  
The New Hampshire Small Business Development Center, an outreach program of the UNH Whittemore School of Business and Economics, is the key link to business assistance in New Hampshire and to programs offered through the University System, the State of New Hampshire, the U.S. Small Business Administration and the private sector. The Center provides a wide range of services and information to local and regional business owners, including free one-on-one confidential business counseling, low-cost training programs, and referrals.

New Hampshire Water Resource Research Center  
www.wrrc.unh.edu/  
The New Hampshire Water Resource Research Center (WRRC) serves as a focal point for research and information on water issues in the state and region.

Non-lethal Technology Innovation Center  
www.unh.edu/ntic/  
The Non-lethal Technology Innovation Center was created to effect the next generation of NL capabilities by identifying and promoting the development of innovative concepts, materials and technologies within the academic community.

Northeast Consortium  
www.northeastconsortium.org  
The Northeast Consortium works to encourage and fund effective, equal partnerships among commercial fishermen, scientists, and other stakeholders to engage in cooperative research and monitoring projects in the Gulf of Maine and Georges Bank. The Northeast Consortium consists of four research institutions (University of New Hampshire, University of Maine, Massachusetts Institute of Technology, and Woods Hole Oceanographic Institution), which are working together to foster this initiative.

Research Computing Center  
www.sr.unh.edu/  
The Research Computing Center supports the needs of sponsored research programs at the University. The center provides computational and networking support to its customers, advises the University community on subjects pertaining to computing and communications, and conducts research and testing to facilitate its mission.

Robotics / Vibration Control Laboratory  
www.ece.unh.edu/robots/rbt_home.htm  
The research emphasis of the Robotics and Vibration Control Laboratory is the application of fast associative memories and other neural network learning techniques to problems in control, pattern recognition, and signal processing. The basic concept is to design hardware/software systems, which improve their own performance through practice.

Speech-Language-Hearing Center  
www.shhs.unh.edu/csd/  
UNH Speech-Language-Hearing Center provides state-of-the-art diagnostic and therapeutic services to children and adults with communications disorders. The center is staffed by graduate students in the program under the close supervision of the department’s clinical faculty.

UNH Center on Adolescence  
www.adolescence.unh.edu/  
Providing the infrastructure for a coordinated effort, the UNH Center on Adolescence supports the health and well-being of New Hampshire youth. The center provides research-based information about positive youth development and recommends best practices for helping youth thrive and make a successful transition to adulthood. The center is affiliated with the New Hampshire Institute for Health Policy and Practice.

UNH Survey Center  
www.unh.edu/survey-center/  
The Survey Center conducts mail, telephone, Internet, e-mail, and self-administered surveys for University researchers, public agencies, nonprofit organizations, private businesses, and media clients.

William Rosenberg International Center of Franchising  
www.nhsbdc.org//home.cfm/  
The William Rosenberg International Center of Franchising was created according to the vision of William Rosenberg, a franchising pioneer and founder of Dunkin' Donuts. He saw the need for a specialized center that would advance the field of franchising through relevant research and innovative teaching.
The home of the main campus of the University is in Durham—one of the oldest towns in northern England—near the picturesque seacoast of New Hampshire. Students have found Durham to be an ideal place to live while completing a graduate degree at UNH. For those interested in cultural pursuits, Boston is a quick 65 miles to the south. Outdoor enthusiasts will find skiing, hiking, and the scenery of the White Mountains 60 miles to the north and the sandy beaches and rocky coast of New Hampshire and Maine 10 miles east.

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 woods.

Graduate School
www.gradschool.unh.edu/

The Graduate School provides assistance to prospective and current students from the time of their first inquiry about graduate study until completion of their graduate programs. Students are encouraged to contact the Graduate School staff with questions regarding academic policy, financial assistance (scholarships, fellowships, and travel grants), and availability of University services.

Center for Graduate and Professional Studies in Manchester
www.unhmgrad.unh.edu/

The Graduate School’s center in Manchester brings the resources and expertise of the University to the population and economic center of the state, to focus and extend UNH’s professional education programs, and to further distinguish professional graduate education at UNH. The staff at the center is committed to facilitating these goals.

McNair Graduate Opportunity Program
www.unh.edu/mcnair/

The McNair Graduate Opportunity Program provides eligible undergraduate students with ongoing consultation and support from faculty mentors and staff to help ensure their success in making the transition from undergraduate to graduate education. There is both an academic year and a summer component to the program. Application is required.

Graduate Council

The Graduate Council comprises 12 graduate faculty members and four graduate students. The council advises the dean of the Graduate School on policies concerning graduate education and is responsible to the graduate faculty for recommendations concerning new graduate programs. Standing committees of the council include the doctoral program committee, the master’s program committee, the student affairs committee, and program review committee.

Graduate Student Organization

The Graduate Student Organization (GSO) serves to provide a collective voice for the more than 2,400 graduate students who form an integral part of the University community. The GSO provides a representative structure for the graduate student body. Its board, comprising representatives from each approved graduate program, helps to find graduate student representatives for various University boards and committees. The board also maintains communication among graduate students through Blackboard.

Communication to Students

The University of New Hampshire often communicates with students on official matters in written form. The progression of technology has prompted the University to adapt both its administrative and educational communications to benefit from this technology. In those instances when the University chooses to communicate with students through technology (including but not limited to e-mail, portal communications, and electronic messaging), it often does so with the use of a University-generated ITID (Information Technology Identification) address. The University will provide and maintain this ITID address; it will be the responsibility of the student to monitor this ITID address for official communications.

University Communications are sent to students through the following channels:

Webcat

Students receive billing statements, registrar, view grades, student accounts and financial aid awards through Webcat, a part of MyUNH (Blackboard).

University E-mail

Important notifications are sent to students by many departments and offices via a UNH e-mail address that is assigned by the University. Students are responsible for checking this e-mail address on a regular basis.

MyUNH (Blackboard)

Course material and University announce-ments are available through MyUNH, a student portal system.

Mail to permanent address

Some notifications are sent in the student’s name to the permanent mailing address.

Library
www.library.unh.edu/

The UNH Library comprises the main Dimond Library, four specialized branch libraries, an extensive government documents collection, and the Douglas and Helena Milne Special Collections and Archives. In addition to more than a million volumes and 6,000 periodical subscriptions, the library has government publications, maps, sound recordings, compact discs, video cassettes, DVDs, and manuscripts. The library offers extensive electronic resources, including electronic journals, dissertations, databases, and full-text resources. The Dimond Academic Commons (DAC)—Main Floor—features “one-stop” shopping for information needs, including reference assistance, IT help, high-tech equipment, and collaborative work space. Wireless access, computer workstations, and laptop hookups are available throughout the building.

The library is a member of the elite Boston Library Consortium. Through the consortium, UNH faculty, faculty emeritus, students, and staff at both the Durham and Manchester campuses have full access to a combined collection of more than 31 million volumes via interlibrary loan and on-site visits to member libraries.

The four branch libraries specialize in science, mathematics, and engineering. The Biological Sciences Library is located in Kendall Hall; Chemistry Library is in Parsons Hall; Engineering/Mathematics/Computer Science Library is in Kingsbury Hall; and the Physics Library is in Nesmith Hall. All branch materials are indicated in the UNH Library catalog.

Computing and Information Services (CIS)
cis.unh.edu

Computer access: All students have access to networked computing resources on campus. UNH has five microcomputer clusters, which offer more than 220 Dell Pentium and Apple Macintosh computers as well as high-speed laser printing. All clusters are completely networked and offer a suite of software; access to the Internet via the World Wide Web; and are staffed by student consultants. Two clusters are available 24 hours/day.
Training: Each semester, short courses are offered on a variety of topics. Register for a short course via the Web. Facilities with Dell Pentium and Apple Macintosh systems may be reserved by faculty and students for hands-on training.

Purchase and repair: Students may purchase their own computers at the UNH Computer Store, which sells Apple and Dell computers; Apple, Epson, and Hewlett-Packard printers; and a variety of supplies, peripherals, and software at educational pricing to members of the UNH academic community. The Computer Service Center (CSC), located in the MUB, provides hardware and software repairs for UNH faculty, staff, and students. CSC technicians are certified to perform warranty repairs on certain Dell, Apple, and Hewlett Packard products. One University telephone dial tone connection is available in each UNH Housing room.

CIS Call and Dispatch Center: As a unit of Help Desk Professional Services, the CIS Call and Dispatch Center provides UNH and USNH faculty, students, and staff with a centralized contact point for computer-related questions and concerns.

Dimond Academic Commons IT Support Center, cis.unh.edu/dac-itsc: The IT Support Center (ITSC) is one component of the Dimond Academic Commons (DAC) located on Level 3 (Main Level), Dimond Library. DAC provides “one-stop shopping” for students to get help with their academic work including using library resources and consulting help with computer, communications, and phone questions.

The DAC ITSC has friendly staff to help:
- Clean viruses and spyware from your laptop
- Learn how to stay virus- and spyware-free
- Get connected - including wireless
- Use Blackboard
- Use Word, Excel, & PowerPoint
- Repair damaged files
- Drop off exam-scan test sheets & surveys
- Fix computer account problems and re-set passwords
- Scan documents & images
- Set up your laptop to print to the library printers

ResNet, cis.unh.edu/resnet: UNH’s Residential Network provides a high-speed network connection for each student living on campus. ResNet services enable students to connect to the UNH network and stay connected. ResNet staff are located in the Dimond Academic Commons IT Support Center on Level 3 (Main Level) in the Dimond Library.

UNHINFO www.unh.edu/: UNH’s main Web server functions as the starting search point to find any on-line University information such as events, jobs, courses, directories, departments, and much more. UNHINFO is accessible to computers with a network connection, including the student computing centers, dorms, and Internet service providers.

Graduate Student Housing www.unh.edu/housing/

Babcock Hall and Forest Park Apartments
Babcock Hall is a community of 180 graduate, international, and nontraditional students. Six-story Babcock Hall combines social, educational, and cultural opportunities with the convenience of on-campus living. All rooms are single occupancy, simply furnished, and are wired for telephone, cable television, and Internet access. Each floor has a kitchenette and television lounge available for residents’ use. The building has table tennis, a piano, a fireplace, and laundry facilities located on the lobby level.

Family housing at the Forest Park Apartment Complex provides campus housing for married students, students with dependent children, and newly appointed faculty members. The community at Forest Park is diverse, with students and faculty members from all over the world. The three-acre complex is located on the southern edge of campus, within close walking distance of UNH academic and administrative buildings and Durham’s shopping and business district. The two- and three-story buildings within Forest park house 97 apartments. These include studio (efficiency), one-bedroom, and two-bedroom apartments.

Following acceptance to the Graduate School, any student interested in on-campus housing should contact the University’s Department of Housing.

Summer Housing
Rooms in Babcock Hall are available to graduate students taking courses during the summer. Students interested in summer accommodations should contact the Department of Housing. Off campus housing is listed on the Web at www.unhmub.com/housinglist/.

