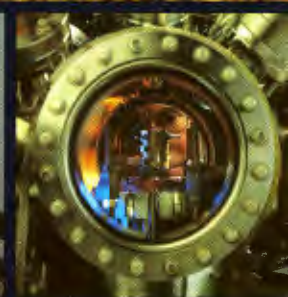


The Graduate School





A rising star among research institutions, the University of New Hampshire offers graduate programs of distinction in the humanities, social and life sciences, physical and geosciences, engineering, and applied professional fields. As a land-, sea-, and space-grant university, UNH fosters a close relationship between research and classroom teaching. Graduate faculty and students collaborate to discover theoretical and empirical knowledge, design innovative methods and technologies to disseminate that knowledge, and engage in state-of-the-art undergraduate and graduate teaching. The Graduate School is an important source of intellectual capital for the University, the region, and the nation.



Land-grant



Sea-grant



Space-grant





UNIVERSITY *of* NEW HAMPSHIRE

The Graduate School

Points of distinction

- We offer 20 doctoral programs and 60 master's degrees in disciplines ranging from accounting to zoology.
- UNH enrolls 11,000 undergraduates, 2,400 graduate students, and has 600 full-time faculty members; graduate programs enroll students from 44 states and 49 countries.
- Ranked among the top 125 research universities, our labs and centers are research powerhouses, drawing \$108 million in research funding in 2005. This represents an increase of more than 15 percent over last year. The \$108 million figure does not include a recent \$38 million NASA grant.
- Our graduate students have been awarded a number of highly competitive fellowships from the EPA, Ford, Fulbright, Merck, NASA, NIH, NOAA, and NSF.
- More than 70 UNH faculty have held the Fulbright Fellowship, making the University one of the top Fulbright campuses in the U.S.
- New Hampshire is 10th among the nation's top 25 most entrepreneurial colleges and universities as ranked by Forbes.com.
- The Institute for Scientific Information has named UNH a "high-impact university" in geosciences and environmental science research.
- UNH has a nationally recognized Preparing Future Faculty program.

The sky is the limit

Backed by supercomputers and world-class research institutes, partnerships with global consortiums, and the state's own natural geography, graduate education at UNH reaches for the stars.

Electronic Drift Instruments (EDI) will be a new type of satellite instrument to measure both electric and magnetic fields with unprecedented accuracy. Eight EDIs will be constructed at UNH. Roy Torbert, physics professor and principal investigator.



UNH, NASA partner to construct solar-terrestrial instrumentation

Some graduate and undergraduate students at UNH will be able to say they rocketed their college research into space. Literally. Thanks to a \$38 million research award from NASA to construct eight Electron Drift Instruments (EDI), UNH students will have the opportunity to help make history.

The EDI's will be installed on four identical solar-terrestrial probes of NASA's Magnetospheric MultiScale (MMS) mission and will involve UNH scientists, engineers, graduate and undergraduate students. The goal of the probes is to study fundamental processes in the earth's magnetosphere, the magnetic shield that protects the earth from solar and cosmic radiation.

"In a sense, MMS represents a culmination of the extensive work done in space science at the University," says physics professor and principal investigator **Roy Torbert**. "It is based on previous successful NASA and European Space Agency missions in which UNH has participated."

Three parts fun, two parts science

Mix together saltwater, freshwater, zooplankton, phytoplankton, and swamp detritus and you have a soup that would make most people sick. But for kids at the Sandy Point Discovery Center in Stratham the ingredients are a recipe for fun—and estuary soup. "We talk about how [estuary soup] fits into the food pyramid," says graduate student **Laura Gunnels**.

The Sandy Point Discovery Center, a conservation and education establishment on the shores of Great Bay Estuary, is designed to teach children and adults about the importance of preserving the bay. Gunnels, an environmental educator at Sandy Point, is a summer intern at the center, while earning her M.A. in the environmental education program.

The environmental education program focuses on three aspects: curriculum and instruction, environmental science, and environmental policy and values. "You can really customize the program to what you're interested in," says Gunnels. Students have included K-12 teachers and nonformal environmental teachers from AMC, Audubon, regional nature centers, and land trusts.



New breakthroughs—be they concepts or technologies—can transform a whole area of pedagogy. Environmental education integrates new scientific understandings into general curricula. Laura Gunnels at Sandy Point Discovery Center in Stratham, N.H.

Eye in the sky

Russ Congalton understands the importance of taking the long view of things.

A professor of natural resources, Congalton is a leader in the field of “computerized mapping”—using the tools of remote sensing, photogrammetry (aerial photography), and geographic information systems, or GIS, to solve natural resource problems.

“Years ago, somebody asked me to evaluate the quality of vegetation-land cover maps made from satellite imagery,” Congalton recalls. The undertaking resulted in his being internationally known for developing the statistical tools needed to gauge the accuracy of land cover maps made from “remotely sensed” satellite and aircraft imagery.

In Elements of Photo Interpretation, one of the four courses he teaches graduates and undergraduates, Congalton walks the UNH campus with his students, helping them compare what they’re looking at on the ground with aerial photographs of the same area.

Good chemistry

When forest air mingles with a sea breeze, interesting and unknown chemistry takes place. Working together, atmospheric chemists from the Department of Chemistry and the Institute for Earth, Oceans, and Space (EOS) are trying to discover how



Chemistry student Carsten Nielsen participated in ICARTT, the largest air quality and climate study ever conducted.

chlorine (from sea salt) reacts with unstable, intermediate molecules (from land breezes) in the atmosphere to possibly affect air quality.

Chemistry Ph.D. student **Carsten Nielsen** worked on Appledore Island at one of AIRMAP’s (Atmospheric Investigation Regional Modeling Analysis and Prediction) four New Hampshire atmospheric observatories. AIRMAP, a research project sponsored by NOAA, seeks to understand how air quality has an effect on climate change in New England. AIRMAP’s four observatories are aligned from the highest on Mt. Washington to the lowest on the seacoast.

Nielsen collected air samples during an intensive, six-week-long atmospheric field study. “I think we, as physical chemists, are helping AIRMAP researchers to understand some of the discrepancies they may see in their data—things that don’t quite make sense, where we can shed a little light,” he says.

The AIRMAP observatories contributed to the International Consortium for Atmospheric Transport and Transformation (ICARTT)—the largest air quality and climate study ever conducted, involving hundreds of scientists from around the world, including 20 from UNH.

Professor Russ Congalton has shepherded many graduate students through coursework and into careers. And for that, he was selected as the inaugural recipient of the University’s Graduate Faculty Mentoring Award for Excellence.



The marine environment



With rich estuarine, coastal, and deep ocean environments nearby, UNH attracts scientists from many disciplines and nations to some of the world's most productive and cutting-edge marine and freshwater laboratories.

Kimberly Leung, ocean engineering student, recording data on the New Hampshire coast.



Zoology student Chris Rillahan dives to check on cod 80-feet below the North Atlantic chop.

This cod's life

Researchers with UNH's Open Ocean Aquaculture (OOA) Demonstration Project are painting a picture of an Atlantic cod's life. Using biotelemetry they rely on ultrasonic transmitters implanted into some of the farmed cod to emit high frequency signals to underwater microphones. The signals are relayed to shore where researchers can visualize which sections of the underwater cages the 30,000 cod prefer to swim and feed in, and when the cod are most active.

"Biotelemetry tracks the fine scale movements of each fish," says zoology master's degree student **Chris Rillahan**. "We can gauge how active they are throughout the day, what parts of the cage they like, how they respond to feeding, changes in weather, temperature, and so forth."

Rillahan's findings will increase knowledge of cod biology, help aquaculture farmers avoid over-feeding cod, and assist in determining the best kind of cages in which to grow the tasty fish.

Protecting New Hampshire's coastline

On a point of land in Hampton Harbor, Atlantic tides and Blackwater River currents have begun to erode stone and sand. With the crumbling ground disappearing nothing stands between destructive waters and a blacktop road lined by harbor-side homes. Nothing except for **Kimberly Leung**.

While earning her doctorate in ocean engineering, Leung works with the Center for Ocean Engineering (COE) to protect the point of land in Hampton Harbor from further erosion. A channel that was dredged through a nearby sandbar partially protects the point by diverting the tide to another part of bay. Leung is creating a computerized model of the point and surrounding harbor, complete with simulated currents, tides, and sediment movement, to see if the channel will solve the erosion problem.

"I apply current and tidal measurements and the [computer] model will show what the flow looks like in the rest of the bay," says Leung.



Salt marsh investigation

Alison Watts, a doctoral student in civil engineering, was one of only four New Hampshire students to receive a National Science Foundation (NSF) Graduate Research Fellowship in 2004, providing her with an annual stipend of \$30,000.

Watts studies whether pollutants from sources such as tanker spills, industrial discharges, sewage outflow, and urban runoff can be taken up by wetland plants. "We are growing salt marsh grass in contaminated sediments, then measuring how much contaminant moves into the plant," she says. "This will help us to understand if animals that graze on marsh grasses, such as deer, are being exposed to contaminants through their food, and also if the plants may help to remediate, or clean up the soil."

Her research, which is already gaining international attention, is one of several projects within the Center for Contaminated Sediments Research and is also supported by the Cooperative Institute for Coastal and Estuarine Environmental Technology.

The mother of two young children, Watts returned to graduate school after 10 years of working as an environmental geologist. "It's fun to come back to school," she notes. "I really appreciate being able to figure out a problem."

NSF fellow Alison Watts at UNH's Jackson Estuarine Laboratory, just minutes from downtown Durham.



How does the satellite pick up data from tagged tuna? After a set time, the pop-up tags jettison from the tuna to the surface where data is relayed to the satellite. Other species tracked by the Large Pelagics Research Center include billfish, sharks, and sea turtles.

Catch and release

What's **Benjamin Galuardi's** favorite thing about working with bluefin tuna? Catching them of course. Galuardi tracks bluefin tuna movement patterns with the Large Pelagics Research Center. "I've been told you should either study something that takes you to cool places or something that tastes good," says Galuardi who is working towards a master's of science in zoology.

A fishing rod, tagging stick, and charter boat are all the tools Galuardi needs for field research. He and colleagues catch

bluefin tuna (*Thunnus thynnus*) off the Atlantic coast, attach electronic tags, which can be tracked by satellite, and release them back into the water. Easy right? Not when mature bluefin typically weigh over 300 pounds and can grow up to 10-feet long. "They are incredibly strong swimmers," says Galuardi.

With the fishing over, Galuardi returns to the lab to analyze data. Information gleaned from the tags and from satellite imagery is used to obtain a clearer picture of the migration and spawning patterns of this deep-sea fish.

Mapping the human landscape

Graduate programs in the fine arts, humanities, and social sciences draw strength from the University's prize-winning faculty, robust research institutes, and thriving Seacoast art scene.

Assistant professor Alexander Parsons is part of an award-winning community of writers at UNH.



A great new writer

Alexander Parsons's second novel *In the Shadows of the Sun* details the plight of Jack Strickland, a POW who left behind his ranching family in New Mexico to fight in the Pacific during WWII. Parsons, an assistant professor of English, sets his latest novel in the 1940s to follow two stories—Jack Strickland and the family he leaves behind. While Strickland endures the Bataan Death March, his family is displaced and their ranch becomes part of the atomic bomb test site.

"I'm interested in how people construct narratives to survive suffering," says Parsons. *In the Shadows of the Sun* was chosen as a 2005 Barnes & Noble Discover Great New Writers selection.

*"Beneath a sky
burned vaporous
white the men
marched as they had the day before and would
the day after and the day after that. The dust
from those who had passed before imbued the
humid air with a granularity and phantom
mass—a resistance—as manifest as the weight
of exhausted muscle."*

Research to empower communities

Chris Colocousis and **Sarah Savage**, doctoral students in the sociology department, have found research opportunities with the Carsey Institute that will aid the northern New England region.

Colocousis worked with the Carsey Institute to develop a "social indicator site" of northern New England. In addition to sifting through statistical databases to uncover regional stats, he traveled throughout the towns and cities in the area to attend community meetings and talk with residents.

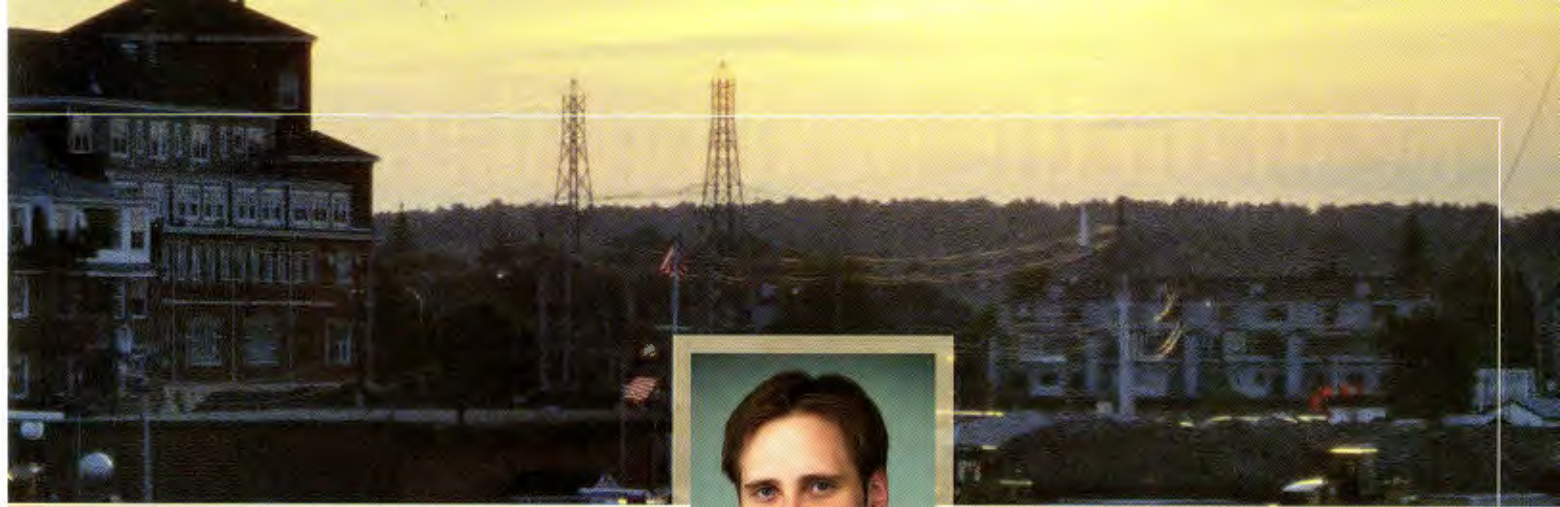
The Northern New England Indicators Site is available on the Carsey Institute's homepage. It lists statistics for every county in

Vermont, New Hampshire, and Maine. Statistics listed on the Web site include the poverty rate, median income, general population, and crime rate.

"It's unique in that there is no other place that pulls these indicators together," says Colocousis. "The [social indicator] Web site is a tool for anybody, whether it's a student or policy practitioner who is interested in any of the issues."

As change sweeps over rural communities, the research that sociology students Chris Colocousis and Sarah Savage do for the Carsey Institute informs the work of policymakers and community development practitioners.





Justiceworks, a research and development group, addresses issues in crime, safety, security, and the administration of justice. For Homeland Security Fellow Clint Jenkin, it's a valuable resource.

Along with Colocousis, Sarah Savage is working to develop a measure of regional well-being as part of a collaborative effort between the Carsey Institute and the Northern Forest Center (NFC) in Concord. According to Savage, "Working collaboratively with the NFC has been a rewarding experience given their sincere commitment to improving the health of the community, environment, and economy across the Northern Forest region." Savage may take on additional work through Carsey by assisting in an evaluation effort to determine the success of a job-training program in northern NH.

With the decline of the paper mill industry in northern N.H., many residents have been forced to find new jobs. By performing pre- and post-interviews of participants in the job-training program, Savage will be able to evaluate whether they learned new skills and if they were able to find and keep a satisfying job.

Opening a door to the past

Cynthia Van Zandt encourages her students to think of the 17th century as a foreign country. Many students, she notes, have a tendency to believe that the English colonists are similar to themselves, but Van Zandt pushes them to recognize the strangeness of the people they study.

"To understand why people made the choices that they made and acted as they did, you have to understand what their world was like. And to do that, you have to think of the differences," she says. "If you can look at anyone in the past and understand why they took a particular course of action, you are much more prepared to think thoughtfully about how we all act today."

Van Zandt has written articles on colonial settlements, culture, and life; presented her research to national and international scholars; and been honored with awards and fellowships. Her first book, *Brothers Among Nations: Mapping and the Pursuit of Intercultural Alliances in Early America*, will be published in 2006.

She has also become a favorite professor of both undergraduate and graduate students. Her Ph.D. students say she has a knack for making each one of them feel as if he or she was Van Zandt's only doctoral student.

Fear factors

Psychology graduate student **Clint Jenkin** has developed a scale to measure people's attitudes toward terrorism and plans to research which factors of terrorist threats impact these attitudes. "Terrorism opens a whole new area of social research," says Jenkin, among the first 101 students selected in 2003 for the Department of Homeland Security's (DHS) newly created Graduate Fellowship Program. "The work Clint is doing could potentially affect airport security in the future," says Ellen Cohn, professor of psychology and Jenkin's adviser. Ted Kirkpatrick, director of Justiceworks, describes Clint as an "exceptionally talented" young researcher. "Universities are now full partners with the federal government in addressing issues of safety and security in the wake of 9/11," says Kirkpatrick. "Clint's research as a DHS fellow will undoubtedly contribute to high-level policy discussions in the nation."

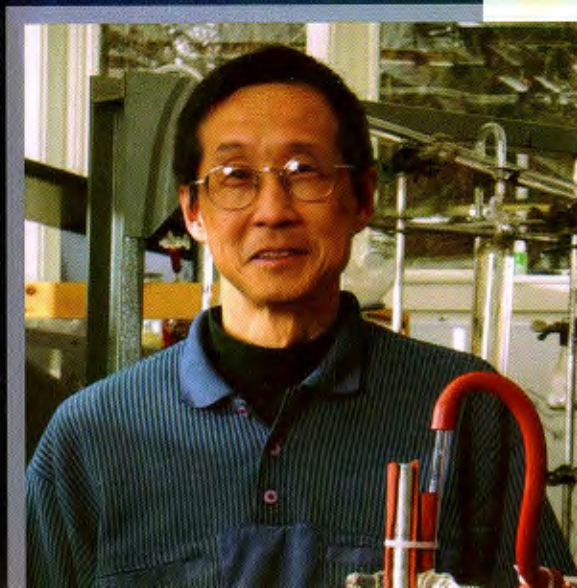
For Cynthia Van Zandt, associate professor of history, the William Damm Garrison, built in 1675, in nearby Dover, N.H., is a precious artifact.