Off-Dining Services www.unh.edu/dining/
University Hospitality Services works hard to exceed its guests’ expectations. Dining halls offer hot entrees, vegetarian and vegan dishes, a variety of specialty bars, salad bars, and a well-stocked deli. In addition, the MUB Food Court, MUB Coffee Office, Wildcatessen, Philbrook Café, The Gables Convenience Store, and with Panache offer grab-and-go foods. A variety of meal plans are available to all UNH community members. Cash, Cat’s Cache (the UNH debit program), and Dining Dollars are accepted as well.

Campus Recreation campusrec.unh.edu/
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 fitness center, basketball/volleyball courts, an indoor track, a lounge, locker rooms, towel and lock service at the equipment room, saunas, a bouldering wall, indoor pool, and several grass and two synthetic sports fields.

Participants may participate in group exercise classes such as step aerobics, Reebok cycling, or cardio kickboxing. Noncredit courses are also offered including CPR and First Aid.

The intramural sports program consists of 25 different sports and activities offered through co-rec and to men’s and women’s teams. There are also 27 sport club teams.

Ice skating in the Whittemore Center arena is available during nonpeak/nonteam hours.

During the summer, the Department of Campus Recreation manages a large outdoor recreation facility on Mendum’s Pond in Barrington and an outdoor pool located on Edgewood Ave.

Memorial Union Building www.unhmub.com/
The “Heart of Campus” is the Memorial Union Building (MUB). The original building was a gift from UNH alumni and is the official state war memorial.

The MUB was the first building on campus to have complete wireless capabilities in all public spaces and meeting rooms. Key areas of the MUB are the Information Center, two movie theaters, Games Room, the UNH Copy Center, the UNH Bookstore, the Ticket Office, and specific lounge/study space for both nontraditional and graduate students. Computing and Information Services provides a computer cluster and help desk with walk-in service. The Food Court offers expanded dining options, and food service is also available in the Coffee Office. Nearly 60 student organizations have office
space in the MUB.

Student Organization Services (SOS), a division of the Memorial Union, is responsible for the registration and recognition of more than 200 student organizations and assists students with the mandatory registration process.

Off-Campus and Commuter Services
www.unhmb.com/off-campus

Found within the Leadership Center, located in the Memorial Union Building, Room 122, Off-Campus and Commuter Services provides resources, services, and programs for all students living off campus. Included are listings for off-campus housing, tenants’ rights information, and community, and UNH information contained in our Community Guide (available as a PDF on our website). We also host programs such as Commuter and Transfer Survival Day (an orientation program for all new UNH students held before classes begin each semester), Commuter Appreciation Day, Good Morning Commuters, and many others. The Commuter Connection is a great weekly resource—e-mail containing UNH events, activities, and programs—subscribe at www.unhmb.com/off-campus.

The Leadership Center
www.unhmb.com/leadershipcenter

Located in Memorial Union Building (MUB), Room 122, the Leadership Center is the home of Student Organization Services, Project LEAD Leadership Development Programs, Greek, and Off-Campus and Commuter Services. We are the place to help you get involved on campus! Find information ranging from student organizations, fraternities and sororities, sample apartment sublet agreements, staying connected to campus, and much more.

Health Services
www.unh.edu/health-services/

The University has a state-licensed and nationally accredited health and wellness program.

Medical Services

Health Services provides comprehensive, student-focused, primary medical care, laboratory testing, radiology, and pharmacy services. During the academic year, the clinical staff consists of board-certified physicians, nurse practitioners, nurses, and medical assistants who are committed to prevention and holistic care. They work in teams, three of which focus on general medicine services, e.g., infectious diseases, injuries, and mental health concerns. The fourth team focuses on women’s health. There is also a Travel Clinic providing clearance and immunizations for foreign travel and an Allergy Clinic providing allergy shots. One may speak by telephone with a triage nurse for advice at any time.

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

Office of Health Education and Promotion

The Office of Health Education and Promotion presents educational workshops, offers support groups, and facilitates ongoing educational groups on a variety of physical and emotional health issues. Confidential assessment and referral are also available. The office offers alcohol and other drug counseling, nutritional counseling services, as well as anonymous and confidential HIV counseling and testing. A health educator/nurse provides education and support to students living with chronic illnesses. Massage therapy is also available. The resource room contains information on physical and emotional health issues, including HIV/AIDS, alcohol/other drugs, and men’s and women’s health issues.

Student Health Benefits Plan

Health insurance is required as a condition of enrollment for full-time degree students at the University of New Hampshire beginning with the 2007-2008 academic year. Students will have the option of waiving this requirement if they present proof of adequate coverage; alternatively, students can acquire an affordable health benefits plan sponsored by the University. Information about the University’s Student Health Benefits Plan can be found at www.unh.edu/health-services/shbp/.

Health Record Requirement

In order to provide effective care, Health Services requires that students who have been formally accepted for a graduate program in Durham, and who register for five or more credits, must have medical records on file with Health Services. The information will include three forms provided by Health Services on its Web site at www.unh.edu/health-services. These include a physical assessment and immunization form, to be completed by a medical provider and mailed to Health Services, and a health history form, to be completed by the student online. Proof of immunity to measles is mandatory (UNH Academic Policy 02.14). Students must meet one of the following criteria for proof of immunity to measles: have received two live-virus measles vaccinations at least one month apart after 12 months of age, a positive measles titer (blood test), health provider documentation of past history of measles, or have been born before 1957. Students requesting a religious exemption from measles vaccinations must submit a formal exemption form from their religious affiliation or complete the UNH Health Services Request for Exemption, form 202.5. 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 complete the forms before the beginning classes. Any student failing to complete these requirements may not be cleared to register for future classes.

Counseling Center
www.unhcc.unh.edu/

The Counseling Center offers confidential professional consultation, individual and group therapy, and educational workshops for a broad range of emotional, psychological, and interpersonal concerns.

Appointments can be made over the phone or in person. In addition, emergency services are offered, 24 hours a day, seven days a week. All information about a student’s visits to the Counseling Center is confidential and cannot be released without the written permission of the student.

The staff comprises licensed psychologists, counselors, and consulting psychiatrists. 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.

Center for International Education
www.unh.edu/cie

The Center for International Education is the clearinghouse for international activities on campus. It administers the dual major in international affairs, undergraduate study abroad, and annual scholarship competitions for the Student Fulbright Program and the National Security Education Program. Each semester, CIE also offers international enrichment opportunities through its New Hampshire International Seminar series and Faculty International Development Grants on a competitive basis.
Disability Services for Students  
[www.unh.edu/disabilityservices/](http://www.unh.edu/disabilityservices/)

The University of New Hampshire is committed to providing students with documented disabilities a living and learning environment that assures equal access to programs and facilities. The University will make reasonable accommodations, as supported by documentation, to promote maximum independence and access to the full range of college activities at UNH.

All students with a disability who anticipate the need for services should self-identify and provide written documentation to the office. Please submit documentation to Disability Services for Students, Memorial Union Building, Room 118, (603) 862-2607 (Voice/TTY) as soon as possible after acceptance, to assure accommodation of disability and smooth coordination of available services.

International Students and Scholars  
[www.unh.edu/oiss/](http://www.unh.edu/oiss/)

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 between 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 assist international students, exchange scholars, faculty, and staff in the achievement of their academic and professional goals.

The OISS staff provides counseling, information on University policies, administrative support, and referral services. A variety of social and educational programming activities is offered, including orientation for incoming students, faculty and staff, and others.

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

OMSA creates opportunities for people to participate in an inclusive community and to explore and understand diversity, injustice, and equality.

Our work is grounded in understanding diversity that includes people of all abilities, ages and ethnicities, genders, nationalities, races, religions/spiritual traditions, socioeconomic classes, and sexual orientations.

Providing support and development for African American/Black, Latina/o, Native American, and Asian/Pacific Islanders, as well as lesbian, gay, bisexual, transgender, queer, and questioning students is at the heart of our work.

President’s Commissions

President’s Commission on the Status of Gay, Lesbian, Bisexual, and Transgender Issues  
[www.unh.edu/glbt/](http://www.unh.edu/glbt/)

The UNH President’s Commission on the Status of Gay, Lesbian, Bisexual and Transgender Issues facilitates the development of a University community that is equitable and inclusive of all sexual orientations and gender expressions.

President’s Commission on the Status of People of Color  
[www.unh.edu/cspc/](http://www.unh.edu/cspc/)

The UNH President’s Commission on the Status of People of Color proposes, recommends, and evaluates programs, policies, and services aimed at enhancing diversity and supporting people of color within the UNH community.

President’s Commission on the Status of Women  
[www.unh.edu/womens-commission/](http://www.unh.edu/womens-commission/)

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.

Each of the three commissions comprises faculty, staff, and students (undergraduate and graduate).

Sexual Harassment and Rape Prevention Program  
[www.unh.edu/student-life/sharpp/](http://www.unh.edu/student-life/sharpp/)

The Sexual Harassment and Rape Prevention Program (SHARPP) is a crisis intervention center dedicated to providing free and confidential services for all members of the University community. SHARPP operates a 24-hour crisis line to respond to the needs of survivors of sexual assault, sexual harassment, childhood sexual abuse or incest, intimate partner violence, and stalking. SHARPP provides crisis services for those who are close to the survivor. Additionally, SHARPP presents a wide range of programs to the University community.

UNH Transportation Services  
[www.unh.edu/transportation/](http://www.unh.edu/transportation/)

UNH Transportation Services administers visitor parking; parking for faculty, staff, and students; and University mass transit. Other services offered by Transportation Services are Cat Courier, Guaranteed Ride Home, and Safe Rides.

Wildcat Transit, Campus Connector, Wildcat Access  

Wildcat Transit Bus Service provides public transportation from Durham to Dover, Portsmouth, and Newmarket, with connections to other local and interstate bus service providers.

Campus Connector is the on-campus bus service.

Wildcat Access provides rides for people with either permanent or temporary disabilities who cannot access Campus Connector around campus.

University Police  
[www.unh.edu/upd/](http://www.unh.edu/upd/)

The University Police Department is committed to the enforcement of laws and University policies supportive of the rights and dignity of all persons. The department seeks to maintain a campus environment in which learning may thrive. Self-defense courses and crime prevention literature are some of the services they offer. A walking patrol provides an escort service for students, faculty, and staff. Officers, professionally trained in their respective areas, staff both the police and Security Services units.

Veterans Information  

The UNH veterans’ coordinator, located in the Registrar’s Office, provides counseling on all aspects of veterans’ benefits and assistance in procuring and completing the required forms and certifications for veterans’ benefits. The veterans’ coordinator maintains a comprehensive directory to assist veterans in contacting state, local, and University resources. The coordinator also provides a framework for networking among campus veterans. For further information, call (603) 862-1595 or email Lonn Sattler at Lonn.Sattler@unh.edu.
There are many opportunities for financial aid. To ensure that you will benefit, contact us either at the Graduate School or at the Financial Aid Office to talk about what opportunities may be available to you.

Residency

Each graduate student is classified as a resident or nonresident for tuition purposes at the time of admission to the University. The decision, made by the Graduate School, is based upon information furnished by the student's application and any other relevant information. Nonresident undergraduates continuing directly to the Graduate School will be classified as nonresidents. All applicants claiming New Hampshire residency are required to have been legally domiciled in New Hampshire continuously for at least twelve months immediately prior to registering for the term for which in-state status is claimed.

Students admitted from states other than New Hampshire or from foreign countries are considered nonresident throughout their entire attendance at the University unless they shall have acquired bona fide domicile in New Hampshire. Changes in residency for enrolled students as well as appeals are reviewed by the Registrar's Office and will only occur if the student can clearly establish that his or her residence in New Hampshire is for some purpose other than the temporary one of obtaining an education at the University.

The burden of proof in all cases is upon the applicant. In all cases, the University reserves the right to make the final decision as to resident status for tuition purposes. The University rules governing tuition rates are fully set forth in the application for admission package; all students are bound by them.

New England Regional Student Program

The University of New Hampshire participates in the New England Regional Student Program administered by the New England Board of Higher Education. Under this program, admitted graduate students from New England may qualify for regional tuition rates (New Hampshire resident tuition, plus 50 percent) if the program to which they are admitted is one that is not available at any of their home state/public institutions. Inquiries and requests for further information may be directed to the Graduate School or to the New England Board of Higher Education, www.nebhe.org/.

Sub-Degree Exchange Program

The Graduate School participates in a sub-degree exchange program sponsored by the New England land-grant universities. The program is designed to provide any admitted student at one of the six land-grant universities access to the full range of talent and resources available in the region. Under the agreement, graduate students may, with the approval of the dean of the Graduate School at UNH and the graduate dean of the host university, take advantage of courses or other special resources not available at UNH. Specific information about the program may be obtained from the Graduate School.

Tuition and Fees

Tuition and fees are established by a vote of the Board of Trustees. Approval normally occurs between April and July. The current academic year rates are published annually on the University's Web site. Mandatory fees for all students include a Memorial Union fee, which funds the personnel, programs, and maintenance of the building; a health and counseling fee, which funds University Health Services and the Counseling Center; a recreation fee, which funds recreational sports facilities; a technology fee, which funds technology services and support for students and faculty; and a transportation fee, which funds transportation services on the Durham campus. The services and facilities are available to all and students are required to pay all mandatory fees charged regardless of actual usage of the programs and services. Mandatory fee charges are based on registration status—full- or part-time fees, depending on number of credit hours. Students enrolled in pre-designated evening-only programs do not pay the health and counseling fee. Students enrolled in 4 credits or less pay the technology fee only.

Tuition and fees are due by the published deadline, and students are not considered registered until they have paid. UNH no longer sends bills through the mail—students receive bills through Webcat, a part of MyUNH (Blackboard), the student portal. E-mails are sent to students' UNH-assigned e-mail address when new bills are posted. Payment may be made online or mailed—check, credit card, cash or wire is accepted. Late fees may be assessed on balances remaining unpaid by mid-semester. Graduate tuition and fees apply to admitted graduate students enrolling for courses, graduate or undergraduate, at the University during the academic year. Admitted graduate students planning to enroll for UNH courses through weekend or executive programs during the summer session, or through the Center for Graduate and Professional Studies should consult the relevant publications for information regarding tuition and fees.

Mandatory Fees

The University of New Hampshire assesses mandatory fees to support expenses associated with the participation in an academic community. Mandatory fees are defined as fees that all students are assessed as a prerequisite for registration unless specifically exempt. Mandatory fees are assessed because the services made available through such fees benefit the overall educational experience of the students, including academic, co-curricular, health-related, and recreational programs. It is recognized that not all students will use the benefits and privileges made available by fee-supported activities to an equal extent. The services and facilities supported by fees are available to all. The special circumstances of part-time and graduate students is reflected in the University’s fee structure.

Fee Structure

Full mandatory fees are assessed to undergraduate and graduate students registered for 9 or more credits, national student exchange students, doctoral research and master's continuing research students. Students registered for 5–8 credits are assessed one-half of the cost. Students registered for 1–4 credits are assessed only the Technology Fee. Students enrolled in Manchester campus programs pay Manchester mandatory fees.

The mandatory fee includes:
- Memorial Union fee for the use and administration of the student union
- Recreational fee for support of recreational facilities
- Student activity fee for support of the undergraduate newspaper, yearbook, student government, student lawyer, student radio station, and other student organizations
- Athletic fee to provide support for athletic programs
- Health and counseling fee to provide general health care through University Health Services
- Technology fee to provide electronic tools to students both on and off campus
- Transportation fee to provide student transportation services, including select infrastructure improvements, transit service, pedestrian and bicycle facilities, and ride services
• SHARPP fee to support the University’s efforts to address issues of sexual and domestic violence

Students who withdraw or drop to part-time status after classes begin are eligible for full or partial refund of fees. (100 percent will be refunded before the first day of classes; 75 percent during the first week of the semester; 50 percent after one week and within 30 days; and none thereafter.)

Exceptions
Students enrolled as majors in the Graduate Center for Professional Studies are assessed the Manchester mandatory fees.

Students participating in a UNH Study Abroad Program or internship in the immediate geographic area (75-mile radius) for a semester are exempt from mandatory fees with the exception of the technology fee.

All graduate students are exempt from the student activity and athletic fees. Graduate students enrolled in weekend/executive programs on the Durham campus are exempt from mandatory fees except the technology fee.

Graduate students enrolled in evening-only programs, as approved by the provost and executive vice president for academic affairs or his/her designee, are exempt from the Health Services and Counseling fees.

Doctoral students who have achieved candidacy may petition for a waiver of the mandatory student fees. A waiver will be granted under the following circumstances:
• The student must be advanced to candidacy and enrolled only in 999 prior to the beginning of classes.
• The student cannot be on an assistantship or fellowship, unless such support covers research that is being conducted out of the geographic area (75 miles).
• The student has recently relocated and/or permanently resides out of the immediate geographic area (75 miles) prior to the beginning of classes. The 75-mile radius may be waived if the student is not receiving University support, has met the one-year residency requirement, is working full-time and will only be on campus sporadically to meet with his or her adviser, or if the student has completed all requirements for the degree prior to the end of the drop/add period (end of the third week).
• The student is temporarily out of the region (75 miles) for at least one semester, conducting research related to his or her dissertation.
• The student has a family emergency, illness, or has provided the dean of the Graduate School other information to warrant an exception. (Information will be provided with the petition as appropriate.)

Authority
Any conflicts resulting from this procedure will be adjudicated by the provost and executive vice president for Academic Affairs and the vice president for Finance and Administration or his/her designee.

Special Fees
Differential Tuition
Students majoring in accounting, computer science, economics, and engineering will be charged a tuition differential. Students in these programs who are registered for Doctoral Research (999) or Masters-Continuing Research (GRAD 900) are considered full time and pay the full tuition differential. The current academic year rates are published annually.

Continuing Enrollment Fee
Students registered for Continuing Enrollment (GRAD 800) will pay a continuing enrollment fee. This fee will be waived for students who subsequently register for course credits or research within the semester.

Master’s Continuing Research Fee
Master’s students registered for Master’s Continuing Research (GRAD 900) will pay a continuing research fee plus full mandatory fees.

Doctoral Research Fee
Doctoral students in residence and registered for Doctoral Research (999) will pay a doctoral research fee plus full mandatory fees. Students who register for coursework in addition to Doctoral Research will pay the appropriate additional tuition charges up to the appropriate maximum tuition rate for full-time students. Doctoral candidates not in residence who are conducting their research away from the Durham campus may petition for a waiver of the mandatory fees.

Other Charges and Fees
Overload
Graduate students are charged full tuition plus the appropriate course charge for each credit beyond 16, if registered for more than 16 credits 30 days after the semester has begun. (No refund will be made if a student subsequently drops a course, reducing his or her course load to 16 or fewer credits.) Tuition waivers awarded with assistantships and scholarships do not cover charges for overload.

Zero-Credit Seminars
Seminars for 0 credit are billed as if they were for 1 credit.

Audit
Charges for auditing a course are the same as those for taking it for credit.

Late Fees
A $25 late registration fee is charged to students who register after the last day scheduled for graduate registration. Late fees are also charged for changes in registration as follows: A $25 fee is charged for each course dropped after the third Friday of classes; a $25 fee is charged for each course added after the third Friday of classes. The late-add fee is charged in addition to the reinstatement fee when students register after the third week of classes. A change of section (within the same course) is accomplished by a “drop” of one section and an “add” of another section. The fee will not be assessed for the add portion of a late section change but the $25 drop fee will still apply for the drop portion of the late section change. Late fees are also charged on accounts remaining unpaid by mid-semester.

Reinstatement Fee
A reinstatement fee is charged to any student who has his or her degree status discontinued and subsequently petitions to be reinstated during the same semester that the action to discontinue the degree status was taken. This fee will not be waived.

Registration Fee
Part-time students (i.e., those registering for 1 to 8 credits) pay a nonrefundable registration fee.

Student Health Benefits Plan
Health insurance is required as a condition of enrollment for full-time degree students at the University of New Hampshire beginning with the 2007-2008 academic year. Students will have the option of waiving this requirement if they present proof of adequate coverage; alternatively, students can acquire an affordable health benefits plan sponsored by the University. Information about the University’s Student Health Benefits Plan can be found at www.unh.edu/health-services/shbp/.

Refunds
Tuition and mandatory fees are refundable during the academic year in accordance with the calendar published by the Registrar’s Office (UNH Academic Calendar). Students receiving federal financial aid will have their
Financial Assistance

Several forms of financial assistance are available to graduate students through the Graduate School and individual departments, most of which are awarded for an academic year commencing in the fall. To be eligible for any assistance, the student must first be admitted to the Graduate School. In most cases, the application for admission with supporting documents serves as the application for new graduate students for the scholarship and assistantship programs available to them. In other cases, individual departments have their own application forms. Students are advised to contact individual programs for more information about assistantships and scholarships, and any departmental application forms.

Scholarships and Fellowships

Graduate Scholarships for Merit

The Graduate School awards six scholarships annually to recognize the outstanding contributions of both master’s and doctoral students for their teaching and scholarship. Availability and criteria for award of these scholarships are announced annually by the Graduate School.

Scholarships for Full-Time Students

Students who are full-time may be granted full or 1/2 tuition scholarships for the academic year or semester. These awards provide for waiver of tuition and are subject to the maintenance of a high scholastic record in the Graduate School. Application is made to the student’s department or program.

Scholarships for Part-Time Students

Students who are part-time may be granted tuition scholarships, which provide a partial waiver of tuition charges. The scholarships are awarded each semester of the academic year. Applications are available at the Graduate School. University employees or family members who are eligible for staff benefits are not eligible to receive scholarships for part-time students.