Be in on the next breakthrough

Many graduate students begin their life's research at UNH—research that contributes to all of our well being. And yes, many have had breakthroughs.

"Our goal in all of our research programs has always been to turn students into professionals," says Professor Ed Wong. "That's as important as doing good science."



Big goals, nano devices

Imagine building molecular materials so miniscule that 100,000 of them would barely equal the width of a human hair. Then imagine using these materials to create "nanotube" chips with much more memory than today's silicon chips, or biosensors that can be implanted in the body to detect diseases at the earliest stages.

Thanks to a \$12.4 million grant from the National Science Foundation (jointly shared by UNH, UMass-Lowell, and Northeastern University), Glen Miller, associate professor of organic chemistry and materials science, and his students are putting their imaginations to work in hopes of developing just such tiny wonders in the hot new field of nanotechnology.

Working within the University's Center for High-Rate Nanomanufacturing (CHN), Miller's team must first develop tools to direct the self-assembly of nanoparticles. "We're working with nanoscale objects that are just a bit larger than molecules," says Miller. "We can't manipulate them by hand, so we have to develop nanoscale tools to do the job."

And what tools do you need to make to create such small devices? "Very, very small wrenches," quips Miller, describing the nanoscale templating tools that will be created to do the job.

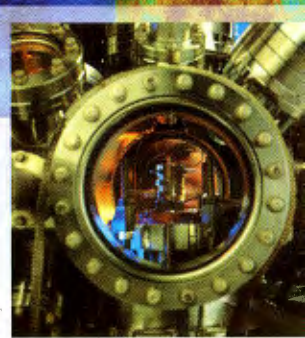
Chemistry is a "living science"

Inorganic chemistry professor **Ed Wong** and organic chemistry professor Gary Weisman have designed a new class of molecules that form the basis of imaging for Positron Emissions Tomography, or PET scans, which provide images of cancer. This new class of molecules has the potential to enable doctors to spot cancer earlier than ever before.

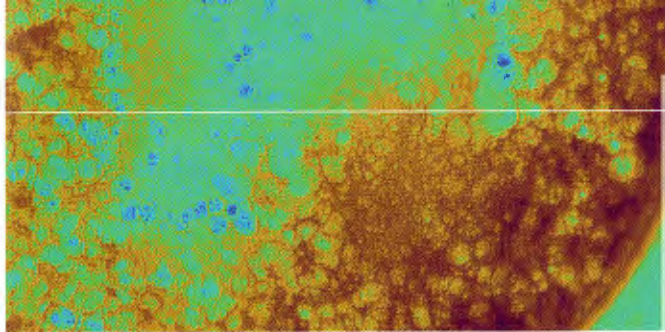
While Wong and Weisman are synthesizing and studying the clamshell molecules necessary for PET scans, associate professor Carolyn Anderson at Washington University in St. Louis is applying the molecules toward a new PET imaging device.

"Our collaborator Carolyn Anderson told us that it lights up tumors like a Christmas tree," says Wong referring to the new PET scans. "She said that it produced the nicest, sharpest images they'd ever seen."

The primary reason for using clamshell molecules is that they hang on to metal ions, or charged particles, tightly and create a protective shell. PET scans produced



UNH is one of 20 universities nationally to do nanotechnology research.



with conventional copper-based imaging agents appear hazy because proteins in the body hijack the positron-emitting copper isotope from the imaging agent. Anderson and co-workers can attach the clamshells to polypeptides that target specific tumors and then “tag” the composite molecule with a copper radioisotope.

The research has led to the creation of 50 different clamshell molecules, all with similar properties.

Wong and Weisman have included about 20 graduate and undergraduate students in their research, all of them conducting basic rather than applied research.

“We’re academics and most of the breakthroughs in science have been from basic research,” said Weisman. “And basic research provides problems for students to work on and mature into scientists themselves.”

Better living through bacteria

Before deciding to pursue her Ph.D. in microbiology, **Brandye Michaels** worked in a biotech quality control lab. “I was bored,” says Michaels. “I wanted to discover new things.”

Now she is. “It is extremely gratifying after doing an experiment for a year to finally get a result that means something,” says Michaels, who chose UNH specifically to be able to work with her adviser, professor Louis Tisa. “I found a great match and it’s been working out well. You want someone there when you need them, but not over your shoulder.”

Together, Michaels and Tisa study the bacteria known as *Photorhabdus*, that live symbiotically within certain soil nematodes. When these nematodes infect an insect, they release their bacterial symbionts into the insect. The bacteria kill the insect. Thus, the bacteria live a dual existence, as a nematode symbiont and insect pathogen. “We focus on the genetics of the bacteria—what chemical signals it’s detecting in the environment,” says Michaels. The applications of her research include contributions to clinical understandings of how harmless bacteria turn lethal and to the environmental use of natural bioinsecticides.

In addition to the research itself, Michaels appreciates the collaborative spirit she’s found within the scientific community at UNH. “I’ve worked with geneticists, plant biologists, biochemists, and nematode specialists... This kind of environment helps everyone move ahead.”

Tyrone Spady, zoology student, and research associate professor Karen Carleton. The Hubbard Center for Genome Studies brings the tools of genomic science to study new model organisms and the environments in which they live.



Professor Louis Tisa and microbiology student Brandye Michaels. The microbiology department is housed in Rudman Hall, which was built in 1995 and has state-of-the-art molecular biology facilities.

Seeing is believing

In the lakes of East Africa, fishes of the family Cichlidae have undergone an extraordinarily rapid and extensive “speciation,” or evolution of new species. Indeed, well over 1,500 species of this fish have arisen from a common ancestor in the last 10 million years. At the University’s renowned Hubbard Center for Genome Studies, whose special focus on aquatic and marine organisms makes it unique among university-based genome centers, cichlids are a major area of research.

Tyrone Spady, a doctoral candidate in zoology, studies the evolution of visual sensitivity in a group of African cichlids. “If you want to understand how different environmental forces shape the evolution of visual sensitivity, fish are a good system to study,” says Spady, who has had a continuing interest in aquatic life since his childhood in Washington, D.C.

Spady came to UNH and the Hubbard Center for Genome Studies after spending a year as a postbaccalaureate fellow at the National Institutes of Health. “I came to work with Karen Carleton and Tom Kocher, both well known for their work on cichlids,” says Spady. “Karen is my adviser and mentor. She’s probably the best mentor that I’ve had, and I’ve had a few of them.”



Professional programs

Taught by faculty in business, health care, education, and other fields, flexible programs at UNH support a wide range of career aspirations

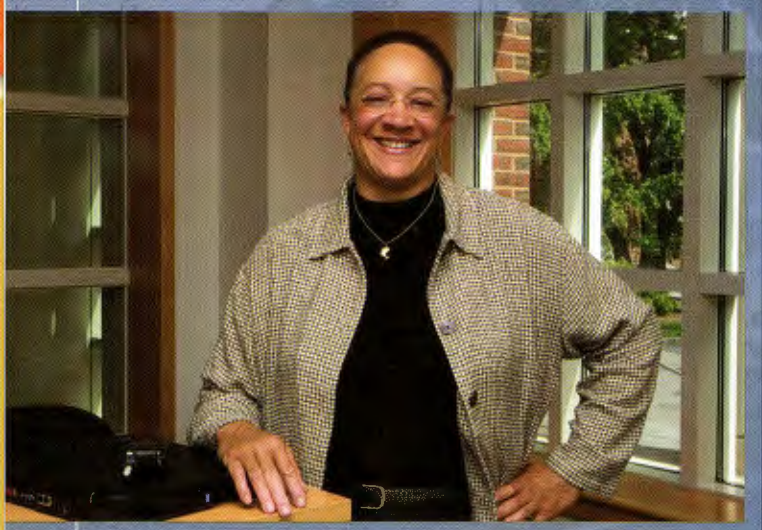


M.B.A.—your best business partner

Glendwyn Howard grew-up in Durham as a self-proclaimed “faculty brat.” For more than 20 years, she has worked for IBM. Recently, she returned to live in Durham and continues to work out of her home. After her move, she decided to enter UNH’s M.B.A. program. It will be her second master’s degree, her first is in manufacturing systems engineering.

Now entering her second year of the M.B.A. program, Howard is choosing a concentration. “I’ve been working on a leadership path [now], and I’m also going to be looking at entrepreneurship, so it’s kind of a dual path,” says Howard.

Howard says her experience in the master’s program has been “positive and flexible” which is important while juggling both classes and work. “My employer has been supportive in my pursuit of education, and even granted me a leave for the full academic year,” says Howard. When she returns to her job permanently with her M.B.A., Howard will have a whole new set of skills.



The Whittemore School was named one of the top 100 graduate business schools by *U.S. News and World Report*. Glendwyn Howard, M.B.A. student.

Classroom charisma

Courtney Brocks became “hooked” on teaching the first time she engaged with a classroom. After earning a bachelor’s degree in anthropology, her interest in Native American oral traditions led to an internship at Crow Canyon Archeological Center in Cortez, Colo. Brocks worked as an educator, teaching visitors about local tribes.

“Having the opportunity to lead discussions on subjects that I’m passionate about was very exciting,” says Brocks. “Especially when I could see sparks of interest in my students’ eyes.”

This fall, Brocks will have the chance to generate plenty of sparks in a yearlong teaching internship at Noble High School in North Berwick, Maine. Required of all master’s degree candidates in teacher education, the teaching internship helps polish classroom skills and build a professional portfolio.

For her internship, Brocks will coteach a large interdisciplinary humanities course with two cooperating teachers. “Noble



UNH teacher education graduates are known for their professional commitment. Courtney Brocks plans to teach high school English.



strikes a wonderful balance between being a public high school and also allowing for some creative freedom,” says Brocks, who plans to teach high school English after graduation.

Turning data into good decisions

Brian McHorney, a master’s degree student in public health at the Center for Graduate and Professional Studies at UNH Manchester, has been involved in some form of health care since graduating from high school. He worked as a medical transcriptionist and computer network administrator. Listening to doctors recite the symptoms of patients, and their diagnoses, McHorney began to ask what he could do to help.

Now he wants to use his computer skills to assist health care providers in creating policies using feedback from data.

An employee at Integrated Healthcare Information Services (IHCIS), McHorney uses health insurance provider data in conjunction with a large health experience database of individuals nationwide to predict the health risks of a carrier’s current membership. Data is returned to the health insurance providers, who can then intervene with high-risk patients.

Earning his M.P.H. degree will open doors in McHorney’s career at IHCIS. He also plans to explore health care policy development regarding HIV/AIDS awareness and same sex adoption.

Notes McHorney, “By turning data into information that health care decisions can be based on, it greatly improves the quality of health care delivered to the public.”

Brian McHorney plans to explore health care policy development. UNH’s M.P.H. program is the only public university program in Maine, New Hampshire, or Vermont that makes the program available to health professionals in the area.



Students in the Direct Entry Master’s in Nursing program come from the corporate world, related fields such as biotechnology, and the liberal arts. Nursing student Chip Peters, on right.

Help wanted: “master” nurses

The nursing shortage is a critical issue nationally and in the state of New Hampshire. According to a study published in the *Journal of the American Medical Association*, having master-level nurses at patients’ bedsides leads to better patient outcomes and more cost-effective care.

UNH has stepped up to meet the need by creating a new Direct Entry Master’s in Nursing program (DEMN). The program is open to individuals with a B.S., B.A., or higher degree in a field other than nursing. The entire program is two and a half years, but the first year is accelerated study. After successfully completing their first year, students are eligible to take the nursing licensing exam. Once students have passed that exam and earned their Registered Nurse licensure, they follow the clinical nurse leader (CNL) track for the next year and a half. CNL is a new role in the field of nursing designed to provide master’s prepared, bedside nurses with the ability to manage and solve complex patient problems within a microsystems framework.

Thanks to the new direct entry program, **Chip Peters** has been able to retrain quickly from computer work to nursing. “The program is demanding, fast-paced, and challenging,” says Peters. “When I worked with computers, the world was virtually black and white, ‘yes’ or ‘no.’ The nursing world functions on critical assessment skills, the best appropriate interventions, and detailed documentation.”

UNH graduates are equipped to assume leadership positions in nursing service units, contribute to clinical nursing education, and function as expert clinicians in direct care roles.

College teaching success

Education in the art and science of teaching greatly enhances graduate-level education. It also sets you apart as a job applicant and helps you to succeed as a new faculty member. The University's nationally acclaimed College Teaching Program offers unique cognate courses, certificate, and (dual degree) master's degree programs.

Differentiate your degree

Martina Arndt 'G00 is now a tenured, assistant professor of physics at Bridgewater State College—thanks in part to various opportunities made available through the



Martina Arndt

Preparing Future Faculty (PFF) program at UNH. “The PFF program prepared me to hit the ground running and contribute immediately to my new department,” says Arndt. “It also prepared me for the tenure process because I could talk to experienced faculty and administrators about expectations of junior faculty on the tenure track.”

Preparing future college teachers

With dual appointments in psychology and college teaching, Professor **Ed O'Brien** has designed his course, Cognitive, Teaching, and Learning, to explore methods for applying cognitive theories to the college classroom.

Psychology graduate student **Karla Ann Devlin** plans to become a college professor. “With all of the media available to students—PowerPoint, Web-based learning, digital media—there are many venues for students to learn from,” says Devlin. “This class taught me that although media is important—such as knowing when to use PowerPoint—lecture and classroom management skills are paramount to becoming and remaining a competent teacher.” In addition to her doctorate, Devlin plans to earn a Master of Science in College Teaching.

For **Cary Girod**, a master's degree student in natural resources, O'Brien's course, “really made me think about how, why, and when we are able to pay attention and remember what the teacher is saying.” Girod plans to teach at either the high school or community college level.

Professor Ed O'Brien, Karla Ann Devlin, and Cary Girod. O'Brien's recent research examines the processes involved in the activation of knowledge structures necessary for comprehension during reading.



Exciting high schoolers about science

“Before this fall, the last person to call me ‘Mr. Seaton’ was my ninth-grade history teacher,” says **Dan Seaton** about his double life as a physics graduate student and a science educator at Portsmouth High School.

Seaton, a Ph.D. candidate in physics, participated in the Leitzel Center’s Partnership for Research Opportunities to Benefit Education (PROBE) in fall 2004. The PROBE project links UNH graduate fellows in the science and mathematics fields with students and faculty from nine local high schools. The project is helping schools develop more student-centered and inquiry-focused science courses.

Working at Portsmouth High twice a week, Seaton made it his goal to challenge the physical science students with some of the most difficult problems he could conceive.

“One afternoon I asked the class to design a system to shield its user from the radiation produced by a quarter-sized piece of strontium-90 and to do it for less than 30 cents,” he says. “A few days later I found myself with a pile of clever, inexpensive, and effective radiation shielding containers.”

A national leader in research ethics

In September 2004, UNH’s Graduate School was honored as one of 10 universities nationwide to receive a grant to develop and promote graduate education in the responsible conduct of research (RCR), sponsored by the Council of Graduate Schools and the Office of Research Integrity.

UNH’s goals included integrating RCR into the academic programming and research environment and developing a credit course for graduate students.

The two-credit course is based on 10 modules, which are available on the Web (www.unh.edu/rcr). Case studies are used to illustrate such ethical questions as who owns research data, what constitutes plagiarism, and what considerations should apply when involving people in a research project?

Since contemporary research often involves a range of skills rarely found in one person, clarity on such research issues is critical. Large-scale research efforts, such as space missions, high-energy physics, and genetic decoding and engineering are virtually impossible without multi-institutional or international collaboration.

“Plagiarism, fabrication, and falsification of data—there’s very little gray about those areas,” says Thomas Pistole, professor of microbiology, who coteaches the course. But, Pistole adds, “Ethics has so much gray area in it, and seldom is it one individual who is being affected. We work with students to try and see the global picture.”

Such understandings support the extraordinarily creative and collaborative research environment at UNH.

Physics student, Dan Seaton, center. Thanks to an NSF grant UNH graduate students in math and science work with local high school teachers and students. It’s a win-win: teachers gain assistance, students gain mentoring for science careers and projects, graduate students gain science teaching and communication skills.



Julie Simpson, manager, Research Conduct and Compliance Services, and Professor Thomas Pistole.



Globally connected

As graduate education at UNH grows ever larger and more globally connected, international faculty and students are attracted to our world-class programs and research centers.

Engineers Without Borders

In 2003 the villagers of Santisuk, Thailand, had to pick the frog eggs out of their drinking water before it was “drinkable.” That May, eight UNH students, members of the new UNH chapter of **Engineers Without Borders** (EWB) traveled to Thailand for a week of hard labor—and life-changing experience. In hand, they had design plans for a leach field and a drinking water system. “The stakes were high,” said **Mindy Weimar** ’G03, then a civil engineering graduate student who was a moving force behind the project. “People were actually going to drink this water.”

The group had no idea how desperately their help was needed until they arrived at Santisuk. “The water was filled with bacteria and viruses,” said Weimar. “People were getting sick all the time.”

Over the course of five days, one team of students and villagers excavated, lined, and covered the hillside spring, installing purification filters and a large storage tank. A second team installed two leach fields.

Since then, UNH EWB students have returned twice to Santisuk to work with villagers, refining the drinking water system and developing an irrigation system. They’ve also involved Thai university students and the hope is that the villagers and students will share this technology with surrounding villages.

Like many involved in this project, **Deana Aulisio** ’G03, a master’s degree student in civil engineering, redefined her career goals, “I want my job to have meaning, not just a salary.”

Mashkoor Malik came to UNH to study ocean mapping. Only two institutions in the U.S. offer this program.



UNH engineering students help dig a leach field in Santisuk, Thailand.

Mapping the sea floor

Mashkoor Malik, who’s Ph.D. will be in earth sciences, spent August 2005 traveling by research vessel surveying the ocean shelf along the Alaska coast in hopes of mapping U.S. seafloor territory in support of the United Nations Convention on the Law of the Sea.

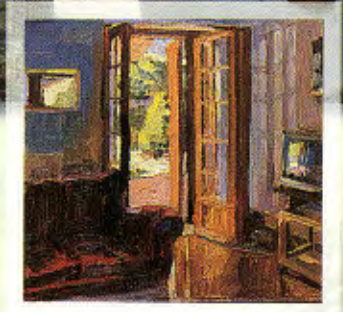
“We checked instruments, did calibration tests, and monitored all the scientific equipment,” says Malik. “It was just like working anywhere else, but it was on a ship.”

Using sonar and GPS, Malik helps to design new applications for sea floor mapping with the University’s Center for Coastal and Ocean Mapping (CCOM). Data collected will determine the habitats of animals living on the seafloor, directions that currents travel, and navigable passages. “Once you see the seafloor in maps it becomes obvious what is happening there,” says Malik.

Malik traces his love the sea to his childhood in Karachi, Pakistan, where he worked on research ships while still an undergraduate studying the marine and hydrographic sciences.

With three years left until completing his Ph.D., Malik knows that he wants to continue doing research in ocean mapping after graduating. “I want to make this technology accessible to the poorer nations of the world,” says Malik.





Above, the town of Ascoli Piceno; right, painting by Andrea Jacobson 'G04

Italian light, personal vision

Ascoli Piceno, a provincial capital in Italy's Marches region, is home to a special UNH study abroad program. Year round, classes ranging from studio art, art history, and all levels of Italian language and cultural studies are taught in a restored 15th-century paper mill, surrounded by waterfalls on the Castellano River. Ascoli Piceno, a university town, is one of Italy's 33 Città Lente or "slow cities," where regional crafts, local produce, and cuisine is consciously preserved. Regionally, one can find paintings by artists such as Titian and Rubens and the ruins of ancient Greeks, Etruscans, and Romans.

Andrea Jacobson 'G04, M.F.A. alumni, studied painting in Ascoli Piceno during the summer program. She wrote of her experience: "The landscape was new and fascinating but it overwhelmed me. I love painting light, color, and space, and this was all there, but I didn't know how to make it mine. When I started painting a still life in the window of my apartment, I finally could portray my experience in Italy."

Centers for Research and Scholarship

- Agricultural Experiment Station
- Biomolecular Interaction Technologies Center
- Browne Center
- The Carsey Institute
- Center for Integrative Regional Problem Solving
- CATlab
- Center for Business and Economic Research
- The Center for Coastal and Ocean Mapping/Joint Hydrographic Center
- Center for Family Business
- Center for Freshwater Biology
- Center for the Humanities
- Center for New England Culture
- Center for Structural Biology
- Center for Teaching Excellence
- Center for Venture Research
- Center for Xenon Imaging
- Center to Advance Molecular Interaction Sciences
- Child Study and Development Center
- Cooperative Institute for Coastal and Estuarine Environmental Technology
- Cooperative Institute for New England Mariculture and Fisheries
- Crimes Against Children Research Center
- Dairy Teaching and Research Center
- Environmental Research Group
- Bedrock Bioremediation Center
- Coastal Responses Research Center
- Electrotechnologies Research Program
- New England Water Treatment Technology Assistance Center
- Recycled Materials Resource Center
- UNH Center for Contaminated Sediment Research
- UNH Center for Stormwater Technology Evaluation and Verification
- Family Research Laboratory
- Hubbard Center for Genome Studies
- Institute for the Study of Earth, Oceans, and Space
- Space Science Center
- Complex Systems Research Center
- Ocean Process Analysis Laboratory
- Climate Change Research Center
- Institute on Disability
- Joan and James Leitzel Center for Mathematics, Science, and Engineering Education
- Justiceworks
- Marine Program
- Center for Marine Biology
- Center for Ocean Engineering
- Center for Ocean Sciences
- R/V Gulf Challenger
- University Diving Program
- Marriage and Family Therapy Center
- Nanostructured Polymers Research Center
- Polymer Research Group
- Polymer Nanoparticle Laboratory
- Advanced Polymer Laboratory
- New England Academic Center for Emergency Preparedness and Response
- New Hampshire Industrial Research Center
- New Hampshire Industries Group
- New Hampshire Institute for Health Policy and Practice
- New Hampshire Sea Grant
- New Hampshire Small Business Development Center
- New Hampshire Water Resource Research Center
- Non-Lethal Technology Innovation Center
- Office of Intellectual Property Management
- Office of Sponsored Research
- Office of Sustainability Programs
- Research Computing Center
- InterOperability Lab
- Robotics and Vibration Control Laboratory
- Shoals Marine Laboratory
- Speech-Language-Hearing Center
- UNH Center on Adolescence
- UNH Survey Center
- William Rosenberg International Center of Franchising

Applying to UNH

Contact us

Visit us, talk to our faculty and graduate students, and select the program that will help you achieve your goals.

The Graduate School

University of New Hampshire
Thompson Hall, Room 109
105 Main Street
Durham, NH 03824
(603) 862-3000
www.gradschool.unh.edu

Admissions and financial support

All application materials, including criteria, application packet, and forms, are available from the Graduate School or may be found on our Web site. Several types of financial support 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.

The Map

The University of New Hampshire occupies 2,600 acres of woods, water, and classic campus greens in the town of Durham.

With the White Mountains a short drive to the north and the seacoast but a few minutes away, the area is rich in recreational opportunities. Boston is just an hour away by car, bus, or train.



Below: Thompson Hall, home of the Graduate School, in Durham, N.H.



Above: The Center for Graduate and Professional Studies at UNH Manchester. Located in Manchester, N.H.'s historic mill yard, the center is easily accessible by major highways.



UNH's Dimond Library is the only New Hampshire member of the prestigious Boston Library Consortium (BLC), a group of major research centers that share resources. BLC members include the Massachusetts Institute of Technology, Brown University, Boston University, Tufts University, the Boston Public Library, and other institutions.



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DEPARTMENTAL REGULATIONS AND COURSES

The following pages describe the graduate programs offered at the University. Program descriptions include faculty, degrees offered, special admission requirements, degree requirements, and courses offered.

Admission Requirements

Courses that have been offered during the past three years are listed in this catalog. These are listed by number, title, and credits only.

For up-to-date information about when a course is offered; who teaches the course; the number of recitations, lectures, labs, and such, students are referred to each semester's on-line *Time and Room Schedule*, which carries a complete schedule of courses for the semester at: unhinfo.unh.edu/registrar/timeroom/timeandroom.html.

Permission of instructor may be required for enrollment in a particular course. Courses are offered subject to adequate student demand. Consult departments for detailed descriptions of current course offerings.

Accounting (ACFI)

www.mba.unh.edu/

Professors: Ahmad Etebari, Fred R. Kaen

Associate Professors: Afshad J. Irani, Catherine A. Plante

Assistant Professors: Stephen J. Ciccone, Stefanie Tate, 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.

The deadline for regular admission is July 1st. 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.

Fall Semester

Accounting Theory and Research
Topics in Advanced Accounting
Governmental and Nonprofit Accounting
Elective*
Elective*

Spring Semester

Tax Planning for Business
Ethics and Professional Practices
Advanced Auditing
Elective/Master's Project
Elective*

*Candidates will be advised to select appropriate graduate-level electives offered by the University.

Courses

| | | | |
|------|-----|--|-------|
| ACFI | 820 | Corporate Taxation | 3 cr. |
| ACF | 830 | Advanced Auditing | 3 cr. |
| ACFI | 844 | Topics in Advanced Accounting | 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 Sciences (ANSC)

www.anscandnutr.unh.edu/

Professors: William E. Berndtson, Gale B. Carey, William A. Condon, Thomas L. Foxall, Charles G. Schwab, Anthony R. Tagliaferro, Robert L. Taylor, Jr.

Affiliate Professors: Ronald E. Rompalla, Martin Stokes

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

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

Affiliate Associate Professor: Arthur F. Stucchi

Clinical Associate Professor: Wendell Davis

Assistant Professor: Deena J. Small

Affiliate Assistant Professors: Paul F. Cotter, Glenn T. Shwaery

Clinical Assistant Professors: Joanne D. Burke, Ruth A. Reilly

Extension Professor: Catherine A. Violette

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 biological sciences appropriate for advanced study in the proposed area of specialization. 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.

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. The thesis is expected to be based on original hypothesis-driven research of publishable quality. 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 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, including their academic courses and scientific research project, 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—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.

M.S. in Nutritional Sciences—Nonthesis Option

This option emphasizes coursework in the nutritional sciences while providing students with exposure to theoretical aspects of research and participation in a research project. The research experience is less significant than for the thesis option and usually involves a practical application of nutritional sciences to individuals or a community. This option may be most appropriate for students who anticipate a professional career that emphasizes applied aspects of nutrition, rather than basic biological aspects of nutritional sciences. 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 34 credits and a Master's Project. Up to 12 credits of Dietetic Internship may apply. The student's guidance committee will be appointed early in the program and consist of 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 guidance committee based upon course availability and the individual needs and interests of the student. All master's students are required to present two formal seminars or one seminar per year of enrollment, whichever is fewer (exclusive of the Master's Project summary).

Students pursuing the nonthesis option of the master of science degree program must develop a Master's Project and enroll for 4 credits of NUTR 898. This culminat-

ing experience involves investigation of a nutritional science issue of interest to the student. The student will identify an appropriate topic with the guidance of her/his guidance committee. The student will prepare a Master's Project proposal, which must be reviewed and approved by their guidance committee. At the conclusion of the Master's Project, the student will submit a written project summary to their guidance committee for final approval. The findings will also be formally presented to faculty and fellow students in a seminar.

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. 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 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. 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

| | | |
|----------|---|------------|
| ANSC 801 | Physiology of Reproduction | 4 cr. |
| ANSC 802 | Endocrinology | 4 cr. |
| ANSC 804 | Principles of Pathobiology | 4 cr. |
| ANSC 805 | Veterinary Microbiology and Zoonotic Disease | 2 cr. |
| ANSC 806 | Human Genetics | 3 cr. |
| ANSC 807 | Veterinary Histologic Techniques | 2 cr. |
| ANSC 808 | Ruminology | 2 cr. |
| ANSC 810 | Dairy Nutrition | 4 cr. |
| ANSC 814 | Research Methods in Endocrinology | 5 cr. |
| ANSC 815 | Physiology of Lactation | 4 cr. |
| ANSC 818 | Mammalian Physiology | 4 cr. |
| ANSC 824 | Reproductive Management and Artificial Insemination | 4 cr. |
| ANSC 827 | Advanced Dairy Management I | 4 cr. |
| ANSC 828 | Advanced Dairy Management II | 4 cr. |
| ANSC 850 | Nutritional Biochemistry | 4 cr. |
| ANSC 851 | Cell Culture | 5 cr. |
| ANSC 854 | Molecular Diagnostics | 4 cr. |
| ANSC 895 | Investigations | 1 to 4 cr. |
| ANSC 899 | Master's Thesis | 6 cr. |
| ANSC 900 | Contemporary Topics in Animal, Nutritional, and Biomedical Sciences | 1 cr. |
| ANSC 901 | Philosophy and Practice of Research in the Life Sciences | 4 cr. |
| ANSC 904 | Amino Acid Metabolism | 2 cr. |
| ANSC 906 | Methods in Protein Nutrition and Metabolism | 2 cr. |
| ANSC 909 | Contemporary Trends in Reproductive Physiology | 4 cr. |
| ANSC 913 | Contemporary Topics in Immunobiology | 2 cr. |
| ANSC 995 | Nonthesis Investigations in Animal Science | 1 to 4 cr. |
| ANSC 997 | Animal and Nutritional Sciences Seminar | 1 cr. |
| ANSC 999 | Doctoral Research | 0 cr. |
| NUTR 809 | Nutritional Epidemiology | 4 cr. |
| NUTR 811 | Lipid Metabolism | 4 cr. |
| NUTR 820 | Community Nutrition | 4 cr. |
| NUTR 825 | Metabolic Adaptations to Exercise II | 4 cr. |
| NUTR 840 | Nutrition for Children with Special Needs | 2 cr. |
| NUTR 850 | Nutritional Biochemistry | 4 cr. |
| NUTR 856 | Treatment of Adult Obesity | 2 cr. |
| NUTR 860 | Geriatric Nutrition | 2 cr. |
| NUTR 870 | Nutrition and Gender Based Health Concerns | 2 cr. |
| NUTR 873 | Clinical Nutrition | 4 cr. |
| NUTR 875 | Practical Applications in Medical Nutrition Therapy | 3 cr. |
| NUTR 880 | Critical Issues in Nutrition | 4 cr. |
| NUTR 898 | Master's Project | 4 cr. |
| NUTR 899 | Master's Thesis | 6 cr. |
| NUTR 900 | Contemporary Topics in Animal, Nutritional, and Biomedical Sciences | 1 cr. |
| NUTR 910 | Mineral Nutrition | 2 cr. |
| NUTR 912 | Vitamin Nutrition | 2 cr. |

| | | |
|----------|---|------------|
| NUTR 929 | Principles of Dietetics | 0 cr. |
| NUTR 930 | Dietetics Practicum I: Foodservice Systems Management and Community Nutrition | 4 cr. |
| NUTR 931 | Dietetics Practicum II: Medical Nutrition Therapy | 4 cr. |
| NUTR 955 | Disorders in Energy Balance | 4 cr. |
| NUTR 995 | Non-thesis Investigations | 1 to 4 cr. |

Biochemistry and Molecular Biology (BCHM)

biochemistry.unh.edu/

Professors: Rick H. Cote, Clyde L. Denis, Thomas M. Laue, Stacia A. Sower

Research Professor: Vernon N. Reinhold

Associate Professors: John J. Collins, Anita S. Klein, Andrew P. Laudano, W. Kelley Thomas

Research Assistant Professor: Thomas P. Moody

Degrees 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 glycobiology, 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 TOEFL (Test of English as a Foreign Language) scores. In addition, the biochemistry department requires scores from either the Test of Spoken English (TSE) or the Speaking Proficiency English Assessment Kit (SPEAK).

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 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. All candidates for the M.S. degree will be required to pass an oral examination based on the thesis or project report and on the graduate courses completed in the degree program.

B.S./M.S. Degree Requirements

This accelerated five-year program leading to a combined bachelor's degree and master's degree in biochemistry is designed for highly motivated and qualified undergraduate UNH students seeking additional training to further their career goals as researchers in the life sciences. Admission to the combined degree program is highly competitive. Students wishing to pursue this program must have a grade point average greater than 3.2 at the time of application. A thesis adviser must be identified during the junior year, and the approval of the adviser must be obtained. Prior to the first semester of the senior year, the student must formally apply to the department through the Graduate School and receive early admission. The requirement for the Graduate Record Examinations is waived for combined degree applicants. Thirty credits of graduate level (800-999) coursework (including dual-credit courses) must be completed. Six to 8 credits of graduate-level courses must be taken during the senior year and are applied to both the B.S. and M.S. requirements. All other requirements for the M.S. degree must be followed.

Ph.D. Degree Requirements

Doctoral students will be required to complete a dissertation 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. 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

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|--|-------------|
| BCHM 802 Endocrinology | 4 cr. |
| BCHM 811 Genomics and Bioinformatics | 4 cr. |
| BCHM 850 Physical Biochemistry | 3 cr. |
| BCHM 851 Principles of Biochemistry I | 4 cr. |
| BCHM 852 Principles of Biochemistry II | 4 cr. |
| BCHM 854 Laboratory in Biochemistry and Molecular Biology of Nucleic Acids | 5 cr. |
| BCHM 855 Laboratory in Biochemistry and Molecular Biology | 5 cr. |
| BCHM 863 Biochemistry of Cancer | 3 cr. |
| BCHM 866 Environmental Genomics | 4 cr. |
| BCHM 871 Molecular Genetics | 4 cr. |
| BCHM 882 Developmental Genetics | 3 cr. |
| BCHM 890 Current Topics in Biomedicine | 4 cr. |
| BCHM 894 Protein Structure and Function | 4 cr. |
| BCHM 895 Investigations | 1 to 4 cr. |
| BCHM 899 Master's Thesis | 6 to 10 cr. |
| BCHM 902 Endocrine Disruptors/ Neuroendocrinology | 3 cr. |
| BCHM 942 Biochemical Regulatory Mechanisms | 3 cr. |
| BCHM 950 Macromolecular Interactions | 3 cr. |
| BCHM 960 Advanced Topics in Signal Transduction | 3 cr. |
| BCHM 997 Seminar | 1 cr. |
| BCHM 998 Seminar | 1 cr. |
| BCHM 999 Doctoral Research | 0 cr. |

Business Administration (ADMN)

www.mba.unh.edu/

Professors: Steven F. Bolander, Ross J. Gittell, Raymond J. Goodman, Jr., Charles W. Gross, Allen M. Kaufman, Michael J. Merenda, Barry Shore, Jeffrey E. Sohl, A. R. Venkatachalam

Associate Professors: Carole K. Barnett, Vanessa Urch Druskat, Joseph F. Durocher, Jr., Roger B. Grinde, Afshad J. Irani, Peter J. Lane, William Naumes, R. Daniel Reid, Christine M. Shea, Eleanne M. Solorzano, Craig H. Wood

Assistant Professors: Ludwig A. Bstieler, Pamila Dembla, Amy Kallianpur, Jun Li, Jeong Eun Park, Anthony T. Pescosolido, Theophanis Stratopoulos, Stefanie Tate, Le Xu, Honggeng Zhou

Degree Offered: M.B.A.

The Whittemore School of Business and Economics offers a program leading to the M.B.A. in formats designed for full-time students, part-time evening students, and practicing managers in a weekend executive program. Each program includes a sequence of required courses and opportunities to take electives in various specializations. While each program is offered in a different format, the basis of each program is to provide students with an introduction to business practices through theoretical and applied opportunities. All three models are professional and nationally accredited by the Association to Advance Collegiate Schools of Business (AACSB), making these programs the only AACSB-accredited executive and part-time models in New Hampshire.

Admission Requirements

The Whittemore School welcomes applicants with an above-average academic record in any undergraduate specialty. The crucial requirement for admission into the M.B.A. program is a history that demonstrates that the applicant has the potential and desire for graduate study in business. Consequently, a portfolio approach to admissions is adopted, in which an applicant's work and military experience along with other indications of maturity, motivation, and self-discipline are considered in addition to the applicant's test scores and academic record. All applicants are required to take the Graduate Management Admission Test (GMAT). Applicants are expected to have successfully completed one semester of calculus, statistics, or have demonstrated proficiency in quantitative reasoning. Interested applicants are encouraged to contact George T. Abraham, Director of Graduate and Executive Programs, Whittemore School, 15 College Road, Durham, NH 03824-3593.

Full-time M.B.A. Degree Requirements

The Whittemore School curriculum for the one-year intensive full-time program begins each fall with a cohort of students that complete the program together. The 48-credit program is comprised of ten required core courses, two terms of corporate consulting project and four electives. 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 integrate course materials into their professional and personal development. Specializations can be pursued in marketing

and supply chain management, entrepreneurial venture creation, financial management and general management.

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. An option in health administration (Manchester campus only) is also available.

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.

Health Administration Option

This option builds upon the core courses with electives focused specifically on the unique characteristics of the health care industry. Students take such courses as Epidemiology, Health Care Planning, Health Reimbursement, and Health Law and Ethics. All health-related courses are taught either by faculty from the Department of Health Management and Policy, or working health care managers. The specialization requires a supervised internship for all students. Students already working in the health care industry usually may satisfy that requirement in their current setting; for others, the internship may provide an opportunity to explore in a different organizational setting.

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

tive 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.