Graduate Fellowships

The Graduate School offers a number of fellowships to entering students to assist programs in recruiting a high-quality and diverse student body. Availability and criteria for these fellowships are announced annually by the Graduate School. Students are nominated by their respective program coordinators.

Dissertation Fellowships

Dissertation fellowships for a maximum tenure of one academic year are available on a competitive basis to doctoral students who have been advanced to candidacy. These awards include stipends and waivers of the doctoral research and mandatory fees for the period of the award. Application is made to the dean of the Graduate School.

Summer Fellowships for Teaching Assistants

A limited number of summer fellowships are awarded to students who have held graduate assistantships involving teaching during a previous academic year. Application is made to the dean of the Graduate School.

Assistantships

The University offers a variety of forms of financial assistance to graduate students in support of their efforts to obtain a graduate degree. Graduate appointments are made to postbaccalaureate students who have been regularly or provisionally admitted to the Graduate School and who have been recommended by the appropriate department or program and approved for appointment by the Graduate School. Appointments are normally for one academic year and may be renewed provided that funds are available and that the student’s academic performance, as well as performance in carrying out the responsibilities of the appointment, is satisfactory. Appointments may be made in the following categories:

Graduate Assistants: Graduate assistants are student who provide instructional or administrative support as specified by the appointing department and are normally supported by University funds.

Graduate Associates: Graduate associates are doctoral candidates who because of their advanced standing and experience are appointed to teach one or two courses per semester and are normally supported by University funds.

Graduate Part-Time Lecturers: Graduate part-time lecturers are master’s, C.A.G.S., or precandidacy doctoral students who because of their specific expertise are appointed to teach one or more courses per semester and are normally supported by University funds.

Graduate Interns/Trainees: Graduate interns/trainees are students who are assigned to a specific project or subject area to acquire additional learning experiences and are normally supported by external funds.

Graduate Fellows: Graduate fellows are students who have been awarded a fellowship normally through an external grant to the University of New Hampshire or directly to the student. Appointment will normally not exceed one fiscal year and may be renewed in accordance with the terms of the fellowship program.

Graduate Research Assistants: Graduate research assistants are students who are appointed to conduct research on grants supported by the Agricultural Experiment Station, or external grants and contracts.

Graduate Research Associates: Graduate research associates are doctoral candidates, who because of their advanced standing and experience are appointed to conduct research on grants supported by the Agricultural Experiment Station, or external grants and contracts.

Graduate Stipend-Only Appointments: Graduate stipend-only appointments may be made to students during the academic year under one of the above categories. Students on such appointments have responsibilities of less than those of students on regular graduate appointments; have a workload of less than that of students on regular graduate appointments, and receive a lower stipend than students on regular graduate appointments.

Graduate Supplemental Appointments: Graduate students on appointment in one of the above categories may supplement their regular appointments for up to an average of 10 hours per week (20 hours per week when classes are not in session). The dean of the Graduate School, upon recommendation of the student’s adviser and the Graduate Program coordinator, will review the request. F-1 and J-1 students on full assistantships may not accept additional appointments while classes are in session. Such appointments may be processed as stipends or hourly.

Graduate Hourly Appointments: Graduate hourly appointments are appointments made to students in support of the instructional, administrative, or research activities of the University. Students on such appointments have responsibilities of less than those of students on regular graduate appointments.

Graduate Summer Appointments: Graduate summer appointments are appointments made to students during the summer in one
of the categories. Students on summer appointments may work for up to 40 hours per week. Graduate students working full time on research or combined teaching and research for the entire summer earn 2/3 of their prior academic year stipend. Appointments for less than the maximum time are prorated.

**Reappointment:** A graduate student who holds a working appointment directly connected with his/her graduate studies may be reappointed for an additional period, provided that funds are available and that the student's academic performance, as well as performance in carrying out the responsibilities of the appointment is satisfactory, and the student's status as a graduate student is maintained.

**Non-reappointment:** The University, for any reason, may elect not to renew a graduate student's working appointment at the end of the appointment period. No advance notice nor any reason need be given to the graduate student in the case of non-reappointment, and the appeal procedure is not available.

**Termination:** A hiring unit may be recommended to the Graduate School that a graduate student be terminated from a working appointment prior to the end of the appointment. The associate dean of the Graduate School acts on this recommendation. A student who is terminated is entitled to a written statement of the reasons for the termination from the hiring unit. A student who is terminated may initiate an appeal except when the termination is due to the loss of funding for the position; or the termination is due to either a voluntary or involuntary loss of graduate student status. If the graduate student is eligible, and does not initiate an appeal using the following procedure, he or she may be placed on leave of absence without pay during the period of time involved in processing the appeal. If the case is found in favor of the student, “back pay” will be awarded.

**Step 1:** The student should request that the hiring unit make the original recommendation reconsider the decision. The student's request should be written and should contain any information that the student feels warrants a reconsideration of the decision. A copy of the request should be sent to the dean of the Graduate School. As soon as possible after receiving this request, the hiring unit will reconsider the decision and notify the student and the dean of the Graduate School of the results of the deliberation in writing.

**Step 2:** If the student is not satisfied with the decision reached in Step 1, he or she may request that the dean of the Graduate School review the decision. The student's request should be in writing and must stipulate the reasons for his or her dissatisfaction with the decision reached in Step 1. The Step 2 appeal will be heard by the Student Affairs Committee of the Graduate Council, unless the student requests that the dean or the dean's designee hear the appeal. When the appeal is heard by the dean's designee or the student affairs committee, a recommendation is made to the dean, who will render a decision. The dean's decision will be communicated in writing to the student, the hiring unit, and the hiring unit's college dean, director, or vice president.

**Federal Financial Aid**

Graduate students who are enrolled in a degree program at least half time (5 or more credits per semester) and are a U.S. citizen or eligible non-citizen may be considered for Federal Financial Aid. Graduate students are reviewed for loans and work study. There are no Federal or University grants or scholarships awarded to graduate students by the UNH Financial Aid Office.

To apply for Federal Financial Aid you must complete the Free Application for Federal Student Aid (FAFSA) or a Renewal Application. You can complete a paper application or find this form online at www.fafsa.ed.gov. The UNH priority deadline for applying for financial aid is March 1. This is the date by which the FAFSA/Renewal Application must be received by the Federal processor. However, students applying after March 1 will still be considered for the Federal Stafford Loan, which is not subject to the priority deadline.

Graduate students must also complete a Graduate Student Aid Verification Form and a Graduate Student Credit Verification Form before their application can be reviewed. These forms are available at the UNH Financial Aid Office or can be found on their Website at www.unh.edu/financial-aid. Be aware that the Financial Aid Office will make their offer of aid based on your actual tuition charges. If you will be enrolled for less than 9 credits or paying reduced tuition in either semester, your aid package may be adjusted. If you change your status (i.e., from full to part time), receive a scholarship, tuition waiver or other resource, or correct and/or change the information on the FAFSA, an aid adjustment may result.

**Types of aid available:**

- **Federal College Work Study** utilizes federal funds to provide employment opportunities to graduate students who file on time and demonstrate financial need.
- **The Federal Perkins Loan** is a federally funded loan program administered by UNH and is available to graduate students who file on time and demonstrate exceptional need.
- **The Federal Subsidized Stafford Loan** is a federally funded loan available to graduate students who demonstrate financial need.
- **The Federal Unsubsidized Stafford Loan** is available to graduate students regardless of financial need. For more information about the Stafford Loan Programs visit www.nnheaf.org.

Please feel free to visit the UNH Financial Aid Website at www.unh.edu/financial-aid for further information or call (603) 862-3600 to speak to an information specialist or to set up an appointment with the Graduate School Coordinator.

**Veterans Benefits**

Veterans and their dependents should investigate their eligibility for veterans benefit payments. Questions may be addressed to any local Veterans Administration office or the UNH Veterans Coordinator, Registrar's Office at (603) 862-1595.

**Satisfactory Academic Progress**

Satisfactory progress in a course of study must be maintained by all students who receive federal financial aid. The current standards for satisfactory academic progress are available upon request from the Financial Aid Office.
Applying for Admission

Persons holding a baccalaureate degree from an accredited college or university may apply for admission to the Graduate School. Admission is both limited and competitive and is based solely upon academic qualifications and potential of the individual.

Application procedures are included in the application packet, which is available either from the Graduate School or at www.gradschool.unh.edu/. It’s strongly recommended that you apply online.

Applicants to programs that lead to the master of science for teachers degree must meet, in addition to the normal requirements, one of the following admission requirements: (1) completion of education courses sufficient for certification, (2) completion of three years of teaching experience, or (3) current employment in a full-time teaching position.

All application materials become part of the permanent records of the University of New Hampshire and will not be returned. Access to this material is limited under the Family Rights and Privacy Act of 1974. Applicants who are not admitted, who are admitted and do not register in the Graduate School, do not have access to their application files. Materials received as part of the application process will not be duplicated for personal use by the applicant or forwarded to a third party. Materials received from applicants who do not complete their application, who are not admitted, or who are admitted and do not register are held for one year before being destroyed.

Applicants from Foreign Countries

All applicants from non-English-speaking countries must, in addition to all of the above, provide Test of English as a Foreign Language (TOEFL) scores. A minimum TOEFL score of 550 (213 computer-based) is required for admission. TOEFL scores are valid for only two years. The International English Language Testing System (IELTS) may be accepted on a case-by-case basis. A financial declaration on official University forms is also required. A four-year baccalaureate degree is normally the minimum academic certification required for admission.

Applications from residents of foreign countries will be considered only for regular full-time admission.

Application Deadlines

Application deadlines for admission and financial aid vary by program. These are updated on an annual basis and may be found on our Web site.

International applicants who are not currently residing in the United States will be considered for admission for the fall session only and must have their applications completed by April 1. International applicants currently residing in the United States should have their applications completed at least four months prior to the session for which they are applying.

Incomplete Applications

Applications that remain incomplete after the first day of classes of the term for which admission was desired will be placed in an inactive status. A written request is required to reactivate an application.

Application Review

Once an application is complete, it is reviewed by an admissions committee of graduate faculty members, which makes recommendations to the Graduate School. The Graduate School will review these recommendations and make the final decision.

While applicants with bachelor’s degrees may apply directly to certain doctoral programs, the Graduate School also reserves the right to offer applicants admission at the master’s degree level in its place.

Admission Categories

Official offers of admission from the Graduate School are made for a specific term and year in one of the following categories: regular, provisional, or conditional. Applicants who are in the final year of an undergraduate or, in some cases, a graduate degree program are contingent upon the successful completion of that degree program. An official final transcript showing grades and the awarding of the degree must be received by the Graduate School before the student may enroll for the graduate program.

Regular Admission

Regular admission may be offered to applicants whose academic records and supporting documents indicate that they are fully qualified to undertake graduate study in their chosen fields.

Provisional Admission

Provisional admission may be offered to applicants whose academic records and supporting documents indicate that they are qualified to undertake graduate study, but whose undergraduate preparation was not in the intended field of graduate study. Applicants offered provisional admission must meet the specific criteria, usually undergraduate coursework, stated at the time of their admission, before being changed to regular graduate student status.

Conditional Admission

Conditional admission may be offered to applicants whose academic records indicate deficiencies but suggest some promise of success in graduate study. Students offered conditional admission must meet the specific requirements stated at the time of their admission in order to remain in the Graduate
School. Conditionally admitted students are not eligible for assistantships and scholarships offered through the Graduate School until the conditional status is removed.

Deferred Admission
Applicants who cannot enroll in the term for which admission was offered may request to have their admission deferred for up to one year. Such requests must be in writing and will be considered only once. Because enrollments are limited and competition for admission may vary from year to year, such requests may not be granted. Applicants who have received approved deferment of their admission cannot register for graduate coursework as special students at the University during the period of deferment.

Early Admission—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 early admission. Such seniors are normally admitted prior to the start of their last undergraduate semester. Seniors who have been admitted under early admission may register for a maximum of two courses for up to 8 graduate credits prior to completing their bachelor’s degree.

Additional Information
Non degree Students
Individuals holding baccalaureate degrees may register for graduate courses on campus through Continuing Education, or for off campus through the Center for Graduate and Professional Studies at the University of New Hampshire at Manchester. These individuals are designated as “non degree students.” Non degree students are not required to file an application for admission to the Graduate School and are not candidates for a graduate degree. Non degree students are not normally permitted to register as full-time students. Please note policy on transfer of credits (internal and external) in academic regulations and degree requirements.

Applicants Not Admitted
Applicants who are denied admission may have their applications reconsidered only if they furnish significant additional material that was not available at the time of the original decision, such as evidence of further academic achievement or more recent and significantly improved GRE or GMAT scores. Reapplication is not encouraged.

Registration
Academic Year
Registration information and the Time and Room Schedule are available at www.unhinfo.unh.edu/registrar/.

Continuous Registration
Unless a leave of absence is granted, graduate students are required to maintain continuous enrollment each semester of the academic year until their degree is formally awarded by registering for course credits, research, or continuing enrollment. Master’s students must enroll for course credits, thesis credits, Master’s Continuing Research (GRAD 900), or Continuing Enrollment (GRAD 800). Pre-candidacy doctoral students must enroll for course credits, Doctoral Research (999), or Continuing Enrollment (GRAD 800). All doctoral candidates must register for Doctoral Research (999) each semester after advancement to candidacy until their degree is conferred, even if the minimum requirement (two semesters) has been met. Students enrolled in summer-only programs—currently, Math M.S.T., English M.S.T., and College Teaching M.S.T.—are required to enroll in course credit or GRAD 800 each summer until their degree is formally awarded.

Full-Time Students
Graduate students registered for 9 or more credits, Master’s Continuing Research, or Doctoral Research are classified as full-time students. Students holding assistantship appointments are also considered full time and must register for a minimum of 6 credits, Master’s Continuing Research, or Doctoral Research each semester.

Three-Quarter-Time Students
Graduate students not on an assistantship and registered for 7 or 8 credits are classified as three-quarter-time students.

Half-Time Students
Graduate students not on an assistantship and registered for 5 or 6 credits are classified as half-time students.

Maximum Load
The maximum graduate load allowed is 16 credits (12 credits for a student on a full assistantship). Only under unusual circumstances will a student be allowed to exceed these limits, and then only with the recommendation of the student’s adviser and graduate program coordinator and the approval of the dean of the Graduate School.

Dropping and Adding Courses
Graduate students may add or drop courses in accordance with the procedures and deadlines published by the Registrar’s Office at www.unh.edu/registrar.

Auditing Courses
A graduate student may, with the approval of his or her adviser and the faculty member concerned, audit courses. The deadline for requesting an audit is listed on the Registrar’s calendar. Subsequent requests for change to audit require a petition form and must be approved by the course faculty member, the student’s adviser, graduate program coordinator, and the dean of the Graduate School.

Change of Name or Address
It is the responsibility of the student to complete a change of name or address form whenever a change is made. Forms are available in the Registrar’s Office and the Graduate School.

Summer Session
Although many graduate-level courses are offered during the summer session, the University does not guarantee that any particular course will be offered. The availability of individual faculty members to supervise research or to participate in qualifying examinations and final examinations or defenses during the summer session varies from year to year.

Course information and registration materials may be obtained at www.learn.unh.edu/.

Maximum Load
The maximum graduate load allowed is 12 credits for the entire summer session. A student will be allowed to exceed this limit only by petition with the recommendation of the student’s adviser, graduate program coordinator, and the approval of the dean of the Graduate School.

Student Load for Veterans Benefits
Graduate students eligible for V.A. benefits during the summer receive benefits according to the following schedule of average credit registrations: 1/2 credit/week or more = full time; 3/8 credit/week or more = 3/4 time; 1/4 credit/week or more = 1/2 time; less than 1/4 credit/week = tuition and fees only.
Nonregistration

Leave of Absence

Students who, because of unforeseen circumstances, are unable to pursue their graduate program may request a leave of absence for a maximum of one calendar year. Such circumstances may include medical reasons, military obligation, family emergencies, or hardship. The procedure for an approved leave of absence requires that students submit a request, available at the Graduate School, along with appropriate documentation, prior to the term for which the leave is requested. The dean of the Graduate School, upon recommendation of the student's adviser and graduate program coordinator, will review the request. If the request for a leave is granted, the time limit for completion of the student's program will be extended appropriately. Students on an approved leave of absence are exempt from paying the continuing enrollment fee. Graduate students who do not return from a leave of absence will have their degree status discontinued.

Withdrawal

A student may withdraw from the Graduate School during any semester by obtaining a withdrawal form from the Graduate School. This form should be signed by the student's adviser and the dean of the Graduate School. Students who formally withdraw are required to apply for readmission if they subsequently desire to resume their academic program.

Degree Status Discontinued

Students who do not formally withdraw and do not register and pay for course credits, research, or continuing enrollment by the appropriate registration deadline, or do not return from an approved leave of absence, will have their degree status discontinued. Students are notified by the Graduate School when this administrative action is taken and are required to apply for readmission or reinstatement if they subsequently desire to resume their academic program.

Administrative Withdrawal for Reasons of Health

The vice president for Student and Academic Services (VPSAS) or designee; or dean of the Graduate School, or designee; in consultation with Health Services, and/or Counseling Center, Access Office, and ADA Compliance Officer; may temporarily suspend a student without prejudice for reason of seriously impaired mental/physical health, if such conditions pose a significant risk of substantial harm to the health and safety of him or her self, or other members of the University community. Such action may not be used routinely as a means of excluding qualified students with disabilities.

The vice president or dean or designee shall provide the student with a written statement of reasons for the temporary suspension. The student may request a hearing with the vice president or dean or designee to dispute the reasons. The student may be accompanied at the hearing by a member of the University community. The vice president or dean or designee may require receipt of a medical release from a licensed attending medical authority, and consult with the appropriate University official(s) before lifting the suspension. If the student fails to request such a hearing within 10 days of beginning the temporary suspension, or if the temporary suspension is upheld at the hearing, the temporary suspension shall be changed to an administrative withdrawal.

Students who withdraw for medical reasons, whether voluntarily or by administrative action, must apply for readmission through the Graduate School. Readmission shall be contingent upon receipt by the appropriate director(s) or their agents, of a medical release from a licensed attending medical authority, and a personal interview with either the VPSAS or his/her designee, or dean of the Graduate School or his/her designee. A final recommendation regarding readmission will be made based on the information received. For graduate students, the dean of the Graduate School will make the final decision.

Reinstatement

Students who have their degree status discontinued for failure to register and pay for course credits, research, or continuing enrollment may petition the Graduate School to be reinstated for the term in which the action to discontinue their status was taken. Such a petition requires a reinstatement fee, plus payment of current semester charges and late fees.

Change in Degree

Students who wish to pursue a degree program other than the one for which admission was originally granted must complete the appropriate application for a change in degree. This includes students enrolled in UNH master’s programs who intend to pursue the Ph.D. in the same department in which they were admitted for the master’s degree. These forms are available from the Graduate School or at www.gradschool.unh.edu/. The dean of the Graduate School will notify the student of the decision after consulting with the appropriate departments.

Readmission

Students who withdraw, who have their degree status discontinued, or whose time limit has expired and subsequently desire to resume their academic program are required to apply for readmission. Readmission forms are available at the Graduate School or online at our Web site. Students who are applying for readmission are required to pay an application fee plus, if readmitted, any accumulated continuing enrollment fees for the period during which they have been inactive. Students are not guaranteed readmission and may be evaluated in competition with current applicants to the program.
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*.

Graduate Courses

Graduate credits may be earned in courses numbered from 800 through 999, or under limited circumstances in courses numbered at the 700 level. Graduate credit will not be given for any courses that have freshmen or sophomores enrolled. The Graduate School monitors those advanced-level undergraduate courses that are co-listed and co-taught with 800-level graduate courses to insure that only advanced-level undergraduates are enrolled.

The faculty of each graduate program prescribes the courses that make up the degree program. In addition, the Graduate School has general requirements for master’s and doctoral degree programs.

800- and 900-Level Courses

These courses are offered for graduate credit only and therefore are open to only admitted or special graduate students. 800-level courses may be co-listed and co-taught with advanced-level undergraduate courses.

700-Level Courses

These are advanced undergraduate courses. Up to 12 credits earned in 700-level courses may be taken for graduate credit by a graduate degree student, provided such courses are approved by the student’s adviser, graduate program coordinator, and the dean of the Graduate School, provided they are given in a program other than the one in which the student is seeking the degree; and provided only advanced-level undergraduate students are enrolled. Such courses must be taken for a letter grade. Petition forms are available at the Graduate School.

Graduate Grading

Letter grades: The following grades are used at the University: A (4.0), A- (3.67), B+ (3.33), B (3.0), B- (2.67), C+ (2.33), C (2.0), C- (1.67), D+ (1.33), D (1.0), D- (.67), F (0). Graduate credit is normally only granted for courses completed with a grade of B- or higher. Individual programs may have stricter requirements, and those are published with their degree program requirements.

C+ Grades: The dean of the Graduate School may, under limited conditions, approve two courses, up to 8 credits, of C+ grades for graduate credit. A student’s advisory committee or a student’s adviser, in conjunction with the appropriate departmental committee, shall forward its recommendation, with appropriate justification, to the dean of the Graduate School within one month of the completion of the course. Normally these courses will be elective courses outside the student’s major area. Students must have a cumulative GPA of 3.0 or higher to graduate.

AF Grades: An “AF” grade, Administrative F, is assigned for failure to either drop or complete a course. An “AF” is considered the same as an “F.”