Course

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| ADMN 823 Topics in Finance | 3 cr. |
| ADMN 826 Decision Support Systems | 3 cr. |
| ADMN 829 Financial Policy | 3 cr. |
| ADMN 830 Investments Analysis | 3 cr. |
| ADMN 831 Derivative Securities and Markets | 3 cr. |

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| ADMN 832 Exploration in Entrepreneurial Management | 3 cr. |
| ADMN 834 Private Equity/Venture Capital | 3 cr. |
| ADMN 836 Financial Statement Analysis | 3 cr. |
| ADMN 837 Financial Accounting Theory and Applications I | 3 cr. |
| ADMN 840 International Business | 3 cr. |
| ADMN 841 International Management | 3 cr. |
| ADMN 846 International Financial Management | 3 cr. |
| ADMN 847 Business Taxation | 3 cr. |
| ADMN 848 Law: Use and Application in Business | 3 cr. |
| ADMN 851 Advertising and Promotion | 3 cr. |
| ADMN 852 Marketing Research | 3 cr. |
| ADMN 855 Marketing of Services | 3 cr. |
| ADMN 859 Managing Technological Innovations | 3 cr. |
| ADMN 863 International Marketing | 3 cr. |
| ADMN 865 Total Quality Management | 3 cr. |
| ADMN 898 Topics | 2 to 3 cr. |
| ADMN 900 Integrative Management Seminar | 0 cr. |
| ADMN 902 MBA Experience | 0 cr. |
| ADMN 905 Integrated Team Projects I | 3 cr. |
| ADMN 906 Integrated Team Projects II | 3 cr. |
| ADMN 910 Business Forum | 1 cr. |
| ADMN 912 Organizational Behavior | 3 cr. |
| ADMN 914 Integrated Field Project I | 3 cr. |
| ADMN 915 Integrated Field Project II | 3 cr. |
| ADMN 919 Management Accounting | 3 cr. |
| ADMN 920 Financial Accounting | 3 cr. |
| ADMN 921 Managerial Accounting | 3 cr. |
| ADMN 926 Information Systems and Enterprise Integration | 3 cr. |
| ADMN 930 Financial Management | 3 cr. |
| ADMN 940 Technology, Operations and Supply Chain Management | 3 cr. |
| ADMN 950 Managerial Statistics | 2 or 3 cr. |
| ADMN 952 Organizations, Leadership, and Environments | 3 cr. |
| ADMN 955 Quantitative Business Analysis | 3 cr. |
| ADMN 956 Managerial Decision Making | 3 cr. |
| ADMN 960 Marketing Management | 3 cr. |
| ADMN 970 Economics | 3 cr. |
| ADMN 982 Strategic Management: Decision Making | 3 cr. |
| ADMN 985 Organizational Structure and Environments | 3 cr. |
| ADMN 992 Special Projects and Independent Study | 1 to 6 cr. |

Chemical Engineering (CHE)

www.chemengunh.com/

Professors: Dale P. Barkey, Russell T. Carr, Stephen S.T. Fan, Ihab H. Farag, Virendra K. Mathur, Palligarnai T. Vasudevan

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 adviser are required for enrollment in all chemical engineering courses.

Courses

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| CHE 801 Introduction to Polymer Engineering | 4 cr. |
| CHE 805 Natural and Synthetic Fossil Fuels | 4 cr. |
| CHE 809 Fundamentals of Air Pollution and Its Control | 4 cr. |

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| CHE 812 | Introduction to Nuclear Engineering | 4 cr. |
| CHE 844 | Corrosion | 4 cr. |
| CHE 851 | Process Simulation and Optimization | 4 cr. |
| CHE 852 | Process Dynamics and Control | 4 cr. |
| CHE 861 | Biochemical Engineering | 4 cr. |
| CHE 862 | Biomedical Engineering | 4 cr. |
| CHE 872 | Physicochemical Processes for Water and Air Quality Control | 4 cr. |
| CHE 899 | Master's Thesis | 6 cr. |
| CHE 913 | Advanced Fluid Mechanics | 3 cr. |
| CHE 915 | Heat Transfer | 3 cr. |
| CHE 916 | Diffusive Mass Transfer | 3 cr. |
| CHE 923 | Advanced Chemical Engineering Thermodynamics | 3 cr. |
| CHE 932 | Advanced Chemical Engineering Kinetics | 3 cr. |
| CHE 996 | Graduate Independent Study | 2 to 4 cr. |
| CHE 999 | Doctoral Research | 0 cr. |

Chemistry (CHEM)

www.unh.edu/chemistry

Professors: Christopher F. Bauer, N. Dennis Chasteen, Arthur Greenberg, Richard P. Johnson, Howard R. Mayne, W. Rudolf Seitz, Sterling A. Tomellini, Gary R. Weisman, Edward H. Wong, Charles K. Zercher

Associate Professors: Steven B. Levery, Glen P. Miller, Roy Paul Planalp

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 desiring 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.

M.S. 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. A minimum of 30 credit hours is required.

M.S.T. 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 (CHEM 907). 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.

Interdisciplinary Programs in Chemistry

Graduate students in chemistry may elect to enter one of the interdisciplinary programs offered jointly with the chemistry department and other departments. In these programs, the graduate student, with the advice of the guidance committee, elects courses in chemistry and in the related disciplines, and writes the dissertation on a research problem appropriate to interdisciplinary treatment. Students interested in these programs should write to the graduate coordinator for further 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

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| CHEM 800 | Chemistry Teaching Seminar | 1 cr. |
| CHEM 808 | Spectroscopic Investigations of Organic Molecules | 1 to 4 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 902 | Theoretical Organic Chemistry II | 3 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 907 | Introduction to Research | 2 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 or 3 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 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. |

Civil Engineering (CIE)

www.unh.edu/civil-engineering

Professors: Jean Benoit, Michael R. Collins, Pedro A. De Alba, David L. Gress, Nancy E. Kinner, James P. Malley

Research Professor: T. Taylor Eighmy

Associate Professors: Thomas P. Ballesterio, Raymond A. Cook, Charles H. Goodspeed, Robert M. Henry, Jennifer M. Jacobs

Research Associate Professor: Kevin H. Gardner

Assistant Professors: Thomas L. Attard, Erin S. Bell, Jo S. Daniel

Research Assistant Professor: Jeffrey S. Melton

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 adviser 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 31 course credits and a 0-credit project) option. For the thesis option, a formal oral presentation/thesis defense is required. A student electing the nonthesis option is required to prepare a noncredit project paper and give a final oral presentation/project defense. In addition to the paper, the nonthesis candidate must pass a departmental comprehensive examination on fundamental engineering concepts prepared and evaluated by the candidate's advisory committee. For graduation, a B average must be achieved. All students are required to register for Civil Engineering Seminar (CIE 900) for one semester.

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 credit hours beyond a master's degree or 49 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 per semester.

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.

Courses

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| CIE 821 | Pavement Design | 3 cr. |
| CIE 822 | Properties and Production of Concrete | 3 cr. |
| CIE 823 | Bituminous Materials and Mixtures | 3 cr. |
| CIE 840 | Public Health Engineering | 3 cr. |
| CIE 841 | Open Channel Flow | 3 cr. |
| CIE 842 | Solid and Hazardous Waste Engineering | 3 cr. |
| CIE 845 | Engineering Hydrology | 3 cr. |
| CIE 847 | Introduction to Marine Pollution and Control | 3 cr. |
| CIE 848 | Solid and Hazardous Waste Design | 4 cr. |
| CIE 849 | Water Chemistry | 4 cr. |
| CIE 850 | Echohydrology | 3 cr. |
| CIE 854 | Transportation Engineering and Planning | 3 cr. |
| CIE 855 | Design of Water Transmission Systems | 4 cr. |
| CIE 856 | Environmental Engineering Microbiology | 4 cr. |
| CIE 857 | Coastal Engineering and Processes | 3 cr. |
| CIE 860 | Foundation Design I | 4 cr. |
| CIE 861 | Foundation Design II | 3 cr. |
| CIE 862 | Introduction to Geotechnical Earthquake Engineering | 3 cr. |
| CIE 866 | Introduction to Geo-Environmental Engineering | 3 cr. |

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| CIE 874 | Reinforced Concrete Design | 4 cr. |
| CIE 882 | Timber Design | 3 cr. |
| CIE 883 | Matrix Structural Analysis and Modeling | 3 cr. |
| CIE 885 | Introduction to Structural Vibrations | 3 cr. |
| CIE 886 | Introduction to Finite Element Analysis | 3 cr. |
| CIE 891 | Prestressed Concrete | 3 cr. |
| CIE 892 | LRFD Bridge Design | 3 cr. |
| CIE 893 | Structural Design in Steel | 3 cr. |
| CIE 895 | Independent Study | 1 to 4 cr. |
| CIE 896 | Special Topics | 1 to 4 cr. |
| CIE 897 | Special Topics in Environmental Engineering | 1 to 4 cr. |
| CIE 899 | Master's Thesis | 6 cr. |
| CIE 900 | Seminar | 1 cr. |
| CIE 940 | Hydrologic Monitoring | 3 cr. |
| CIE 942 | River Mechanics | 3 cr. |
| CIE 943 | Advanced Hazardous Waste and Environmental Sampling and Analysis | 4 cr. |
| CIE 944 | Advanced Physicochemical Treatment Design | 4 cr. |
| CIE 945 | Advanced Groundwater Topics | 3 cr. |
| CIE 946 | Advanced Bioenvironmental Engineering Design | 4 cr. |
| CIE 960 | Advanced Soil Mechanics | 3 cr. |
| CIE 961 | In Situ Geotechnical Testing | 3 cr. |
| CIE 962 | Laboratory Geotechnical Testing | 3 cr. |
| CIE 995 | Problems | 2 to 4 cr. |
| CIE 999 | Doctoral Research | 0 cr. |

College Courses

Health and Human Services (HHS)

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| HHS 840 | Collaborative Services for Children with Special Needs | 4 cr. |
| HHS 898 | Special Topics | 1 to 8 cr. |

Life Science and Agriculture (LSA)

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| LSA 900 | College Teaching | 2 cr. |
|---------|------------------|-------|

College Teaching (GRAD)

www.gradschool.unh.edu/pff

Professors: Christopher F. Bauer, Victor A. Benassi, William A. Condon, Walter F. Eggers, Kenneth Fuld, Lisa Watt MacFarlane, Edward J. O'Brien, Thomas G. Pistole, Lee F. Seidel, Sally Ward

Affiliate Professor: Daniel Reagan, Elliot Gruner

UNHM Professor: John J. Cerullo

Associate Professors: Victoria L. Banyard, Dawn C. Meredith, Harry J. Richards

Affiliate Associate Professors: Michael J. Lee

UNHM Associate Professor: Gary S. Goldstein

Affiliate Assistant Professor: Cari Moorhead

Clinical Assistant Professor: Ruth A. Reilly

Degrees Offered: Cognate, M.S.T.

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.

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 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. Many GRAD 950 and GRAD 960 series courses are available using alternative scheduling that relies upon computer-mediated interaction with the instructors. 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 articulating agreements insure 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.

Courses

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| GRAD 800 | Continuing Enrollment | 0 cr. |
| GRAD 885 | Graduate Foreign Exchange | 1 to 9 cr. |
| GRAD 900 | Master's Continuing Research | 0 cr. |
| GRAD 930 | Ethics in Research and Scholarship | 2 cr. |
| GRAD 940 | Foundations in College Teaching | 2 cr. |
| GRAD 941 | Teaching Methods in Higher Education | 2 cr. |
| GRAD 942 | Role of the College Professor | 2 cr. |
| GRAD 945 | Advanced Seminar in College Teaching | 2 cr. |
| GRAD 950 | Issues in College Teaching | 1 cr. |
| GRAD 951 | Teaching with Writing | 2 cr. |
| GRAD 952 | College Teaching Mentorship | 1 cr. |
| GRAD 959 | Advanced Issues in College Teaching | 1 cr. |

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| GRAD 961 | Cognition, Teaching, and Learning | 2 cr. |
| GRAD 962 | Academic Citizenship | 2 cr. |
| GRAD 963 | College Students and the Undergraduate Culture | 2 cr. |
| GRAD 965 | Classroom Research and Assessment Methods | 2 cr. |
| GRAD 970 | Special Topics in College Teaching | 2 to 4 cr. |
| GRAD 972 | Laboratory and Field Experience in the Sciences | 2 cr. |
| GRAD 978 | Teaching Economics | 4 cr. |
| GRAD 980 | Preparing to Teach a Psychology Course | 2 cr. |
| GRAD 990 | College Teaching Praxis | 3 to 4 cr. |
| GRAD 995 | Independent Study | 1 to 4 cr. |

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

Assistant Professors: Michael Fraas, Sheryl Gottwald

Research Assistant Professor: 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, as well as two options: language and literacy disabilities and early childhood intervention. Students learn about the science and art of communication, its processes, and disorders.

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 concurrent 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. 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 880, Diagnosis of Speech and Language Disorders, 3 cr.; COMM 890, Advanced Audiology for Speech-Language Pathologists, 3 cr.; COMM 891, Neurology for the Speech-Language Pathologist, 3 cr.; COMM 903, Therapy Process, 2 cr.; COMM 910, On-Campus Clinical Practicum, 3 cr.; COMM 911, Off-Campus Clinical Practicum, 3 cr.; COMM 920, Seminar (Audiology), 1 cr.; EDUC 920, Counseling Clients and Families with Communications Disorders, 2 cr.; and EDUC 981, Methods and Techniques of Educational Research, 4 cr., or equivalent.

No Option

In addition to the core courses listed above, students enrolling in the master of science degree program (no option) will take the following required courses:

- COMM 900 Articulation and Phonological Disorders 3 cr.
- COMM Dysphagia 3 cr.

In addition, students will take two of the following courses:

- COMM 875 Advanced Language Acquisition 3 cr.
- COMM 908 Language/Literacy Disorders I 3 cr.
- COMM 909 Language/Literacy Disorders II 3 cr.
- COMM 912 Language Disorders in Early Childhood 0-5 yr. 3 cr.

Two of the following courses:

- COMM 902 Stuttering 3 cr.
- COMM 906 Voice Disorders 3 cr.
- COMM 907 Seminar in Advanced Aural Rehabilitation 3 cr.
- COMM 914 Augmentative/Alternative Communications 3 cr.

Three of the following courses:

- COMM 904 Aphasia 3 cr.
- COMM 905 Motor Speech Disorders 3 cr.
- COMM 913 Cognitive/Communication Disorders 3 cr.
- COMM 920 Seminar (Autism Spectrum Disorders) 3 cr.

Students will take two elective courses, which may be taken within and outside the department.

Option in Language and Literacy Disabilities

In addition to the above, required courses for this option are:

- COMM 875 Advanced Language Acquisition 3 cr.
- COMM 900 Articulation and Phonological Disorders 3 cr.
- COMM 901 Dysphagia 3 cr.
- EDUC 907 Foundations of Literacy Instruction 4 cr.
- COMM 908 Language/Literacy Disorders I 3 cr.
- COMM 909 Language/Literacy Disorders II 3 cr.
- COMM 912 Language Disorders in Early Childhood 0-5 yr. 3 cr.

Students will also take four elective courses from the two different groups below:

Students will take two of the following courses:

- COMM 902 Stuttering 3 cr.
- COMM 906 Voice Disorders 3 cr.
- COMM 914 Augmentative/Alternative Communication 3 cr.
- COMM 920 Seminar in Autism Spectrum Disorders 3 cr.

Students will take two of the following courses:

- COMM 904 Aphasia 3 cr.
- COMM 905 Motor Speech Disorders 3 cr.
- COMM 907 Advanced Seminar in Aural Rehabilitation 3 cr.
- COMM 913 Cognitive/Communication Disorders 3 cr.

Option in Early Childhood Intervention

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 I 3 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/Communicative Disorders 3 cr.

Students will take two of the following courses:

- COMM 909 Language/Literacy Disorders I 3 cr.
- EDUC 941 Diversity and Child Development 4 cr.
- HHS 898 Neurodevelopmental and Related Disorders 1 to 8 cr.

Clinical Practicum

Clinical practicum experiences will be selected according to the desired option to develop practical skills in that area of interest. The number of hours needed by students may vary depending on previous undergraduate experiences. All students are required to complete two on-campus and two off-campus clinical practicum rotations.

Concluding Experience

Students must elect a comprehensive examination or thesis as a concluding experience.

Comprehensive Examination (non-thesis):

All students except those writing a thesis must pass a written comprehensive examination designed to assess their mastery of the professional concepts of communication sciences and disorders in the area of normative processes, pathologies, and remediation.

Thesis: Students may choose to write a thesis. Upon completion of the research project, students must defend the thesis in an oral examination and must gain approval of the thesis committee. In addition to the required coursework specified above, students must register for 6 credits of COMM 899.

Courses

| | | |
|----------|--|------------|
| COMM 875 | Advanced Language Acquisition | 3 cr. |
| COMM 876 | Ethical and Professional Issues in Communication Sciences and Disorders I | 1 cr. |
| COMM 877 | Ethical and Professional Issues in Communication Sciences and Disorders II | 1 cr. |
| COMM 880 | Diagnosis of Speech and Language Disorders | 3 cr. |
| COMM 890 | Advanced Audiology for Speech-Language Pathologists | 3 cr. |
| COMM 891 | Applied Neurology for Speech-Language Pathology | 3 cr. |
| COMM 895 | Special Topics | 1 to 3 cr. |
| COMM 899 | Master's Thesis | 6 cr. |
| COMM 900 | Articulatory and Phonological Disorders in Children | 3 cr. |
| COMM 901 | Dysphagia | 3 cr. |
| COMM 902 | Stuttering | 3 cr. |
| COMM 903 | Therapy Process | 2 cr. |
| COMM 904 | Aphasia in Adults | 3 cr. |
| COMM 905 | Motor Speech Disorders | 3 cr. |
| COMM 906 | Voice Disorders | 3 cr. |
| COMM 907 | Advanced Seminar in Aural Rehabilitation | 3 cr. |
| COMM 908 | Disorders of Language and Literacy I | 3 cr. |
| COMM 909 | Disorders of Language and Literacy II | 3 cr. |
| COMM 910 | Clinical Practicum | 1 to 3 cr. |
| COMM 911 | Off-Campus Clinical Practicum | 1 to 3 cr. |
| COMM 912 | Language Disorders Birth to Five | 3 cr. |
| COMM 913 | Cognitive Communication Disorders | 3 cr. |
| COMM 914 | Augmentative and Alternative Communication | 3 cr. |
| COMM 920 | Graduate Seminar | 1 to 6 cr. |

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, Robert D. Russell, Elizabeth Varki, James L. Weiner

Affiliate Associate Professors: Jason H. Moore, Sylvia Weber Russell, Elise H. Turner, Roy M. Turner

Assistant Professors: Michel Charpentier, Alejandro Hausner, Zachary Rubinstein

Affiliate Assistant Professors: Susan Lander, Matthew D. Plumlee

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 graduate 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 620 | Operating System Fundamentals |
| CS 671 | Programming Language Concepts and Features |
| 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.