Credit/Fail Grades: A “CR” grade is assigned for complete, approved theses and dissertations, as well as other approved courses and seminars.

Pass/Fail Grades: A graduate student may petition to take undergraduate courses on a pass/fail basis. Such a petition must be approved by the end of the add period for the term the course is taken. A grade of “C” is the minimum grade in order to receive a “P.” Courses at the 700-level approved for graduate credit cannot be taken for pass/fail.

Audit Grades: An “AU” grade is assigned for completion of courses for which an audit was granted. No credit is earned.

Incomplete Grades: An “IC” grade is assigned with the approval of the instructor for excused unfinished work only. The work must be completed and submitted to the instructor by the date agreed to with the instructor, but not later than the last day of the classes of the semester immediately following the one in which the incomplete was granted (800- and 900-level course only; midsemester for 400-, 500-, 600-, and 700-level courses). A petition requesting additional time within which to resolve the incomplete, approved by the instructor, the student’s adviser and graduate program coordinator, may be submitted to the Graduate School by the appropriate deadline. An extension will be granted by the dean only under unusual circumstances. An incomplete grade becomes an “F” if not resolved or if a petition for an extension is not approved within the allowed time period. This policy also applies to students who withdraw from the University or who are on an approved leave of absence.

IA Grades: An “IA” grade is assigned for approved continuing courses such as thesis or doctoral research and remains on the record until the course requirements are completed. In the case of doctoral research, the “IA” grades remain on the official transcript for all semesters prior to the completion of the degree. The “IA” grade for the final term of enrollment will be changed to “CR” to signify successful completion of the dissertation.

W Grades: If a student withdraws from school or drops a course prior to the fifth Friday of the semester, the course(s) will not appear on the student's permanent record. If a student withdraws from school or, for compelling nonacademic reasons, submits an approved petition to drop a course after the fifth Friday of the semester, a notation of “W” will be shown on the student’s academic record. If the withdrawal or drop is after the midpoint in the class, a grade of “WP” or “WF” is shown on the record. A “WF” is considered a failing grade and will calculate into the GPA as such. Deadlines for courses scheduled for any time period other than a full semester are apportioned at the same rate as semester courses. The actual dates are determined on a term-by-term basis.

Appeals: Every instructor must be prepared to discuss and explain the basis for her or his evaluation of students. If, after consulting the instructor, a student still believes that he or she was treated unfairly, he or she has the right to seek redress from the chairperson of the department or program in which the course is offered. Under exceptional circumstances, a final appeal may be made to the dean of the college or school in which the program is offered.

Repeated courses: Repeating a course does not remove the original course or grade from the record. If the course numbers and/or titles do not match exactly, graduate students must obtain written permission of their adviser, graduate program coordinator, and the endorsement of the Graduate School dean before the adjustment will be made. Only the most recent grade is included in the cumulative grade-point average; only the most recent credit, if any, is included in the cumulative credits earned. A course
Academic Standards

Graduate students receiving grades below “B-” in 9 or more credits, including undergraduate courses taken while a graduate student, will be dismissed from the Graduate School.†

Graduate students will have a maximum of two opportunities to successfully complete final examinations for the master’s or C.A.G.S. degree.

Doctoral students will have a maximum of two opportunities to successfully complete qualifying or final examinations for the Ph.D. degree.

Graduate students admitted on a conditional or provisional basis must meet the conditions or provisions as stated in the letter of admission in order to remain in the Graduate School.

Appeals Procedure for Graduate Students Dismissed for Academic Reasons

A department chairperson, a director of graduate studies of a program, or an appropriate faculty committee may recommend dismissal for a student who is not performing satisfactorily. This recommendation will be acted upon by the associate dean of the Graduate School. A student disagreeing with the action taken should make every effort to resolve the situation through informal discussions with the individuals involved in the decision. After such efforts, a student wishing to enter a formal appeal should follow the procedure outlined below. A student who has been dismissed for academic reasons may, with the permission of the dean of the Graduate School, enroll as a special student in courses in his/her program pending a final decision on the appeal. Note: This procedure is not available to graduate students who have received failing grades in 9 or more credits.

Step 1: The student should request that the faculty member or committee making the original recommendation reconsider their decision. The student’s request should be written and should contain any information, which the student feels warrants a reconsideration of the decision. A copy of the request should be sent to the dean of the Graduate School. As soon as possible after receiving this request, the faculty member or committee group will reconsider their decision and notify the student and the dean of the Graduate School of the result of their deliberations in writing.

Step 2: If the student is not satisfied with the decision reached in Step 1, he/she may request that the chairperson of the appropriate department or program convene a meeting of all faculty members in the department or program to review the decision. The student’s request should be in writing, and a copy should be sent to the dean of the Graduate School. After the meeting, the chairperson will provide the student and the dean of the Graduate School with written notification of the decision of the faculty.

Step 3: If the student is dissatisfied with the decision reached in Step 2, he/she may request that the dean of the Graduate School review the decision. The student must request such a review in writing and stipulate the reasons for his/her dissatisfaction with the decisions reached in the earlier steps in the review procedure. Within a reasonable period of time, the dean of the Graduate School will hold separate meetings with the student and the appropriate faculty to discuss the case. After these meetings and after reviewing any other information he/she deems appropriate, the dean of the Graduate School will inform the college dean about the appeal process to date. In consultation with the Graduate Council, the dean of the Graduate School will then arrive at a final decision, which he/she will communicate in writing to the student, the department or program faculty, and the college dean.

In Steps 1 and 2, the student may, at the discretion of the faculty body involved in hearing the appeal, be present during the review of his/her appeal. A member of the University community may appear with the student, as an adviser, before the dean of the Graduate School and before any faculty meeting, which the student is permitted to attend. An adviser may be present, but may not directly participate, in any of these proceedings.

Transfer Credit (External to UNH)

Students may request that a maximum of two courses, for up to 8 semester credit hours of resident courses completed on the campus of an accredited institution authorized to grant graduate degrees, be transferred to count toward their graduate program. All courses presented for transfer must have been completed with a grade of B or better and must have been taken for graduate credit. Courses cannot be transferred for credit if used in earning another degree. Transfer of credits must be recommended by the program faculty and approved by the dean of the Graduate School. Students taking courses at another university for transfer after enrolling at UNH should obtain approval of their adviser and the graduate dean prior to enrolling in the course.

Non degree Credits (Internal to UNH)

A maximum of three courses for up to 12 credits completed by a special student in graduate courses (800- or 900-level) at UNH or UNHM may, upon recommendation of the program faculty and approval of the dean of the Graduate School, be applied to a student’s degree program. The 12-credit limitation applies to all courses completed or in process on the date when the official letter of admission is written. This number will be reduced if transfer credits are also applied.

Continuing Education Units

The Continuing Education Unit (CEU) is a nationally recognized method of quantifying the time spent in the classroom during professional development and training activities. Ten hours of instruction = 1.0 CEU. One hour of instruction = 0.1 CEU. CEUs are not transferable as graduate credit.

Dual-Credit UNH Seniors

University of New Hampshire seniors who have been admitted to the Graduate School under early admission may, upon recommendation of the department and approval of the Graduate School, be allowed a maximum of two graduate-level courses for up to 8 credits, to count toward both a bachelor’s and master’s degree. 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. Dual-credit forms are available at the Graduate School.

* Each individual program may set and announce standards for coursework, examinations and/or research achievement that are more rigorous than the Graduate School standard. Thus, students may be dismissed if they accumulate less than 9 credits of grades below the “B-” level, and/or fail to make adequate progress in other aspects of their graduate program.

† Graduate students MUST have a cumulative GPA of 3.0 or higher in order to graduate.
Master's Degree Requirements

Credits
A minimum of 30 graduate credits is required for all master's degrees. Many programs require substantially more than the minimum 30 credits. Individual program requirements are outlined in the program descriptions of this catalog. Graduate credits are normally earned in courses numbered 800-999. Up to 12 credits earned in courses numbered 700-799 may be taken for graduate credit by master's degree students provided the courses are approved by the dean of the Graduate School and given in a department other than the one in which the degree is sought. A maximum of 12 credits taken by a student prior to admission can be applied to a degree program.

Residency
A student will normally spend at least one calendar year, or the equivalent, in satisfying the requirements for the degree.

Master's Continuing Research
Master's students who have completed all course requirements and have previously registered for the maximum number of thesis or project credits and are in residence completing their master's program must register for Master's Continuing Research.

Time Limit
All graduate work for any master's degree must be completed within six years from the date of matriculation (enrollment following admission) in the program. Progress toward the degree will be carefully monitored by the adviser and the Graduate School to ensure that adequate advancement is made toward the completion of the program and that any deficiencies noted at the time of admission are removed.

Nonthesis Option
Students who are in a nonthesis program may be required to pass a final examination. This examination may be oral, written, or both. The schedule of final examinations will be at the convenience of the department concerned, except that all such examinations must be given at least two weeks before the graduation date at which the degree is to be conferred. Further regulations governing the final written examination, when required, will be made by the department concerned, subject to the approval of the dean of the Graduate School.

Examining Committee
Examining committees, when required, are appointed by the dean of the Graduate School, upon recommendation of the department or program concerned. Normally three members are required. The dean of the Graduate School is an ex officio member of all examining committees.

Thesis Option
Students who are in a thesis program are required to conduct independent research and prepare a scholarly paper for submission to the Graduate School. Each department will determine the date when the student must submit for approval a statement of the subject of the thesis and the date when the thesis must be completed. Students writing a thesis should obtain a copy of the Thesis and Dissertation Manual from the Graduate School or at www.gradschool.unh.edu. Students in thesis programs may also be required to pass a final examination. The regulations concerning this exam are the same as those in the nonthesis option. The thesis committee will normally also serve as the examining committee.

Thesis Credit
A student completing a thesis must enroll for a minimum of 6 thesis (899) credits (8 credits in economics, mechanical engineering, and political science). A maximum of 10 thesis credits may be applied toward a master's degree. The exact number of credits within this range to be applied toward the degree will be determined by the faculty of the individual programs. No thesis credit shall be given until the completed thesis has been approved by the thesis committee and accepted by the Graduate School. Satisfactory acceptance of the thesis will be recorded as a credit (CR).

Thesis Committee
A master's thesis must be approved by a committee composed of the faculty member under whose direction it was written and two other members of the graduate faculty nominated by the department chairperson or graduate program coordinator and appointed by the dean of the Graduate School.

Submission of Thesis
Two copies of the approved thesis, one ready for binding and one for Microfilm, must be submitted to the Graduate School Office by the appropriate deadline as published in the Graduate School calendar. Binding fees will be paid at the Graduate School and are due upon submission of final copies. Most programs require one additional copy of the thesis.

Publication of the thesis by University Microfilms is required, and the student assumes the cost. Students may choose to copyright their thesis at the time of Microfilming.

Certificate of Advanced Graduate Study
Requirements for completion of the Certificate of Advanced Graduate Study are found under the program descriptions of the education department. A maximum of 12 credits taken by a student prior to admission to the C.A.G.S. can be applied to a C.A.G.S. program.

All graduate work for the C.A.G.S. must be completed within six years from the date of matriculation (enrollment following admission) in the program.

Doctoral Degree Requirements
The degree of doctor of philosophy is conferred on qualified candidates who have passed an oral or written examination(s) on the subject matter of their field of study, who have completed an original investigation in this field and have embodied the results in an acceptable dissertation, and who have passed an oral examination in defense of the dissertation. The degree of doctor of philosophy is essentially a research degree.

Credits
Each program specifies the number of courses required for the Ph.D. degree.

Residency
A minimum of three academic years of graduate study is required for the doctorate. Graduate work done at other universities may be counted toward the minimum requirement upon approval of the guidance committee and the dean of the Graduate School, but one full academic year must be in residence at the University of New Hampshire. In individual cases, the major department and the dean of the Graduate School may grant permission to pursue the research for the dissertation at another institution where access to special facilities would be advantageous.

Doctoral Research
A minimum of two semesters of registration in Doctoral Research is required. However, doctoral students at candidacy must register for 999 each semester during the academic year, even if the minimum requirement has been met.

Guidance Committee
A guidance committee is appointed by the dean of the Graduate School upon the recommendation of the program faculty as soon as possible after a student has begun study
for the doctoral degree. The committee assists the student in outlining a program and preparing for the qualifying examination, and administers the examination.

Qualifying Examination
The qualifying examination is required and may be written, oral, or both. This examination will test (1) the student’s general knowledge in the student’s major and minor work and (2) the student’s fitness for engaging in research, particularly in the subject proposed for the dissertation. The chairperson of the student’s program will communicate the examination results to the Graduate School dean. (See academic standards for details.)

Language/Research Proficiency
Each doctoral program has its own language and/or research proficiency requirements. These requirements can be found in the individual program descriptions.

Degree Candidacy
A doctoral student is advanced to candidacy for the degree by the dean of the Graduate School upon recommendation of the graduate program coordinator after the student has passed the qualifying examination, met the language or proficiency requirements as are deemed desirable by the student’s program, and declared a topic for dissertation research.

Doctoral Committee
After the student has been advanced to candidacy, a doctoral committee will be appointed to supervise and pass on the dissertation and administer the final examination. This committee will be nominated by the department of major concentration and appointed by the dean of the Graduate School. It shall consist of a minimum of five members, usually three from the major department and two from related departments. The dean of the Graduate School is an ex officio member of all doctoral committees.

Time Limit
All graduate work for the doctorate must be completed within eight years of matriculation (enrollment after admission) or within seven years if the student entered with a master’s degree in the same field. The student must be advanced to candidacy within five years after matriculation or within four years if the student entered with a master’s in the same field.

Dissertation
The dissertation must be a significant contribution to scholarship in the student’s discipline, demonstrating the student’s ability to conduct independent and original research and to communicate the results of the research through a coherent, integrated, and mature piece of writing.

Final Defense
A copy of the completed dissertation must be made available to the members of the examining committee two weeks before the final examination date.

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Professor of Electrical and Computer Engineering and Ocean Engineering; B.E., University of Madras, India, 1956; M.S., Harvard University, 1958; Ph.D., ibid., 1963.

Research Associate Professor of Earth, Oceans, and Space; B.S., University of California at Irvine, 1993; M.S., ibid., 1995; Ph.D., ibid., 1998.

Small, Deena J. (2002)
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Smith, Andrew E. (2005)
Associate Professor of Political Science; B.A., University of Cincinnati, 1983; M.A., ibid., 1987; Ph.D., ibid., 1997.

Smith, Charles W., III (2003)
Research Professor of Physics and Earth, Oceans, and Space; B.S., University of Maryland, 1977; M.S., College of William and Mary, 1979; Ph.D., ibid., 1981.

Smith, Cheryl A. (1992)
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Smith, David R. (1979)
Professor of Art and Art History; A.B., Washington University, 1968; M.A., Columbia University, 1971; M.Phil., ibid., 1978; Ph.D., ibid., 1978.

Smith, Kevin T. (1996)
Affiliate Professor of Plant Biology; B.S., Connecticut College, 1976; M.S., University of New Hampshire, 1979; Ph.D., University of Georgia, 1982.

Research Assistant Professor of Sociology; B.A., University of Vermont, 1989; M.P.H., Tulane University, 1993; Ph.D., University of Maryland, 2006.

Smith, Nathan L. (2006)
Affiliate Assistant Professor of Animal and Nutritional Sciences; B.S., University of Miami, 1966; Ph.D., University of California, 1972.

Smith, Nicholas J. (2002)
Assistant Professor of Philosophy; B.A., Vassar College, 1994; J.D.; State University of New York at Buffalo, 1997; Ph.D., Vanderbilt University, 2002.

Sohl, Jeffrey E. (1983)
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Sonnenmeier, Rae M. (1996)
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Stähler, Robert (1978)
Professor of Music; B.S., Susquehanna University, 1970; M.M., Catholic University of America, 1973; D.M.A., ibid., 1979.

Associate Professor of Psychology; B.S., Georgia Institute of Technology, 1977; M.S., ibid., 1982; Ph.D., ibid., 1983.

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Stokes, Martin (1999)
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Straus, Murray A. (1968)
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Swartz, Erik E. (2000)  
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Swift, M. Robinson (1976)  
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Taylor, James T. (1977)  
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Tebbetts, Diane R. (1972)  

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Terry, Clark (1988)  
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Thomas, W. Kelley (2002)  
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Thompson, Peter J. (2000)  
Affiliate Professor of Geology; A.B., Dartmouth College, 1968; M.S., University of Vermont, 1973; Ph.D., University of Massachusetts at Amherst, 1985.

Tisa, Louis S. (1994)  
Associate Professor of Microbiology and Genetics; B.Sc.(Hon.), University of Windsor, Canada, 1976; M.S., ibid., 1979; Ph.D., University of Wisconsin at Madison, 1987.


Tomellini, Sterling A. (1985)  
Professor of Chemistry; B.S., University of Rhode Island, 1979; Ph.D., Rutgers, The State University of New Jersey, 1985.

Torbert, Roy B. (1989)  
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Townson, David H. (1997)  
Associate Professor of Animal Sciences; B.S., Michigan State University, 1983; M.S., University of Wisconsin at Madison, 1988; Ph.D., Ohio State University, 1993.

Tracy, Susanne M. (2005)  
Assistant Professor of Nursing; B.S.N., Niagara University, 1967; M.N., University of South Carolina, 1975; M.A., Rivier College, 1992; Ph.D., University of Rhode Island, 2005.

Associate Professor of Philosophy; B.A., Antioch College, 1972; M.A., University of Massachusetts at Amherst, 1980; Ph.D., ibid., 1982.

Trubowitz, Rachel (1986)  
Associate Professor of English; B.A., Barnard College, 1976; M.A., Columbia University, 1977; Ph.D., University of Texas at Dallas, 1981.

Professor of Biochemistry and Molecular Biology; B.S., Washington State University, 1976; Ph.D., University of Texas at Dallas, 1981.

Tiang, Paul C. (1989)  
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Tsukrov, Igor I. (1997)  
Associate Professor of Mechanical Engineering and Materials Science; B.S., Dnepropetrovsk University, Ukraine, 1986; M.S., Tufts University, 1993; Ph.D., ibid., 1996.

Tucker, Anita (2005)  
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Tucker, Corinna Jenkins (2000)  
Associate Professor of Family Studies; B.A., Clark University, 1992; M.S., Pennsylvania State University, 1995; Ph.D., ibid., 1998.

Tucker, James (1992)  
Associate Professor of Sociology; B.S., University of Virginia, 1981; M.A., ibid., 1987; Ph.D., ibid., 1992.

Turner, Elise H. (1990)  
Affiliate Associate Professor of Computer Science; B.S., Bard College, Columbia University, 1981; M.S., Columbia University, 1983; Ph.D., Georgia Institute of Technology, 1989.

Professor of Sociology; B.A., University of Western Ontario, Canada, 1983; Ph.D., University of California at San Francisco, 1990.

Turner, Roy M. (1990)  
Affiliate Associate Professor of Computer Science; B.S., University of Louisville, 1980; M.S., Georgia Institute of Technology, 1987; Ph.D., ibid., 1989.

Upton, Timothy (2005)  
Affiliate Assistant Professor of Mechanical Engineering; B.S., University of New Hampshire, 1989; Ph.D., ibid., 1995.


Vagts, Peggy A. (1978)  
Professor of Music; B.M., Morningside College, 1976; M.M., University of Wisconsin at Madison, 1978.

Van Zandt, Cynthia J. (1998)  
Associate Professor of History; B.A., University of Virginia, 1984; M.A., University of Connecticut, 1991; Ph.D., ibid., 1998.

Research Associate Professor of Earth, Oceans, and Space and Affiliate Associate Professor of Earth Sciences; B.S., Hope College, 1984; M.S., University of Massachusetts at Amherst, 1988; Ph.D., University of New Hampshire, 2005.

vanDeveer, Stacy D. (1998)  
Associate Professor of Political Science; B.A., University of Maryland, 1994; Ph.D., ibid., 1997.

VanGundy, Karen (2001)  
Associate Professor of Sociology; B.S., Virginia Polytechnic Institute and State University, 1994; M.A., University of Cincinnati, 1998; Ph.D., University of Miami (Fla.), 2001.