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. Three 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.
 - d. 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. CD 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 noncomputer 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

1. Theory: Theory of Computation, Algorithm Analysis, Formal Specification and Verification
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.)

Group Introductory Course

1. Theory CS 845, 859
2. Systems CS 820, 821, 824, 825
3. Compiler and Language CS 812, 835
4. Database CS 875
5. Artificial Intelligence CS 830, 865
6. Interactive Systems CS 860, 867, 870

Courses

| | | |
|--------|--------------------------------|-------|
| CS 800 | Internship | 1 cr. |
| CS 812 | Compiler Design | 3 cr. |
| CS 819 | Object-Oriented Methodology | 3 cr. |
| CS 820 | Operating System Programming | 3 cr. |
| CS 821 | Operating System Kernel Design | 3 cr. |

| | | |
|--------|--|------------|
| CS 824 | Distributed Operating Systems | 3 cr. |
| CS 825 | Computer Networks | 3 cr. |
| CS 830 | Introduction to Artificial Intelligence | 3 cr. |
| CS 835 | Introduction to Parallel and Distributed Programming | 3 cr. |
| CS 845 | Formal Specifications and Verification of Software Systems | 3 cr. |
| CS 859 | Theory of Computation | 3 cr. |
| CS 860 | Introduction to Human-Computer Interaction | 3 cr. |
| CS 865 | Introduction to Computational Linguistics | 3 cr. |
| CS 867 | Interactive Data Visualization | 3 cr. |
| CS 870 | Computer Graphics | 3 cr. |
| CS 875 | Database Systems | 3 cr. |
| CS 880 | Topics | 3 cr. |
| CS 898 | Master's Project | 3 cr. |
| CS 899 | Master's Thesis | 6 cr. |
| CS 900 | Graduate Seminar | 1 cr. |
| CS 925 | Advanced Computer Networks | 3 cr. |
| CS 941 | Design and Analysis of Algorithms | 3 cr. |
| CS 970 | Advanced Computer Graphics | 3 cr. |
| CS 975 | Object-Oriented Database Systems | 3 cr. |
| CS 980 | Advanced Topics | 3 cr. |
| CS 981 | Advanced Topics in Database Systems | 3 cr. |
| CS 986 | Advanced Topics in Formal Specification and Verification | 3 cr. |
| CS 988 | Advanced Topics in Computer Graphics | 3 cr. |
| CS 989 | Advanced Topics in Algorithms | 3 cr. |
| CS 998 | Independent Study | 1 to 6 cr. |
| CS 999 | Doctoral Research | 0 cr. |

| | | |
|---------|---------------------------------------|------------|
| EOS 844 | Biogeochemistry | 4 cr. |
| EOS 850 | Biological Oceanography | 4 cr. |
| EOS 864 | Introduction to Paleoclimate Analysis | 4 cr. |
| EOS 865 | Paleoclimatology | 3 cr. |
| EOS 867 | Earth System Science | 4 cr. |
| EOS 895 | Topics | 1 to 4 cr. |
| EOS 896 | Topics | 1 to 4 cr. |
| EOS 901 | Seminar | 1 cr. |
| EOS 930 | Modeling of Forest Ecosystems | 3 cr. |
| EOS 940 | Physics of Fluids | 3 cr. |
| EOS 954 | Heliospheric Physics | 3 cr. |
| EOS 987 | Magnetospheric Physics | 3 cr. |
| EOS 988 | High Energy Astrophysics | 3 cr. |
| EOS 995 | Special Topics | 1 to 4 cr. |
| EOS 996 | Special Topics | 3 to 4 cr. |

Earth Sciences (ESCI)

www.unh.edu/esci/

Professors: Francis S. Birch, Wallace A. Bothner, Theodore C. Loder III, Larry A. Mayer, Karen L. Von Damm

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

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

Associate Professors: William C. Clyde, J. Matthew Davis, Jo Laird, Berrien Moore III

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

Assistant Professors: Julia G. Bryce, Robert J. Griffin, Joel E. Johnson, Joseph M. Licciardi, James M. Pringle

Research Assistant Professor: Jeffrey B. Johnson

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 isotope 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,

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 physics and astrophysics (M.S. and Ph.D.), and departmental (M.S.) or interdepartmental (Ph.D.) program in natural resources and earth systems sciences. Admission and degree requirements are set by the respective departments and program. See the graduate program descriptions in earth sciences, physics, zoology, natural resources, and the natural resources and earth systems sciences program (NRESS) for admission and degree requirements.

Courses

| | | |
|---------|---|-------|
| EOS 812 | Introduction to Space Plasma Physics | 4 cr. |
| EOS 815 | Global Atmospheric Chemistry | 3 cr. |
| EOS 816 | Atmospheric Aerosol and Precipitation Chemistry | 3 cr. |
| EOS 817 | Macro-Scale Hydrology I | 4 cr. |
| EOS 818 | Macro-Scale Hydrology II | 4 cr. |
| EOS 830 | Terrestrial Ecosystems | 3 cr. |

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 each of college chemistry, physics, and calculus; to have an undergraduate major 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 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.

M.S. 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 satisfactorily complete 34 credits, which includes the core curriculum, a 2-credit directed research project, and a written and oral presentation of that research.

Geology

The core curriculum for the option in geology normally includes at least three courses from 825, Igneous Petrology; 826, Metamorphic Petrology; 832, Regional Geology and Advanced Structure; 834, Applied Geophysics; 841, Geochemistry; 845, Isotope Geochemistry; 854, Sedimentary Rocks and Stratigraphy; 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 oceanography normally includes 852, Chemical Oceanography, 3 or 4 cr.; 858, Introductory 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, Introductory Physical Oceanography; 859, Geological Oceanography; OE 810, Ocean Measurements Laboratory; 870, Introductory Hydrography; 871, Geodesy and Positioning for Ocean Mapping; 972, Hydrographic Field Course; 997, Seminar in Earth Sciences (1 cr. first year); and 998, Proposal Development (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 Oceanography; 864, Paleoclimate Analysis; EOS 813, Biogeochemical Dynamics; EOS 815, Global Atmospheric Chemistry; 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 hydrology 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, additional 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 803 | Fluvial Hydrology | 4 cr. |
| 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 825 | Igneous Petrology | 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 | Sedimentary Rocks and Stratigraphy | 4 cr. |
| ESCI 855 | Analytical Techniques for Sediments | 2 to 4 cr. |
| ESCI 858 | Introduction to Physical Oceanography | 3 cr. |
| ESCI 859 | Geological Oceanography | 4 cr. |
| ESCI 862 | Glacial Geology | 4 cr. |
| ESCI 864 | Introductory Paleoclimate Analysis | 4 cr. |
| ESCI 865 | Paleoclimatology | 3 cr. |
| ESCI 870 | Introduction to 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 907 | Geostatistics | 3 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. |
| ESCI 996 | Advanced Topics | 1 to 4 cr. |
| ESCI 997 | Seminar in Earth Sciences | 1 cr. |
| ESCI 998 | Proposal Development | 1 cr. |
| ESCI 999 | Doctoral Research | 0 cr. |

Economics (ECON)

orbit.unh.edu/econ/

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, Neil B. Niman, Torsten Schmidt

Assistant Professors: Reagan A. Baughman, Chi-young Choi, Robert D. Mohr

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

The economics program is offered through the Whittemore School of Business and Economics.

The economics program offers the master of arts and the doctor of philosophy degrees. The master of arts degree in economics may be a final degree for certain occupations and professions. Most students complete the program as a general rather than a specialized degree. The same fields of concentration in the Ph.D. program are available to the master's student as long as appropriate prerequisites are met. M.A. students who continue in the Ph.D. program may apply their M.A. credit toward the doctoral degree requirements.

The doctoral program in economics is intended for those students who are interested in research and teaching. The program includes a series of core courses, two fields of concentration, several significant research requirements, comprehensive exams in economic theory and two fields of concentration, and proficiency in one foreign language (if deemed to be important for the student's research). Fields of concentration are environmental economics, development and sustainability, international economics, and public economics. Students may also opt for a third field in history of economics thought.

In addition to these requirements, Ph.D. students may opt to seek the cognate in college teaching. This program, pursued simultaneously with the Ph.D., systematically trains students in pedagogical methods to prepare them for the challenging transition to teaching economics at the college level. The culmination of the cognate is the preparation and defense of a teaching portfolio. A notation appears on the student's transcript when the Cognate in College Teaching is awarded.

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 GRE.

The master's program seeks students whose undergraduate experience provides evidence of superior ability and indicates the promise of serious scholarship. Undergraduate preparation will usually include exposure to economic reasoning and methodology, including mathematics and statistics. For those whose backgrounds are deficient, remedial work is available.

The doctoral program expects a master's degree in economics. Previous graduate study of economics is required.

M.A. Degree Requirements

Every student must meet the general requirements of the Graduate School and the following requirements of the major:

1. At least 30 total semester hours, which may include 8 hours of thesis;
2. Of the total hours:
 - a. a minimum of 12 hours must be in 900-level courses. These courses must be ECON 972 (Macroeconomics I), ECON 976 (Microeconomics I), and ECON 926 (Econometrics I);
 - b. in addition, 2 hours must be in the Graduate Economics Seminar;
 - c. a maximum of 4 credit hours may be taken in related disciplines in approved 700-level and above courses;
 - d. the remaining credit hours are to be taken in 800-level and above courses.
3. Written evidence of proficiency in economic theory (either by passing the qualifying examination in economic theory or by completing a thesis).

Additional requirements may be associated with the concentrations in environmental economics, development and sustainability, international economics, and public economics. Further information about fields of concentration may be obtained from the department chair. A concentration is not required.

Ph.D. Degree Requirements

Ph.D. candidacy requires the following:

1. Completion of core courses: Microeconomics I and II, Macroeconomics I and II, Econometrics I and II, History of Economic Thought, and Topics in Economic Thought and Methodology.
2. Comprehensive exams in microeconomics and macroeconomics.
3. Completion of two fields of concentration (including an exam in each field).

4. Participation in the General Economics Seminar for four semesters.

5. Participation in a research workshop for two semesters.

6. Demonstrated knowledge of one foreign language (which may be waived).

7. An accepted dissertation proposal (which includes a public defense of the proposed dissertation).

The final degree requires:

8. A public defense of the dissertation.

9. An acceptance of the dissertation by the committee.

There are eight core courses in the program. The two theory exams may be taken separately. Each of the two fields of concentration consists of two related courses. The foreign language requirement may be waived if the graduate coordinator determines that knowledge of a foreign language is not directly relevant to the student's course of study and research. A continuously integrated approach to research is a highlight of the program. During the first and second years, students evaluate research presented to them in the weekly departmental seminar. Beginning in the third year, students participate in the research workshop and present their own research. Students are then encouraged and supported in presenting research papers at professional conferences. This activity brings together students and faculty members and encourages the transition from course-related activities to proposing a dissertation topic.

Cognate in College Teaching

To complete the Cognate in College Teaching program, a student must submit, and have accepted, a letter of application with a curriculum vitae 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 Teaching Excellence Program director. The student must complete specific coursework: GRAD 950 (1 cr.); 3 credits from GRAD 950 series or, with permission, GRAD 960 series; ECON 898, Teaching of Economics (4 cr.); and GRAD 990, College Teaching Praxis (4 cr.). Finally, the student must submit an approved teaching portfolio. Upon completion of all of these requirements, the Cognate in College Teaching is awarded and noted on the graduate transcript. The cognate cannot be awarded except in conjunction with the

Ph.D., and none of the course requirements for the cognate can substitute for requirements for the Ph.D.

Courses

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| ECON 807 | Economics of Sustainable Development | 4 cr. |
| ECON 825 | Mathematical Economics | 4 cr. |
| ECON 828 | Time Series Analysis | 4 cr. |
| ECON 842 | Public Economics I | 4 cr. |
| ECON 843 | Public Economics II | 4 cr. |
| ECON 845 | International Trade | 4 cr. |
| ECON 846 | International Finance | 4 cr. |
| ECON 847 | Multinational Enterprises | 4 cr. |
| ECON 868 | Seminar in Economic Development | 4 cr. |
| ECON 898 | Economic Problems | 2 or 4 cr. |
| ECON 899 | Master's Thesis | 8 cr. |
| ECON 926 | Econometrics I | 4 cr. |
| ECON 927 | Econometrics II | 4 cr. |
| ECON 957 | History of Economic Thought | 4 cr. |
| ECON 958 | Topics in Economic Thought and Methodology | 4 cr. |
| ECON 972 | Macroeconomics I | 4 cr. |
| ECON 973 | Macroeconomics II | 4 cr. |
| ECON 976 | Microeconomics I | 4 cr. |
| ECON 977 | Microeconomics II | 4 cr. |
| ECON 988 | Graduate Seminar | 1 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

Professors: Michael D. Andrew, John J. Carney, Todd A. DeMitchell, Ann L. Diller, Janet Elizabeth Falvey, Ann Weaver Hart, David J. Hebert, Barbara E. Houston, Bruce L. Mallory, Sharon N. Oja

Research Professor: David C. Hagner

Affiliate Professor: Jeanne E. Ormrod

Associate Professors: Eleanor D. Abrams, Grant L. Cioffi, Elizabeth A. Finkel, E. Scott Fletcher, Virginia E. Garland, Georgia M. Kerns, Barbara H. Krysiak, Ann L. Loranger, Jane A. Nisbet, Joseph J. Onosko, Harry J. Richards, Judith A. Robb, Paula M. Salvio, Thomas H. Schram, William L. Wansart, Dwight Webb, Ruth M. Wharton-McDonald

Affiliate Associate Professor: Wanda S. Mitchell

Assistant Professors: Vincent J. Connelly, Leslie J. Couse, Mary K. Fries, Suzanne E. Graham, John F. Hornstein, Michael J. Middleton, Justus M. Ogembo, Loan T. Phan, Judy Sharkey

Research Assistant Professors: Cheryl Daly, Cheryl M. Jorgensen, Mary C. Schuh

Affiliate Assistant Professor: Nancy Franz

Clinical Assistant Professor: Hallie D. D'Agruma

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 going to <http://www.gradschool.unh.edu/catalog/programs.html> and then selecting the specific program of study. The additional application instructions can be found under each program of study's Application Requirements.

Doctor of Philosophy in Education

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 schooling, 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. Candidates must also submit an essay on an educational issue in addition to the

personal statement required on the Graduate School application. Applicants should contact the Department of Education to obtain a description of this additional essay. On-campus interviews are recommended.

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, 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.

Administration and Supervision

Program information: Todd DeMitchell, Virginia Garland, Barbara Krysiak

The Department of Education offers the degree 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, Legal Aspects of School Administration; 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

This program is designed for those who possess a master's degree in school administration or graduate study 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, Personnel and Communication in Educational Organizations; 968, Collective Bargaining in Public Education; 970, The Change Process in 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.

Counseling Program

Program information: Janet Elizabeth Falvey, David Hebert, Dwight Webb, Loan Phan, Hallie D'Agruma

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; 926, Counseling Internship II; 927, Theories of Personality; 929, Advanced Counseling Internship; 930, Research in Counseling; 931, Clinical Diagnosis and Treatment Planning; 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; 932, Society and Culture: Contemporary Issues in Counseling; 933, Psychosocial Development and Comprehensive Guidance in the Classroom; 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 Hornstein

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 (K-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, 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

In addition to the early childhood core requirements described above, students choosing this option will concentrate on young children who are at risk for, or have, developmental difficulties and special needs. Coursework emphasizes an understanding of the role of the family, community, and social policy in early development and intervention. 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: John Carney, Grant Cioffi, Paula Salvio, Ruth Wharton-McDonald

The graduate program in reading prepares reading 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; 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.

Degree Requirements Prerequisites:

1. All candidates are required to complete a course in mathematics teaching methods

and a course in reading teaching methods. At UNH, courses which 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:

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| EDUC 939 | Assessment of Children with Learning Disabilities | 4 cr. |
| EDUC 940 | Teaching Children with Learning Difficulties | 4 cr. |
| EDUC 949 | Supporting Families of Individuals with Exceptionalities | 4 cr. |
| EDUC 900C | Internship and Seminar in Special Education | 6 cr. |
| EDUC 901C | Internship and Seminar in Special Education | 6 cr. |
| EDUC 938 | Advanced Seminar in Special Education | 4 cr. |
| EDUC 981 | Methods and Techniques of Educational Research | 4 cr. |

Elective Courses (12 credit hours minimum)

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| EDUC 852 | Contemporary Issues in Learning Disabilities | 4 cr. |
| EDUC 853 | Contemporary Issues in Behavior Disorders | 4 cr. |
| EDUC 854 | Contemporary Issues in Developmental Disabilities | 4 cr. |
| EDUC 855 | Fostering Friendships | 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. Students with no previous regular teaching certificate must complete at least 8 credit hours in elementary or secondary education in addition to the mathematics

and reading prerequisites. The exact courses will be determined with the adviser.

Other courses may be included with the adviser's approval.

Concluding Experiences

All students will have the option of one of two concluding experiences:

1. Research project with a defense, or
2. A research thesis which meets the requirements of the Graduate School and the Education Department.

Requirements for the thesis are explained in the Graduate School publication entitled Thesis and Dissertation Manual. Requirements for the project may be obtained from the adviser or on the program Web site www.gradschool.unh.edu.

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 Eurenus

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

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, 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 follow-

ing 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 highly competitive.

Licensure requirements that must be met prior to or as part of the master's degree program include completion of 4 credits or an equivalent in each of the following: 500, Exploring Teaching; 800, Educational Structure and Change; 801, Human Development and Learning; Educational Psychology; 803, Alternative Teaching Models; 805, Alternative Perspectives on the Nature of Education; 851A or B, Educating Exceptional Learners; 900A, 901A, Internship and Seminar/Teaching (6 credits each, must be taken as part of the program).

Elementary 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 pursuing teacher licensure in art, biology, chemistry, earth sciences, general science, physics, or social studies must also complete EDUC 807, Teaching Reading through the Content Areas (2 credits).

Credits earned 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, 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, 10 must be in education and 10 can be in either 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.

Concluding experience: 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, 12 must be in education and may include courses required for licensure.

Examples of possible concentrations include early childhood education, special education, English as a second language, literacy (elementary or secondary), instructional technology, counseling, environmental education, or learning environments.

Concluding 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 schooling. 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 learners; 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; either 904, Qualitative Inquiry in Education, or 981, Quantitative Inquiry: Methods and Techniques of Educational Research.