Varki, Elizabeth (1997)  
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Vasquez, Bernard J. (1999)  
Research Associate Professor of Physics and Earth, Oceans, and Space; B.S., Rensselaer Polytechnic Institute, 1987; Ph.D., University of Maryland, 1992.
<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
<th>Title</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vasudevan, Palligarnai T.</td>
<td>1988</td>
<td>Professor of Chemical/Environmental Engineering; B.Tech., University of Madras</td>
<td>India, 1974; M.S., State University of New York at Buffalo, 1984; Ph.D., Clarkson University, 1988.</td>
</tr>
<tr>
<td>Veal, Larry J.</td>
<td>1982</td>
<td>Associate Professor of Music; B.S., University of Illinois at Urbana-Champaign</td>
<td>1974; M.M., ibid., 1976.</td>
</tr>
<tr>
<td>Violette, Catherine A.</td>
<td>1986</td>
<td>Extension Professor/Specialist, Food &amp; Nutrition; B.S., University of Maine at Orono</td>
<td>1974; B.S., ibid., 1975; M.S., ibid., 1977; Ph.D., Pennsylvania State University, 2002.</td>
</tr>
<tr>
<td>Vromen, Keryellen</td>
<td>2005</td>
<td>Assistant Professor of Occupational Therapy; B.S., Massy University</td>
<td>1990; M.H.S., McMaster University, 1992; Ph.D., Massey University, 2005.</td>
</tr>
<tr>
<td>Vromen, Neil B.</td>
<td>1984</td>
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<td>1975; Ph.D., Pennsylvania State University, 1982.</td>
</tr>
<tr>
<td>Wake, Cameron P.</td>
<td>1995</td>
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</tr>
<tr>
<td>Walker, Charles W.</td>
<td>1976</td>
<td>Professor of Zoology; B.A., Miami University, Ohio</td>
<td>1969; M.S., Cornell University, 1973; Ph.D., ibid., 1976.</td>
</tr>
<tr>
<td>Walsh, Wendy A.</td>
<td>2003</td>
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</tr>
<tr>
<td>Ward, Larry G.</td>
<td>1989</td>
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</tr>
<tr>
<td>Ward, Sally</td>
<td>1980</td>
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</tr>
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</tr>
<tr>
<td>Webb, Dwight</td>
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<td>Weiner, James L.</td>
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<td>Weisman, Gary R.</td>
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<td>Wells, Melissa</td>
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<td>Wells, Roger E.</td>
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<tr>
<td>Wirth, Clifford J.</td>
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</tr>
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<tr>
<td>Wright, John J.</td>
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<td>1969.</td>
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<tr>
<td>Wright, Steven C.</td>
<td>2002</td>
<td>Associate Professor of Kinesiology; B.S., St. Law-</td>
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Zunz, Sharyn J. (1993)
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DIRECTIONS TO CAMPUS

By Car
From Boston, Mass.
Follow I-95 North to Portsmouth, N.H., bearing left towards NH Lakes and White Mountains, on Routes 4 & 16 (Spaulding Turnpike) to Exit 6W (Concord-Durham). Follow Route 4 West to Route 155A. Follow 155A through a short stretch of fields and farmland to the UNH campus.

From Hartford, Conn.
Take I-84/I-86 East out of Hartford to the Mass. Pike (I-90) to Auburn Exit 10 then East on I-290 to I-495 North. Drive east on I-495 North, Exit 26. Continue north on I-95, then follow the directions above for driving from Boston.

From Portland, ME.
Follow either I-95 or Route 1 South to the Portsmouth traffic circle. Take the Spaulding Turnpike north to Exit 6W (Concord-Durham). Then follow the directions above for driving from Boston.

From Manchester, N.H.
Take Route 101 to the junction of Route 125. Follow Route 125 North to the Lee traffic circle. Drive east on Route 4, and then follow the directions above for driving from Concord.

By Plane
From Logan International Airport, Boston, you may use the C & J Trailways bus service. Advance reservations are not required. For further information call (603) 430-1100 from New Hampshire or (800) 258-7111 from outside of New Hampshire.

By Bus
Depart C & J Trailways bus service across from South Station in Boston. For further information call (603) 430-1100 from New Hampshire or (800) 258-7111 from outside of New Hampshire.

By Train
Amtrak's Downeaster provides daily service to the Durham-UNH rail station located adjacent to the Whittemore Center. Four round trips a day provide service from Boston, Portland, and points en-route. For further information call (207) 780-1000, email info@nnepra.com, or visit www.amtrakdowneaster.com.
## 2007-2008 Academic Calendar

### Semester I
- **Sept. 3**, M . . . . . . . . . Labor Day, University holiday
- **Sept. 4**, T . . . . . . . . . . Classes begin
- **Sept. 13**, Th . . . . . . . . . Rosh Hashanah*
- **Sept. 22**, Sat . . . . . . . . . Yom Kippur*
- **Oct. 12**, F . . . . . . . . . . Mid-semester, fall break, no classes
- **Nov. 6**, Tu . . . . . . . . . . Election Day; no exams scheduled
- **Nov. 12**, M . . . . . . . . . . Veterans Day observed, University holiday
- **Nov. 13**, Tu . . . . . . . . . Classes follow MONDAY schedule
- **Nov. 21**, W . . . . . . . . . Classes follow FRIDAY schedule
- **Nov. 22-23**, Th-F . . . . . . Thanksgiving holidays
- **Nov. 26**, M . . . . . . . . . Classes resume
- **Dec. 14**, F . . . . . . . . . . Last day of class
- **Dec. 17**, M . . . . . . . . . . Reading day; final exams begin 6 p.m.
- **Dec. 22**, Sat . . . . . . . . . Final exams end

### Semester II
- **Jan. 21**, M . . . . . . . . . Martin Luther King Jr. Day, University holiday
- **Jan. 22**, Tu . . . . . . . . . Classes begin
- **Mar. 13**, F . . . . . . . . . Mid-semester
- **Mar. 16-21**, M-F . . . . . . Spring recess
- **Mar. 23**, M . . . . . . . . . Classes resume
- **Apr. 9**, Th . . . . . . . . . . Passover*
- **Apr. 10**, F . . . . . . . . . . Good Friday*
- **Apr. 17**, F . . . . . . . . . . Orthodox Good Friday*
- **May 11**, M . . . . . . . . . Last day of classes
- **May 12-13**, Tu-W . . . . . Reading days
- **May 14**, Th . . . . . . . . . Final exams begin
- **May 21**, Th . . . . . . . . . Final exams end
- **May 22**, F . . . . . . . . . . Senior Day
- **May 23**, Sat . . . . . . . . . Commencement

*Religious and cultural holidays, although not University holidays, are important to many members of the University community and are noted to facilitate the planning of University events. A more comprehensive list may be found at http://www.interfaithcalendar.org.*

## 2008-2009 Academic Calendar

### Semester I
- **Sept. 1**, M . . . . . . . . . Labor Day, University holiday
- **Sept. 2**, T . . . . . . . . . . Classes begin
- **Sept. 30**, T . . . . . . . . . Rosh Hashanah*
- **Oct. 9**, Th . . . . . . . . . . Yom Kippur*
- **Oct. 17**, F . . . . . . . . . . Mid-semester, fall break, no classes
- **Nov. 4**, Tu . . . . . . . . . . Election Day, no exams scheduled
- **Nov. 11**, Tu . . . . . . . . . Veterans Day, University holiday
- **Nov. 26**, W . . . . . . . . . Classes follow FRIDAY schedule
- **Nov. 27-28**, Th-F . . . . . . Thanksgiving holidays
- **Dec. 1**, M . . . . . . . . . . Classes resume
- **Dec. 12**, F . . . . . . . . . . Last day of class
- **Dec. 15**, M . . . . . . . . . . Reading day; final exams begin 6:00 p.m.
- **Dec. 20**, Sat . . . . . . . . . Final exams end

### Semester II
- **Jan. 19**, M . . . . . . . . . Martin Luther King Jr. Day, University holiday
- **Jan. 20**, Tu . . . . . . . . . Classes begin
- **Mar. 13**, F . . . . . . . . . Mid-semester
- **Mar. 16-21**, M-F . . . . . . Spring recess
- **Mar. 23**, M . . . . . . . . . Classes resume
- **Apr. 9**, Th . . . . . . . . . . Passover*
- **Apr. 10**, F . . . . . . . . . . Good Friday*
- **Apr. 17**, F . . . . . . . . . . Orthodox Good Friday*
- **May 11**, M . . . . . . . . . Last day of classes
- **May 12-13**, Tu-W . . . . . Reading days
- **May 14**, Th . . . . . . . . . Final exams begin
- **May 21**, Th . . . . . . . . . Final exams end
- **May 22**, F . . . . . . . . . . Senior Day
- **May 23**, Sat . . . . . . . . . Commencement

*Religious and cultural holidays, although not University holidays, are important to many members of the University community and are noted to facilitate the planning of University events. A more comprehensive list may be found at http://www.interfaithcalendar.org.*
Directory Assistance and Information

University Operators
(603) 862-1234 (off campus)
Dial 0 (on campus)

University of New Hampshire homepage
www.unh.edu

Other Helpful Resources

Advising and Career Services
862-2064
www.unh.edu/uacc/

Affirmative Action Office
862-2930
www.unh.edu/affirmativeaction/

Business Services
862-2230
www.unh.edu/business-services/

Campus Recreation
862-2031
http://campusrec.unh.edu/

Center for Graduate and Professional Studies at UNH Manchester
641-4313
www.unhmgrad.unh.edu/

Disability Services for Students
862-2607
www.unh.edu/disabilityservices/disabilityservices.html

Financial Aid Office
862-3600
www.unh.edu/financial-aid/

Graduate School
862-3000
www.gradschool.unh.edu/

Health Services
862-1530
www.unh.edu/health-services/

Housing
862-2120
www.unh.edu/housing/

Memorial Union and Information Center
862-2600
www.unhmub.com/

Off-Campus Housing
862-0303
www.unhmub.com/housinglist/

Office of International Students and Scholars
862-1288
www.unh.edu/oiss/

Office of Multicultural Student Affairs
862-2050
www.unh.edu/omsa/

Parking
862-1010
www.unh.edu/transportation/parking/

Registrar’s Office
862-1500
www.unh.edu/registrar/

Transcripts
862-3787
www.unh.edu/registrar/transcript/transcourinfo.html

UNH Calendar
calendar.unh.edu

UNH at Manchester
641-4321
www.unhm.unh.edu/

UNH Bookstore
862-2140
www.unh.bkstore.com/

University Police
862-1427
www.unh.edu/upd/

Veterans Information
862-1595

Whittemore Center Box Office
862-4000
www.whittemorecenter.com/

Wildcat Transit bus service
862-2328
www.unh.edu/transportation/wildcat/
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Appendix

The University of New Hampshire is an Equal Opportunity/Equal Access/Affirmative Action institution. The University seeks excellence through diversity among its administrators, faculty, staff, and students. The University prohibits discrimination on the basis of race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, veteran status, or marital status. Application by members of all underrepresented groups is encouraged. Inquiries regarding discrimination should be directed to Director, Office of Affirmative Action and Equity, Thompson Hall, 105 Main Street, phone (603) 862-2930 (Voice/TDD), fax (603) 862-2936, or to the regional director, Office for Civil Rights, U.S. Department of Education, JW McCormack Post Office and Court House Building, Room 707, 01-0061, Boston, MA 02109-4557.

There are various grievance procedures to provide for the resolution of complaints under this policy. Information may be obtained at the Office of Affirmative Action and Equity.

The University complies with federal guaranteed student loan regulations and will supply information about the employment of its graduates who have majored in specialized degree programs that normally lead to specific employment fields. This information may be obtained upon request from the University’s Career Services, which is available to all students. The University does not guarantee employment to its graduates, but their chances for employment are enhanced if they have begun career planning early in their undergraduate days.

The University provides information pertaining to the Family Educational Rights and Privacy Act of 1974 (the “Buckley Amendment”) in the annual student handbook. Information also is available from the Office of the Vice President for Student Affairs and the Office of the Provost and Vice President for Academic Affairs. The annual student publication, Student Rights, Rules, and Responsibilities, also contains University regulations and policies regarding student conduct.

Course descriptions and 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.