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

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| 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 810B | Microcommunications | 4 cr. |
| EDUC 810C | Youth Organizations | 4 cr. |
| EDUC 810D | Planning for Teaching | 4 cr. |
| EDUC 810E | Workshop in Adult and Occupational Education | 1 to 4 cr. |
| EDUC 810F | Investigations | 1 to 4 cr. |
| EDUC 810G | Seminar in Adult and Occupational Education | 1 to 2 cr. |
| EDUC 811 | Youth, Culture, and Society in Comparative Perspective | 4 cr. |
| EDUC 817 | Growing up Male in America | 4 cr. |
| EDUC 820 | Introduction to Computer Applications for Education | 4 cr. |
| EDUC 833 | Introduction to the Teaching of Writing | 4 cr. |

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| EDUC 834 | Children's Literature | 4 cr. | EDUC 921 | Psychology of Career and Personal Development | 4 cr. | EDUC 971 | School Facilities Management | 4 cr. |
| EDUC 835 | Young Adult Literature | 4 cr. | EDUC 922 | Assessment in Counseling | 4 cr. | EDUC 972 | Educational Program Evaluation | 4 cr. |
| EDUC 841 | Exploring Mathematics with Young Children | 4 cr. | EDUC 923 | Group Counseling | 4 cr. | EDUC 973 | Analysis of Educational Policy | 4 cr. |
| EDUC 850 | Introduction to Exceptionality | 4 cr. | EDUC 924 | Psychological Disorders and Variations in Human Development | 4 cr. | EDUC 974 | Administrative Internship and Field Project | 6 cr. |
| EDUC 851A | Educating Exceptional Learners: Elementary | 4 cr. | EDUC 925 | Counseling Internship I | 4 cr. | EDUC 975 | Administrative Internship and Field Project | 6 cr. |
| EDUC 851B | Educating Exceptional Learners: Secondary | 4 cr. | EDUC 926 | Counseling Internship II | 4 cr. | EDUC 976 | Principalship | 4 cr. |
| EDUC 851C | Educating Exceptional Learners: Related Services | 4 cr. | EDUC 927 | Theories of Personality | 4 cr. | EDUC 977 | Leadership: The District Level Administrator | 4 cr. |
| EDUC 852 | Contemporary Issues in Learning Disabilities | 4 cr. | EDUC 928 | Family Counseling and Consultation | 4 cr. | EDUC 980 | Research in the Teaching of Writing | 4 cr. |
| EDUC 853 | Contemporary Issues in Behavioral Disabilities | 4 cr. | EDUC 929 | Advanced Counseling Internship | 4 cr. | EDUC 981 | Quantitative Inquiry: Methods and Techniques of Educational Research | 4 cr. |
| EDUC 854 | Contemporary Issues of Developmental Disabilities | 4 cr. | EDUC 930 | Research in Counseling | 4 cr. | EDUC 982 | Issues and Methods in Ethnographic Research in Education | 4 cr. |
| EDUC 855 | Fostering Social Relationships for Students who Experience Significant Disabilities | 2 cr. | EDUC 931 | Clinical Diagnosis and Treatment Planning in Counseling | 4 cr. | EDUC 983 | Advanced Psychology of Human Learning | 4 cr. |
| EDUC 860 | Introduction to Young Children with Special Needs | 4 cr. | EDUC 932 | Society and Culture: Contemporary Issues in Counseling | 4 cr. | EDUC 985 | Contemporary Issues and Theories in Human Learning and Development | 4 cr. |
| EDUC 867 | Students, Teachers, and the Law | 4 cr. | EDUC 933 | Developmental Models of Comprehensive School Guidance | 4 cr. | EDUC 986 | Philosophy of Education | 4 cr. |
| EDUC 876 | Reading for Learners with Special Needs | 4 cr. | EDUC 935A | Seminar and Practicum in Teaching | 4 cr. | EDUC 988 | Alternative Models of Teacher Development | 4 cr. |
| EDUC 880 | Belize/New Hampshire Teacher Program | 4 cr. | EDUC 935B | Seminar and Practicum in Teaching | 4 cr. | EDUC 989A | College Teaching | 2 cr. |
| EDUC 881 | Introduction to Statistics: Inquiry, Analysis, and Decision Making | 4 cr. | EDUC 938 | Advanced Seminar in Special Education | 4 cr. | EDUC 989B | Junior and Vocational/Technical Colleges | 4 cr. |
| EDUC 885 | Educational Assessment | 4 cr. | EDUC 939 | Assessment and Teaching of Children with Learning Difficulties | 4 cr. | EDUC 989C | Programming in Adult Education | 4 cr. |
| EDUC 891 | Methods of Teaching Secondary Science | 4 cr. | EDUC 940 | Assessment and Teaching of Children with Learning Difficulties | 4 cr. | EDUC 990 | Developmental Perspectives on Adulthood | 4 cr. |
| EDUC 894 | Proseminar in Teacher Leadership | 2 cr. | EDUC 941 | Diversity and Child Development | 4 cr. | EDUC 991 | Curriculum Theory I | 4 cr. |
| EDUC 897 | Seminar in Contemporary Educational Problems | 1 to 4 cr. | EDUC 942 | Sociocultural Perspectives on Teaching and Learning | 4 cr. | EDUC 992 | Curriculum Theory II | 4 cr. |
| EDUC 899 | Master's Thesis | 6 to 10 cr. | EDUC 943 | Changing Contexts in Early Education | 4 cr. | EDUC 993 | Epistemology and Education | 4 cr. |
| EDUC 900A | Internship and Seminar in Teaching | 3 or 6 cr. | EDUC 944 | Inclusive Curriculum for Young Children | 4 cr. | EDUC 995 | Independent Study | 1 to 4 cr. |
| EDUC 900B | Internship and Seminar in Early Childhood Education | 3 cr. | EDUC 947 | Curriculum for Young Children with Special Needs: Evaluation and Program Design | 4 cr. | EDUC 998 | Special Topics | 1 to 4 cr. |
| EDUC 900C | Internship and Seminar in Special Education | 3 or 6 cr. | EDUC 948 | Leadership and Advocacy in Early Childhood Education | 4 cr. | EDUC 999 | Doctoral Research | 0 cr. |
| EDUC 900D | Internship and Seminar in Adult and Occupational Education | 3 to 6 cr. | EDUC 949 | Supporting Families of Individuals with Exceptionalities | 4 cr. | | | |
| EDUC 901A | Internship and Seminar in Teaching | 3 or 6 cr. | EDUC 950 | Research in Culture, Behavior, and Development | 4 cr. | | | |
| EDUC 901B | Internship and Seminar in Early Childhood Education | 3 cr. | EDUC 951 | Laws and Regulations Affecting the Education of Students with Disabilities | 4 cr. | | | |
| EDUC 901C | Internship and Seminar in Special Education | 3 or 6 cr. | EDUC 952 | Inclusive Assessment, Curriculum, Instruction, and Communication Supports | 4 cr. | | | |
| EDUC 902 | Doctoral Proseminar | 4 cr. | EDUC 953 | Seminar in Curriculum Study | 4 cr. | | | |
| EDUC 903 | Normative Inquiry in Education | 4 cr. | EDUC 954 | Leadership and Systems Change in Inclusive Education | 2 cr. | | | |
| EDUC 904 | Qualitative Inquiry in Education | 4 cr. | EDUC 955 | Mentoring New Teachers | 2 cr. | | | |
| EDUC 905 | Critical Inquiry in Education | 4 cr. | EDUC 956 | Learning to Listen: Developing Positive Behavior Supports for Students with Challenging Behaviors | 4 cr. | | | |
| EDUC 907 | Foundations of Literacy Instruction | 4 cr. | EDUC 957 | Collaborative Models of Supervision for Cooperating Teachers | 4 cr. | | | |
| EDUC 908 | Clinical Diagnosis and Remediation of Reading Difficulties and Disabilities | 4 cr. | EDUC 958 | Analysis of Teaching | 4 cr. | | | |
| EDUC 909 | Clinical Diagnosis and Remediation of Reading Difficulties and Disabilities | 4 cr. | EDUC 960 | Mentoring New Teachers | 2 cr. | | | |
| EDUC 910 | Reading and Writing Methods in the Middle/Secondary School | 4 cr. | EDUC 961 | Public School Administration | 4 cr. | | | |
| EDUC 913 | Field Practicum in Reading | 4 cr. | EDUC 962 | Educational Finance and Business Management | 4 cr. | | | |
| EDUC 914 | Seminar in Reading Research | 4 cr. | EDUC 964 | Human Resources in Education | 4 cr. | | | |
| EDUC 918A | Seminar on Research in Literacy Instruction | 2 cr. | EDUC 965 | Educational Supervision and Evaluation | 4 cr. | | | |
| EDUC 918B | Seminar on Research in Literacy Instruction | 2 cr. | EDUC 967 | School Law | 4 cr. | | | |
| EDUC 919 | Counseling Practicum: Professional and Ethical Orientation | 4 cr. | EDUC 968 | Collective Bargaining in Public Education | 4 cr. | | | |
| EDUC 920 | Counseling Theory and Practice | 4 cr. | EDUC 969 | Practicum in Educational Administration | 4 cr. | | | |
| | | | EDUC 970 | Change Process in Education | 4 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, Kondagunta U. Sivaprasad

Affiliate Professors: Jyoti P. Basu, Stuart M. Selikowitz

Associate Professors: Michael J. Carter, Allen D. Drake, Richard A. Messner

Research Associate Professor: William H. Lenharth

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

Assistant Professors: Andrew L. Kun, Jianqiu Zhang, Kuan Zhou

Research Assistant Professor: Brian P. Calder

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.

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 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

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| ECE | 804 | Electromagnetic Fields and Waves II | 4 cr. |
| ECE | 811 | Digital Systems | 4 cr. |
| ECE | 814 | Introduction to Digital Signal Processing | 4 cr. |
| ECE | 815 | Introduction to VLSI | 4 cr. |
| ECE | 817 | Introduction to Digital Image Processing | 4 cr. |
| ECE | 834 | Network Data Communications | 4 cr. |
| ECE | 841 | Nonlinear Systems Modeling | 4 cr. |
| ECE | 845 | Fundamentals of Acoustics | 4 cr. |
| ECE | 857 | Fundamentals of Communication Systems | 4 cr. |
| ECE | 858 | Communication System Design | 4 cr. |
| ECE | 860 | Introduction to Fiber Optics | 4 cr. |
| ECE | 861 | Optical Engineering | 4 cr. |
| ECE | 872 | Control Systems | 4 cr. |
| ECE | 874 | Introduction to Neural Networks | 4 cr. |
| ECE | 875 | Applications of Integrated Circuits | 4 cr. |
| ECE | 877 | Collaborative Engineering I | 4 cr. |

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| ECE | 878 | Collaborative Engineering II | 2 to 4 cr. |
| ECE | 881 | Physical Instrumentation | 4 cr. |
| ECE | 884 | Biomedical Instrumentation | 4 cr. |
| ECE | 885 | Underwater Acoustics | 4 cr. |
| ECE | 896 | Special Topics in Electrical or Computer Engineering | 1 to 4 cr. |
| ECE | 899 | Master's Thesis | 6 cr. |
| ECE | 900 | Seminar | 1 cr. |
| ECE | 901 | Electromagnetic Wave Theory I | 3 cr. |
| ECE | 902 | Electromagnetic Wave Theory II | 3 cr. |
| ECE | 915 | Advanced Active Circuits | 3 cr. |
| ECE | 936 | Biomedical Engineering | 3 cr. |
| ECE | 939 | Statistical Theory of Communications | 3 cr. |
| ECE | 940 | Information Theory | 3 cr. |
| ECE | 941 | Digital Signal Processing | 3 cr. |
| ECE | 944 | Nonlinear Control Systems | 4 cr. |
| ECE | 951 | Advanced Control Systems I | 3 cr. |
| ECE | 952 | Advanced Control Systems II | 3 cr. |
| ECE | 955 | Estimation and Filtering | 3 cr. |
| ECE | 960 | Computer Architecture | 3 cr. |
| ECE | 961 | Test Engineering and Testable Design | 3 cr. |
| ECE | 962 | Fault Tolerant Computers | 3 cr. |
| ECE | 965 | Introduction to Pattern Recognition | 3 cr. |
| ECE | 970 | Introduction to Optical Signal Processing | 3 cr. |
| ECE | 980 | Opto-Electronics | 3 cr. |
| ECE | 992 | Advanced Topics in Electrical Engineering | 1 to 3 cr. |
| ECE | 993 | Advanced Topics in Computer Engineering | 1 to 3 cr. |
| ECE | 994 | Advanced Topics in Systems Engineering | 1 to 3 cr. |
| ECE | 998 | Independent Study | 1 to 3 cr. |
| ECE | 999 | Doctoral Research | 0 cr. |

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 interdepartmental 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.

Ph.D. Option 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.

English (ENGL)

www.unh.edu/english/graduate/

Professors: Janet Aikins, Elizabeth Jane Bellamy, Thomas A. Carnicelli, Mary Morris Clark, Walter F. Eggers, Burt H. Feintuch, Michael K. Ferber, Lester A. Fisher, Diane P. Freedman, Elizabeth H. Hageman, Jane T. Harrigan, Rochelle Lieber, John S. Lofty, Lisa Watt MacFarlane, Mekeel McBride, Andrew H. Merton, Thomas R. Newkirk, Susan Schibanoff, Charles D. Simic, David H. Watters

Associate Professors: Charlotte M. Bacon, Brigitte Gabcke Bailey, Monica E. Chiu, Margaret-Love G. Denman, Susan Margaret Hertz, James Krasner, Douglas M. Lanier, Lisa C. Miller, Naomi G. Nagy, Petar Ramadanovic, Siobhan Senier, Sarah Way Sherman, Sandhya Shetty, Rachel Trubowitz

Assistant Professors: Jessica Enoch, Robin Hackett, Delia C. Konzett, Aya Matsuda, Paul Kei Matsuda, Martin McKinsey, Sean D. Moore, Alexander M. Parsons

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

The Department of English offers three advanced degrees: master of arts with options in literature, English language and linguistics, and writing; master of science for teachers; and doctor of philosophy.

Admission Requirements

All applicants must submit writing samples in accordance with guidelines available from the English department graduate office. All applicants (except those in M.S.T.) must submit current scores (within five years) from the general test of the GRE. Applicants for the doctor of philosophy degree program in literature must also submit scores for the subject test of literature in English. A student admitted to the Ph.D. program must hold an M.A. degree or be in the final stage of completing requirements for the degree.

Applicants for the degree of master of science for teachers should consult the general regulations of the Graduate School for special admission requirements.

All applicants who wish to be considered for teaching assistantships or tuition scholarships must complete an application form, available from the English depart-

ment graduate office or from their website listed above.

M.A. Degree Requirements

Literature Option

An M.A. candidate must complete 32 credit hours at the 800 or 900 level including two seminar courses and a third seminar in literature or ENGL 998, Master's Paper. At least five courses must be literature courses offered by the English department (as distinct from courses in critical theory, linguistics, writing, or teaching methods). If a student chooses the Master's Paper option, this requirement is reduced to four 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, and no more than two literature courses should be taken in a combined 700/800 (split) level course. In special circumstances, however, a student may be allowed to apply up to two graduate courses offered by other departments toward the degree.

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.

Writing Option

The master of arts in writing is designed for students who intend to become professional writers. Eight working writers supervise the program. Students must elect to specialize in fiction, nonfiction, or poetry. Each member of the writing faculty is accomplished in at least one of these fields.

The writers at UNH emphasize conference teaching. Each student meets frequently with writers specializing in the student's area of study. In addition, each student works closely with a writer-adviser throughout the program.

Workshop courses provide forums for prompt, detailed criticism of each student's writing by instructors and fellow students. Each student takes at least two workshops in his or her specialty and may elect to take an additional workshop in another area as well. Form-and-theory courses and literature courses complete the program. The program consists of 32 credit hours at the 800 or 900 levels.

Upon completion of the required courses, the student submits a portfolio of writing to the staff. The portfolio might consist of short stories, a novel, nonfiction articles, a nonfiction book, or a collection of poetry. The degree is awarded upon approval of the portfolio by a committee of writers. There is no foreign language 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 and the Summer Studies in Composition and Literature Program are summer institutes, which focus on the teaching of writing and reading in grades K-12. Summer Studies in Composition and

Literature, a five-week summer program, offers a selection of 4-credit courses in British and American literature, composition theory and research, as well as writing workshops in fiction, nonfiction, and poetry.

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 may be demonstrated by advanced coursework or 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 11 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.

Courses

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| ENGL 803 | Advanced Nonfiction Writing | 4 cr. |
| ENGL 804 | Advanced Nonfiction Writing | 4 cr. |
| ENGL 805 | Advanced Poetry Workshop | 4 cr. |
| ENGL 806 | Researching the Literature of Fact | 4 cr. |
| ENGL 807 | Form and Theory of Fiction | 4 cr. |
| ENGL 808 | Form and Theory of Nonfiction | 4 cr. |
| ENGL 809 | Form and Theory of Poetry | 4 cr. |
| ENGL 810 | Teaching Writing | 1 to 6 cr. |
| ENGL 811 | Editing | 4 cr. |
| ENGL 814 | Literary Theory | 4 cr. |
| ENGL 815 | Teaching English as a Second Language: Theory and Methods | 4 cr. |
| ENGL 816 | Curriculum, Materials and Assessment in English as a Second Language | 4 cr. |
| ENGL 817 | World Englishes | 4 cr. |
| ENGL 818 | English Linguistics and Literature | 4 cr. |
| ENGL 819 | Sociolinguistics Survey | 4 cr. |
| ENGL 827 | Issues in Second Language Writing | 4 cr. |
| ENGL 829 | Spec Top/Composition Studies | 4 cr. |
| ENGL 838 | Topics in Asian American Studies | 4 cr. |
| ENGL 840 | Indigenous New England | 4 cr. |
| ENGL 842 | American Literature, 1815-1865 | 4 cr. |
| ENGL 843 | American Literature, 1865-1915 | 4 cr. |
| ENGL 844 | American Literature, 1915-1945 | 4 cr. |
| ENGL 845 | Contemporary American Literature | 4 cr. |
| ENGL 849 | Major American Authors | 4 cr. |
| ENGL 850 | Special Studies in American Literature | 4 cr. |
| ENGL 851 | Medieval Epic and Romance | 4 cr. |
| ENGL 852 | History of the English Language | 4 cr. |
| ENGL 853 | Old English | 4 cr. |
| ENGL 858 | Shakespeare | 4 cr. |
| ENGL 864 | Prose and Poetry of the Elizabethans | 4 cr. |
| 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 877 | Postcolonial Novel | 4 cr. |
| ENGL 879 | Linguistic Field Methods | 4 cr. |
| ENGL 880 | English Drama to 1640 | 4 cr. |
| ENGL 883 | English Novel of the 18th Century | 4 cr. |
| ENGL 886 | 20th Century British Fiction | 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 901 | Advanced Writing of Fiction | 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 | 2 to 6 cr. |
| ENGL 920 | Issues in Teaching English and the Language Arts | 1 to 6 cr. |

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| ENGL 921 | Practicum in Teaching English and the Language Arts | 2 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 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 958 | Seminar: Studies in Shakespeare | 4 cr. |
| ENGL 959 | Seminar: Studies in Milton | 4 cr. |
| ENGL 965 | Seminar: Studies in Early 17th Century Literature | 4 cr. |
| ENGL 970 | Seminar: Studies in the Romantic Period | 4 cr. |
| ENGL 971 | Seminar: Studies in the Victorian Period | 4 cr. |
| ENGL 974 | Seminar: Studies in 20th Century British Literature | 4 cr. |
| ENGL 981 | Seminar: Studies in Post-Colonial Literatures in English | 4 cr. |
| ENGL 994 | Practicum in Teaching English to Speakers of Other Languages | 2 to 6 cr. |
| ENGL 995 | Independent Study | 1 to 8 cr. |
| ENGL 996 | Reading and Research | 2 to 8 cr. |
| ENGL 998 | Master's Paper | 4 cr. |
| ENGL 999 | Doctoral Research | 0 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.

M.A. 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 coordi-

nated 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/

Professor: Nancy G. Guerra

Assistant Professor: Corinna Jenkins Tucker

Assistant Extension Professor: Emily M. Douglas

Associate Professors: Kristine M. Baber, Dora Wu Chen, Elizabeth M. Dolan, Barbara R. Frankel, Michael F. Kalinowski, Kerry Kazura, John W. Nimmo,

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 prepare them to work with families in therapeutic, educational, and community or corporate settings. The Core Areas of Study within the M.S. in Family Studies program has three foci: Adolescent Development, Child Advocacy and Family Policy, and Child Development. Students may elect a thesis or non-thesis option. The option in Marriage and Family Therapy is accredited by the American Association of Marriage and Family Therapy and requires a minimum of two years of full-time study, including two summers. Alternative plans of study may be possible.

Admission Requirements

Students in good academic standing with undergraduate degrees in any related field 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 (within five years) from the Graduate Record Examination general test unless a waiver has been approved by the department. Additional admissions information and personal interviews are required of applicants.

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 a research project involving adolescents and their families and to complete a practicum in a program serving adolescents.

Child Advocacy and Family Policy: This care 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 is designed to develop general competence in understanding children from infancy through the early school years. Students are prepared to work in a variety of educational and social services positions, and will complete an internship in an educational program serving young children.

Marriage and Family Therapy Option

The option in Marriage and Family Therapy specifically prepares students to work in mental health, family services, 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 practica continue 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 <http://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 991C), and a graduate-level statistics course; and
- 3) successful completion of a research thesis based on original research (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.

M.S. Degree Requirements-Option in Marriage and Family Therapy

Program requirements include:

- 1) the 12-credit core curriculum (FS991, Professional Issues for Family Specialists; FS 993, Theoretical Approaches to Family Studies; and FS 994, Research Seminar);

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 Practice I; FS 946, Critical Problems in Family Life; FS 947, Family Therapy Practice 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 | 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 | 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. |

Genetics (GEN)

genetics.unh.edu/

Professors: Thomas M. Davis, Clyde L. Denis, Thomas D. Kocher, 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, Charles E. Warren

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 and subject (biology or biochemistry, cell, and molecular biology) tests of the GRE.

M.S. Degree Requirements

The program for the master of science degree is formulated by the student with the approval of 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 a one-year directed teaching experience and are required to attend genetics seminars.

Courses

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| GEN 804 | Genetics of Prokaryotic Microbes | 4 cr. |
| GEN 805 | Population Genetics | 4 cr. |
| GEN 806 | Human Genetics | 3 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 882 | Developmental Genetics | 3 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: Jeffrey M. Diefendorf, Ellen Fitzpatrick, David Frankfurter, Cathy A. Frierson, Jan V. Golinski, Stephen H. Hardy, J. William Harris, Francis D. McCann, Jr., Janet L. Polasky, Harvard Sitkoff, William R. Woodward

Affiliate Professor: Laurel Ulrich

Associate Professors: Funso Afolayan, W. Jeffrey Bolster, Kurk Dorsey, Eliga H. Gould, Nicoletta F. Gullace, Yan Lu, Gregory McMahon, Lucy E. Salyer, Marc L. Schwarz, Jennifer D. Selwyn, Cynthia J. Van Zandt, Ethel Sara Wolper

Assistant Professors: David Bachrach, Julia E. Rodriguez, 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.

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 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

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| HIST 800 | Advanced Explorations | 1 to 4 cr. |
| HIST 801 | Seminar in Religious Texts | 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 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 831 | History of Brazil | 4 cr. |
| HIST 832 | Topics in Latin American History | 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 843 | British Empire | 4 cr. |
| HIST 844 | Victorian Britain | 4 cr. |
| HIST 847 | Early Modern France | 4 cr. |
| HIST 848 | Modern France | 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. |

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| HIST 866 | Environmental History of Northwest Atlantic Commercial Fisheries | 4 cr. |
| HIST 869 | Germany from 1918 to Present | 4 cr. |
| HIST 871 | Museum Studies | 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 884 | History of Southern Africa since 1652 | 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 898 | Internship in Museum Studies | 4 cr. |
| HIST 899 | Master's Thesis | 6 cr. |
| HIST 939 | Readings in Early American History | 3 cr. |
| HIST 940 | Readings in Modern American History | 3 cr. |
| HIST 949 | Colloquium in United States History | 3 cr. |
| HIST 952 | Colloquium in Comparative History | 3 cr. |
| HIST 970 | Graduate Seminar in Teaching History | 2 cr. |
| HIST 989 | Research Seminar in American History | 3 cr. |
| HIST 990 | Research Seminar in American History | 3 cr. |
| HIST 995 | Tutorial Reading and Research | 1 to 6 cr. |
| HIST 997 | Directed Readings in Early American History | 1 to 6 cr. |
| HIST 998 | Directed Readings in Modern United States History | 1 to 6 cr. |
| HIST 999 | Doctoral Research | 0 cr. |

Health Administration (HMP)

www.shhs.unh.edu/hmp/

Professors: Cynthia M. Duncan, James F. McCarthy, Jeffrey Colman Salloway, John W. Seavey, Lee F. Seidel, Robert S. Woodward

Clinical Professors: Edgar J. Helms, Jr., Leslie N.H. MacLeod

Associate Professors: Marc D. Hiller, James B. Lewis

Research Assistant Professor: David J. Laflamme

Degree Offered: M.B.A. Health Management Option

The Department of Health Management and Policy offers courses in the health management option of the part-time M.B.A. degree program. These courses are designed to enable students to improve their effectiveness and performance in the management of health care organizations, services, programs, and policies. For more information, see business administration.

Courses

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|---------|-------------------------------------|------------|
| HMP 810 | Financial Management for Clinicians | 3 cr. |
| HMP 900 | Health Care in the United States | 3 cr. |
| HMP 903 | Health Care Planning | 3 cr. |
| HMP 910 | Epidemiology | 3 cr. |
| HMP 921 | Managing Health Services | 3 cr. |
| HMP 932 | Health Care Reimbursement | 3 cr. |
| HMP 940 | Health Law and Ethics | 3 cr. |
| HMP 995 | Independent Study | 1 to 3 cr. |

Justice Studies (JUST)

www.unh.edu/justice-studies/

Professors: Ellen S. Cohn, Todd A. DeMitchell, David Finkelhor, David R. Hiley, Murray A. Straus, Sally Ward

UNHM Professor: John J. Cerullo

Associate Professors: Victoria L. Banyard, Drew Christie, Elizabeth M. Dolan, Michelle D. Leichtman, Carolyn J. Mebert, Lucy E. Salyer, Susan J. Siggelakis, James Tucker

Research Associate Professors: John T. Kirkpatrick, Charles T. Putnam

Affiliate Associate Professor: Alan Ray

Assistant Professors: Toni L. Bisconti, Alynna J. Lyon, Cesar Rebellon, Nicholas J. Smith, Karen VanGundy

Clinical Assistant Professor: Donna M. Perkins

Degree Offered: M.A.

The goal of the master of arts degree program in justice studies is to produce graduates who have a high level of knowledge about law and justice in American society and worldwide. Upon completion, graduates will be able to enhance their careers in the justice system, enter new careers in the justice system, or continue their graduate training in law, social sciences, or humanities.

The program addresses issues of justice that are not necessarily criminal in nature. It will familiarize students with legal and justice ideas, legal institutions, and the legal process. It will provide tools for a reasoned appraisal of how the law works and of the policies that underlie it. The courses address a wide variety of subjects, including philosophy of law, American legal history, psychological aspects of the law, social control, criminology, juvenile delinquency, law and literature, and family law. Courses are taught by faculty with backgrounds in both the social sciences and humanities.

Admission Requirements

The master of arts in justice studies requires that students complete a minimum of 36 credit hours (9 courses) in justice studies. In addition to meeting the general Graduate

School requirements, applicants must submit current scores (within five years) from the general test of the GRE.

M.A. Degree Requirements

Students must complete at least 36 credit hours (9 courses) of graduate-level coursework in Justice Studies including the Proseminar in Justice Studies (901); Quantitative Research Methods (905) or Qualitative Research Methods (906); Special Topics/Evaluation (965); and either a culminating project (897, 4 cr.) or a thesis (899, 8 cr.).

Students must also complete five elective graduate courses if taking JUST 897 or four elective graduate courses if taking JUST 899. No more than two courses may be taken from the same department.

Courses

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|----------|---|------------|
| JUST 867 | Students, Teachers, and the Law | 4 cr. |
| JUST 897 | Culminating Project | 1 to 4 cr. |
| JUST 899 | Masters Thesis | 8 cr. |
| JUST 901 | Proseminar: Introduction to Justice Studies | 4 cr. |
| JUST 905 | Quantitative Research Methods | 4 cr. |
| JUST 906 | Qualitative Research Methods | 4 cr. |
| JUST 950 | Traditional Field Experience | 4 cr. |
| JUST 951 | Research Field Experience | 4 cr. |
| JUST 965 | Special Topics | 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, Neil B. Vroman, Steven C. Wright

Assistant Professors: Karen E. Collins, David G. Edwards, Erik E. Swartz

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.

M.S. Degree Requirements

Students may follow either the thesis or the nonthesis plan. All degree candidates will be required to take KIN 900, Applied Statistics; 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 Testing 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 870 | Psychological Skills in Performance | 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 | 3 or 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 931 | Advanced Exercise Science Laboratory Procedures | 3 cr. |
| KIN 950 | Internship | 2 to 4 cr. |
| KIN 985 | Change Processes in Adventure Programming | 4 cr. |
| KIN 986 | Outdoor Education Seminar | 4 cr. |

Liberal Studies (LS)

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.

M.A.L.S. 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 seminars 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 advisor. 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

| | | |
|--------|-------------------|------------|
| LS 800 | Core Seminar | 4 cr. |
| LS 845 | Special Topics | 2 to 4 cr. |
| LS 846 | Special Topics | 2 to 4 cr. |
| LS 895 | Independent Study | 1 to 6 cr. |
| LS 896 | Independent Study | 1 to 6 cr. |
| LS 898 | Master's Project | 1 to 6 cr. |
| LS 899 | Master's Thesis | 6 cr. |

Management of Technology (MOT)

www.mba.unh.edu/

Professors: Ross J. Gittell, Michael J. Merenda, Evangelos O. Simos, Jeffrey E. Sohl, A. R. Venkatachalam

Associate Professors: Carole K. Barnett, Vanessa Urch Druskat, Afshad J. Irani, Peter J. Lane, R. Daniel Reid, Christine M. Shea, Eleanne M. Solorzano, Craig H. Wood

Assistant Professors: Amy Kallianpur, Jun Li, Jeong Eun Park, Anthony T. Pescosolido, Honggeng Zhou

Degree Offered: M.O.T.

Please contact the department for details.

The Whittemore School, in collaboration with the College of Engineering, offers a M.S. in the Management of Technology with a project management focus to company-sponsored employees of BAE Systems. The degree is comprised of 36 credits and is divided into three modules: Business Fundamentals for Technical Managers, Advanced Concepts for Technical Managers, and Advanced Management of Technology.

Admission is limited to project managers or program managers employed by BAE Systems. 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.

Courses

| | | |
|---------|--|-------|
| MOT 898 | Advanced Topics | 3 cr. |
| MOT 931 | Accounting and Finance for Technical Managers | 3 cr. |
| MOT 934 | Management of Technology | 3 cr. |
| MOT 935 | Quantitative Methods | 3 cr. |
| MOT 936 | Leadership and Team Management | 3 cr. |
| MOT 939 | Information Systems/Management of Enterprise Systems | 3 cr. |
| MOT 941 | Product Development and Marketing | 3 cr. |
| MOT 942 | Project Management | 3 cr. |
| MOT 945 | Supply Chain Management and Procurement | 3 cr. |
| MOT 946 | Strategic Management of Technology | 3 cr. |
| MOT 947 | Intellectual Property Management, Ethics and Emerging Technology | 3 cr. |
| MOT 948 | Business Planning and Program Management | 3 cr. |

Materials Science (MS)

www.unh.edu/materials-science/

Professors: Olof E. Echt, Todd S. Gross, James M.E. Harper, James E. Krzanowski, Thomas M. Laue

Associate Professors: Carmela C. Amato-Wierda, Glen P. Miller, Donald C. Sundberg, Igor I. Tsukrov

Research Associate Professors: Jerome P. Claverie, Yvon G. Durant

Assistant Professor: Karsten Pohl

Degrees 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

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. Students will be considered for admission into the Ph.D. program after they have completed an M.S. degree or 24 credits of graduate courses in materials science with at least 6 credits at the 900 level.

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. Hibscheiler, A. Robb Jacoby, Ernst Linder, Eric A. Nordgren, Samuel D. Shore, Kevin M. Short, Marianna A. Shubov

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

Assistant Professors: Maria Basterra, Mitrajit Dutta, Sonia Hristovich, Linyuan Li, Yeping 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. in Mathematics

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 statistics 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;
2. Mathematics Ph.D. students passing written comprehensive examinations in algebra, analysis, topology and an elective subject. Mathematics Education Ph.D. students passing written comprehensive examinations in algebra, analysis, mathematics education and

an elective subject. (Elective subjects include functional analysis, algebraic topology, applied mathematics, statistics, advanced algebra, advanced complex analysis, advanced mathematics education, et al.)

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 to 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.

Courses

| | | |
|----------|---|------------|
| MATH 835 | Statistical Methods for Researchers | 3 cr. |
| MATH 837 | Statistical Methods For Quality Improvement | 3 cr. |
| MATH 839 | Regression Analysis | 3 cr. |
| MATH 840 | Design of Experiments I | 3 cr. |
| MATH 841 | Biostatistical Methods | 3 cr. |
| MATH 842 | Multivariate Statistics and Modern Regression Methods | 3 cr. |
| MATH 844 | Design of Experiments II | 3 cr. |
| MATH 845 | Foundations of Applied Mathematics | 3 cr. |
| MATH 846 | Foundations of Applied Mathematics | 3 cr. |
| MATH 847 | Introduction to Nonlinear Dynamics and Chaos | 3 cr. |
| MATH 853 | Introduction to Numerical Methods | 3 cr. |
| MATH 854 | Introduction to Scientific Computing | 3 cr. |
| MATH 855 | Probability and Stochastic Processes | 3 cr. |
| MATH 856 | Principles of Statistical Inference | 3 cr. |
| MATH 861 | Abstract Algebra | 3 cr. |
| MATH 862 | Linear Algebra | 3 cr. |
| MATH 864 | Advanced Algebra | 3 cr. |
| MATH 867 | One-Dimensional Real Analysis | 3 cr. |
| MATH 876 | Logic | 3 cr. |
| MATH 884 | Topology | 3 cr. |
| MATH 888 | Complex Analysis | 3 cr. |
| MATH 896 | Topics | 3 cr. |
| MATH 898 | Master's Project | 1 to 6 cr. |
| MATH 899 | Master's Thesis | 6 cr. |
| MATH 903 | Higher Algebra for Teachers | 3 cr. |
| MATH 904 | Higher Algebra for Teachers | 3 cr. |
| MATH 905 | Higher Geometry for Teachers | 3 cr. |
| MATH 906 | Higher Geometry for Teachers | 3 cr. |
| MATH 907 | Higher Analysis for Teachers | 3 cr. |
| MATH 908 | Higher Analysis for Teachers | 3 cr. |
| MATH 909 | Probability and Statistics for Teachers | 3 cr. |
| MATH 910 | Mathematics Education | 1 to 4 cr. |
| MATH 914 | Topology for Teachers | 3 cr. |
| MATH 917 | Mathematical Proof and Problem Solving | 3 cr. |
| MATH 925 | Problem Solving Seminar | 3 cr. |
| MATH 928 | Selected Topics in Mathematics for Teachers | 1 to 3 cr. |
| MATH 929 | Directed Reading | 3 cr. |
| MATH 931 | Mathematical Physics | 3 cr. |
| MATH 932 | Mathematical Physics | 3 cr. |
| MATH 951 | Algebra I | 3 cr. |
| MATH 952 | Algebra II | 3 cr. |
| MATH 953 | Analysis I | 3 cr. |
| MATH 954 | Analysis II | 3 cr. |
| MATH 955 | Topology I | 3 cr. |
| MATH 956 | Topology II | 3 cr. |
| MATH 958 | Foundations of Math Education | 3 cr. |
| MATH 961 | Topics in Algebra I | 3 cr. |
| MATH 963 | Functional Analysis | 3 cr. |
| MATH 964 | Topics in Analysis I | 3 cr. |
| MATH 967 | Topics in Applied Mathematics I | 3 cr. |
| MATH 968 | Topics in Mathematics Education I | 3 cr. |
| MATH 969 | Topics in Probability and Statistics I | 3 cr. |
| MATH 973 | Topics in Operator Theory | 3 cr. |

| | | |
|----------|------------------------------------|------------|
| MATH 977 | Topics in Applied Mathematics II | 3 cr. |
| MATH 978 | Topics in Mathematics Education II | 3 cr. |
| MATH 979 | Research Topics in Statistics | 3 cr. |
| MATH 998 | Reading Courses | 1 to 6 cr. |
| MATH 999 | Doctoral Research | 0 cr. |

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, David W. Watt

Affiliate Professor: Donald M. Esterling

Associate Professors: Gregory P. Chini, John Philip McHugh, May-Win L. Thein, Igor I. Tsukrov

Affiliate Associate Professor: Vladimir Riabov

Assistant Professor: Brad Lee Kinsey

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

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.

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.

Courses

| | | |
|--------|--|------------|
| ME 802 | Statistical Thermodynamics | 4 cr. |
| ME 807 | Analytical Fluid Dynamics | 4 cr. |
| ME 808 | Gas Dynamics | 4 cr. |
| ME 809 | Computational Fluid Dynamics | 3 cr. |
| ME 812 | Waves in Fluids | 3 cr. |
| ME 823 | Advanced Dynamics | 4 cr. |
| ME 824 | Vibrations Theory and Applications | 4 cr. |
| ME 827 | Advanced Mechanics of Solids | 4 cr. |
| ME 835 | Mechanics of Composite Materials | 4 cr. |
| ME 841 | Nonlinear Systems Modeling | 4 cr. |
| ME 843 | Satellite Systems, Dynamics, and Control | 3 cr. |
| ME 857 | Coastal Engineering and Processes | 3 cr. |
| ME 870 | Design with Microprocessors | 4 cr. |
| ME 872 | Control Systems | 4 cr. |
| ME 873 | Electromechanical Analysis and Design | 4 cr. |
| ME 876 | Product Design | 4 cr. |
| ME 883 | Geometric Modeling | 4 cr. |
| ME 885 | Solid Mechanics in Manufacturing | 4 cr. |
| ME 886 | Introduction to Finite Element Analysis | 4 cr. |
| ME 895 | Special Topics | 2 to 4 cr. |
| ME 899 | Master's Thesis | 8 cr. |
| ME 904 | Radiation Heat Transfer | 4 cr. |
| ME 906 | Convection Heat Transfer | 4 cr. |

| | | |
|--------|--|------------|
| ME 909 | Viscous Flow | 3 cr. |
| ME 911 | Theory of Hydrodynamic Stability | 3 cr. |
| ME 922 | Continuum Mechanics | 4 cr. |
| ME 924 | Vibrations of Continuous Media | 4 cr. |
| ME 926 | Theory of Elasticity | 4 cr. |
| ME 927 | Theory of Plasticity | 4 cr. |
| ME 935 | Micromechanics of Composite and Porous Materials | 4 cr. |
| ME 944 | Nonlinear Control Systems | 4 cr. |
| ME 951 | Advanced Control Systems I | 3 cr. |
| ME 952 | Advanced Control Systems II | 3 cr. |
| ME 955 | Estimation and Filtering | 3 cr. |
| ME 986 | Advanced Finite Element Analysis | 4 cr. |
| ME 992 | Master's Project | 4 cr. |
| ME 995 | Graduate Special Topics | 2 to 4 cr. |
| ME 999 | Doctoral Research | 0 cr. |

Microbiology (MICR)

www.microbiology.unh.edu/

Professors: Aaron B. Margolin, Thomas G. Pistole, Frank G. Rodgers

Associate Professor: Louis S. Tisa

Assistant Professors: Lisa B. Clark, Vaughn Cooper, Elise R. Sullivan, Cheryl A. Whistler

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

| | |
|---|-------|
| MICR 802 Infectious Disease and Health | 5 cr. |
| MICR 804 Genetics Prokaryotic Microbes | 4 cr. |
| MICR 805 Immunology | 5 cr. |
| MICR 806 Virology | 3 cr. |
| MICR 807 Marine Microbiology | 5 cr. |
| MICR 808 Virology Lab | 2 cr. |
| MICR 810 Electron Microscopy and Microbial Cytology | 5 cr. |
| MICR 811 Genomics and Bioinformatics | 4 cr. |
| MICR 813 Microbial Ecology and Evolution | 4 cr. |
| MICR 814 Public Health and Waterborne Diseases | 4 cr. |
| MICR 817 Microbial Physiology | 5 cr. |
| MICR 818 Ethics and Issues in Microbiology | 4 cr. |
| MICR 851 Cell Culture | 5 cr. |
| MICR 866 Plant-Microbe Interactions | 3 cr. |

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| MICR 893 Advanced Problems and Techniques in Microbial Cytology | 4 cr. |
| MICR 895 Special Topics | 1 to 4 cr. |
| MICR 899 Master's Thesis | 6 to 10 cr. |
| MICR 905 Current Topics | 1 cr. |
| MICR 906 Hot Topics | 1 cr. |
| MICR 907 Instrumentation | 1 cr. |
| MICR 909 Advanced Virology | 4 cr. |
| MICR 997 Seminar | 1 cr. |
| MICR 999 Doctoral Research | 0 cr. |

Music (MUSI)

www.unh.edu/music

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

Associate Professors: Michael J. Annicchiarico, Daniel Beller-McKenna, Andrew A. Boysen, Mark S. DeTurk, Robert W. Eshbach, William G. Kempster, David K. Ripley, Peter W. Urquhart, Larry J. Veal

Assistant Professors: Jenni Carbaugh Cook, Lori E. Dobbins, 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. A theory placement examination may be required. Students will not be allowed to enroll in MUSI 994, a required course, until this examination is waived or passed to the satisfaction of the department. For the music studies option, a reading knowledge of both German and French is strongly recommended before entering the program. The department will administer a German reading examination. On recommendation of the graduate adviser, this requirement may be waived for students who do not plan to study in musicology beyond the M.A. degree. 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.

M.A. Degree Requirements

Music Studies Option

This option offers the opportunity for in-depth 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.

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

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| 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 811 Music of the 20th and 21st Centuries | 3 cr. |
| MUSI 813 Art Song | 3 cr. |
| MUSI 815 Survey of Opera | 3 cr. |
| MUSI 831 Advanced Instrumental Conducting | 2 cr. |
| MUSI 832 Advanced Choral Conducting | 2 cr. |
| MUSI 836 Graduate Early Wind Instruments | 1 to 4 cr. |
| MUSI 841 Graduate Piano | 1 to 4 cr. |
| MUSI 845 Graduate Voice | 1 to 4 cr. |

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| 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. |
| MUSI 991 | Research Seminar | 1 to 4 cr. |
| MUSI 994 | Theory Seminar | 3 cr. |
| MUSI 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. |
| MUED 845 | Techniques and Methods in String Instruments | 2 cr. |
| MUED 846 | Techniques and Methods in String Instruments | 2 cr. |
| MUED 847 | Techniques and Methods in Woodwind Instruments | 3 cr. |
| MUED 849 | Techniques and Methods in Brass Instruments | 2 cr. |
| MUED 851 | Techniques and Methods in Percussion Instruments | 2 cr. |
| MUED 855 | Vocal Pedagogy | 2 cr. |
| MUED 865 | Instrumental Music Methods | 2 cr. |
| MUED 871 | Marching Band Methods | 2 cr. |
| MUED 890 | Teaching Elementary School Music | 3 cr. |
| MUED 891 | Teaching Secondary School Music | 3 cr. |
| MUED 895 | Special Studies | 1 to 4 cr. |
| MUED 983 | Instrumental Literature and Its Performance | 3 cr. |
| MUED 995 | Special Projects | 1 to 4 cr. |
| MUED 996 | Foundations and Perspectives of Music Education | 4 cr. |

Natural Resources (NR)

www.unh.edu/natural-resources/

Professors: John D. Aber, John E. Carroll, Russell G. Congalton, Robert T. Eckert, Theodore E. Howard, John A. Litvaitis, William W. Mautz, William H. McDowell, Peter J. Pekins, Barrett N. Rock, Andrew A. Rosenberg

Research Professors: Changsheng Li, Frederick T. Short

Associate Professors: Kimberly J. Babbitt, Mimi Larsen Becker, Mark J. Ducey, Kelly L. Giraud, Paul C. Johnson, Thomas D. Lee, Jonathan R. Pennock

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

Assistant Professors: Serita D. Frey, George C. Hurtt, Scott V. Ollinger

Research Assistant Professors: Jacqueline Ann Aitkenhead-Peterson, Andrew B. Cooper, Adrienne I. Kovach, Mary E. Martin

Degree Offered: M.S.

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

General master of science degree in natural resources: 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.

Forestry option: this option includes forest resource economics and management, biometrics, genetics, forest ecosystem dynamics, remote sensing, and geographic information systems.

Environmental conservation option: this option includes natural resource policy, conservation biology, sustainability, ecological ethics and values, international environmental affairs, and geospatial technologies.

Soil science option: this option includes soil chemistry, soil classification and genesis, forest soils, and soil microbiology.

Water resources option: this option includes wetlands, land-water interactions, groundwater chemistry, and biogeochemistry.

Wildlife option: this option includes habitat evaluation and management, wildlife energetics, and 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.

M.S. 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, a quantitative methods course; 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

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| NR 800 | Critical Analysis of Water Resources Literature | 2 cr. |
| NR 801 | Ecological Values and Ethics | 4 cr. |
| NR 802 | Workshops | 1 to 4 cr. |
| NR 803 | Watershed Water Quality Management | 4 cr. |
| NR 804 | Soil Genesis and Classification | 4 cr. |
| NR 806 | Soil Ecology | 4 cr. |
| NR 810 | Endangered Species Seminar | 2 cr. |
| NR 811 | Wetland Ecology and Management | 4 cr. |
| NR 813 | Quantitative Ecology | 4 cr. |
| NR 814 | Ecosystems of Puerto Rico | 2 cr. |
| NR 815 | Theoretical Ecology | 4 cr. |
| NR 816 | Wetland Delineation | 4 cr. |

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| NR 818 | Law of Natural Resources and Environment | 3 cr. |
| NR 819 | Wetlands Restoration and Mitigation | 3 cr. |
| NR 820 | International Environmental Politics and Policies for the 21st Century | 4 cr. |
| NR 821 | Ecology of Polluted Waters | 4 cr. |
| NR 823 | Field Wetland Ecology | 3 cr. |
| NR 824 | Resolving Environmental Conflicts | 4 cr. |
| NR 830 | Terrestrial Ecosystems | 3 cr. |
| NR 832 | Chemistry of Soils | 4 cr. |
| NR 837 | Wildlife Population Dynamics | 4 cr. |
| NR 838 | Wildlife Policy and Management | 4 cr. |
| NR 844 | Biogeochemistry | 4 cr. |
| NR 845 | Forest Management | 4 cr. |
| NR 847 | Biology Through Bugs | 4 cr. |
| NR 853 | Decision Sciences in Natural Resources Management | 4 cr. |
| NR 854 | Wood Products Manufacture and Marketing | 4 cr. |
| NR 855 | Regional Silviculture and Forest Management | 2 cr. |
| NR 857 | Photo Interpretation and Photogrammetry | 4 cr. |
| NR 859 | Digital Image Processing for Natural Resources | 4 cr. |
| NR 860 | Geographic Information Systems in Natural Resources | 4 cr. |
| NR 864 | Vegetation Sampling and Analysis | 4 cr. |
| NR 865 | Community Ecology | 4 cr. |
| NR 867 | Earth System Science | 4 cr. |
| NR 872 | Wildlife Energetics | 2 cr. |
| NR 880 | Earth as a System for Educators | 4 cr. |
| NR 883 | Forest Communities of New Hampshire | 4 cr. |
| NR 884 | Sustainable Living | 3 cr. |
| NR 885 | Systems Thinking for Sustainable Living | 3 cr. |
| NR 897 | Special Topics | 1 to 4 cr. |
| NR 899 | Master's Thesis | 6 to 10 cr. |
| NR 902 | Ecological Ethics and Values | 4 cr. |
| NR 903 | Approach to Research | 3 cr. |
| NR 910 | Forest Stand Dynamics | 4 cr. |
| NR 912 | Sampling Techniques | 2 to 4 cr. |
| NR 918 | Advanced Forest Biology | 3 cr. |
| NR 930 | Modeling of Forest Ecosystems | 3 cr. |
| NR 947 | Current Issues in Ecosystem Ecology | 1 to 4 cr. |
| NR 993 | Natural and Environmental Resources Seminar | 1 cr. |
| NR 995 | Investigations | 1 to 4 cr. |
| NR 996 | Natural Resource Education | 1 cr. |
| NR 997 | Special Topics | 1 to 4 cr. |
| NR 998 | Directed Research | 4 cr. |

Hamilton, David R. Hiley, Theodore E. Howard, Bruce E. Lindsay, John A. Litvaitis, Theodore C. Loder III, William W. Mautz, Larry A. Mayer, William H. McDowell, Peter J. Pekins, Barrett N. Rock, Andrew A. Rosenberg, Stacia A. Sower, Karen L. Von Damm

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

Affiliate Professors: Michael Keller, Rakesh Minocha

Associate Professors: Eleanor D. Abrams, Kimberly J. Babbitt, Mimi Larsen Becker, Michael J. Carter, Drew Christie, William C. Clyde, J. Matthew Davis, Kurk Dorsey, Mark J. Ducey, Kelly L. Giraud, Paul C. Johnson, Jo Laird, Thomas D. Lee, Berrien Moore III, Douglas E. Morris, Jonathan R. Pennock, Robert A. Robertson, Timm A. Triplett

Research Associate Professors: David M. Burdick, Jack E. Dibb, Mark A. Fahnestock, Stephen E. Frolking, Kevin H. Gardner, Pingguo He, Michael L. Prentice, Cameron P. Wake, Larry G. Ward, Xiangming Xiao

Affiliate Associate Professor: David Y. Hollinger

Assistant Professors: David P. Brown, Julia G. Bryce, Serita D. Frey, Robert J. Griffin, George C. Hurtt, Joseph M. Licciardi, Scott V. Ollinger, James M. Pringle

Research Assistant Professors: Bobby H. Braswell, Andrew B. Cooper, Erik A. Hobbie, Huiting Mao, Mary E. Martin, J. Ruairidh Morrison, Barkley C. Sive, Ruth K. Varner

Affiliate Assistant Professors: Richard Hallett, Marie-louise Smith, Mary E. Westfall

Degree Offered: Ph.D.

The graduate program in natural resources and earth systems science is an interdepartmental 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, geochemical systems, atmospheric science, geologic science, hydrology, oceanography, social science, ethical and policy issues, and multidisciplinary natural resources management.

Four degrees are offered under the NRESS Program:

- Ph.D. in natural resources and environmental studies (NRES)
- Ph.D. in earth and environmental science (EES)
- Ph.D. in earth and environmental science: geology option (EES)

Ph.D. in earth and environmental science: oceanography option (EES)

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

Admission Requirements

Applicants to the NRESS Program come from a wide range of undergraduate majors. 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 either the earth sciences or natural resources department and then continue on in the NRESS Program. All applicants must identify an adviser before being admitted, and this adviser must agree to take on the new student. 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 must submit current scores (within five years) from the general test of the GRE.

Ph.D. Degree Requirements

The requirements of the doctoral program are flexible to accommodate the diverse interests and needs of students. Students, however, must meet the following requirements.

Committees and Coursework

The Ph.D. guidance and dissertation committees must consist of at least five members and must be interdisciplinary, and 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 executive committee, and the Graduate School dean. Students should select their guidance committee in a timely manner, within one year of matriculation for full-time students and two years for part-time students.

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 for students who have completed a M.S. or M.A. degree in a related field. Final credit requirements are determined by the guidance committee and may include additional coursework neces-

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

www.nressphd.sr.unh.edu/

Professors: John D. Aber, Francis S. Birch, Wallace A. Bothner, John E. Carroll, Russell G. Congalton, Garrett E. Crow, Robert T. Eckert, Richard W. England, Ross J. Gittell, John M. Halstead, Lawrence C.

sary 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.

All students in the program will take courses in three core areas: natural sciences, ethics/policy/law, and seminar. Any course used to satisfy the natural sciences and ethics 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, and the NRESS program chair.

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

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| NRES 995 Independent Study | 1 to 4 cr. |
| NRES 999 Doctoral Research | 0 cr. |

Nursing (NURS)

www.unh.edu/nursing

Professor: Judith A. Sullivan

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

Assistant Professors: Katherine S. Collopy, Pamela P. Dinapoli, Janice B. Foust

Degree Offered: M.S.

The department of nursing offers the master of science degree in nursing. Three clinical practice tracks are currently offered: adult nurse practitioner (ANP), family nurse practitioner (FNP), and clinical nursing leadership (CNL). Within the CNL track, students can complete a program of study in advanced leadership and management, nursing education, community health nursing, and other focused areas of study including but not limited to gerontology, evidence-based practice, and adolescent care. 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 offers the CNL track for the master's of science degree in nursing.

Admission Requirements

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 applicants are required to have a good academic record and completion of coursework in statistics. The department strongly recommends that applicants complete coursework in anatomy and physiology, a course in psychology or sociology, and a course in nutrition. Applicants with a bachelor's degree or higher in a field other than nursing may be considered for admission.

M.S. Degree Requirements

The program for the master of science degree includes a total of 42 credit hours for the adult nurse practitioner, 45 credit hours for the family nurse practitioner specialty, and a minimum of 30 credit hours for the clinical nursing leadership track. All tracks are designed to be completed in three to four semesters of full-time study. Individual plans of study are available for those wishing to pursue part-time study. The program of study is designed as follows:

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 in Nursing. ANP/FNP students may elect a thesis but must do so early in their course of study. Specialty courses for their chosen track of study are as follows:

Specialty courses (21-36 credits) required for each area of specialization:

For adult nurse practitioner: 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); 941, Population-Focused Practicum (112 clinical hours); 945, Clinical Decision Making in Health Care; 946, Practicum in Adult Health Care (336 clinical hours), and one, 3-credit elective related to program of study.

For family nurse practitioner: 810, Families in Health and Illness; 907, Pharmacology; 908, Clinical Application of Human Physiology; 909, Health 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 nursing leadership: 945, Clinical Decision Making in Health Care; 950, Reading and Research in Advanced Nursing; 955, Practicum in Advanced Nursing Practice (112 clinical hours); 956, Capstone Project Seminar, or 899, Master's Thesis; and 6-9 credits of support courses.

Concluding Experience

For the nurse practitioner track, NURS 939 or NURS 946, 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 the clinical nursing leadership track, 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 NURS 899 (6 credits) as the capstone course, if planned for early in the program of study.

Direct Entry

The Direct Entry Master's in Nursing Program is a two-and-a-half year, 94-credit, full-time course of study. Students are admitted to the Graduate School program as provisional students for the first year of study. Provision will be removed once the RN license is received.

The curriculum design begins during the January intercession and includes one summer session. Upon successful completion of the first year courses, students are eligible to take the National Council Licensure Examination (NCLEX-RN). Upon successfully passing the NCLEX, the student would then be able to begin practice as a Registered Nurse (RN). Evidence of licensure is required prior to taking clinical courses in the Clinical Nursing Leadership track. Students are encouraged to gain experiences as RNs while continuing their graduate study in the Clinical Nursing Leadership track.

Direct Entry Courses (94 credits); all courses are required and sequenced:

801, Introduction to Nursing; 802, Concepts in Pathopsychology/Pharmacology; 808, Foundations of Nursing Judgment; 814, Techniques of Clinical Nursing; 815, Care of the Adult; 819, Clinical Decision Making I; 818, Caring for People with Alterations in Mental Health; 823, Nursing Leadership/Management and the Organizational Context; 824, Community Health Nursing;

845, Nursing Research; 820, Caring for the Childbearing and Childrearing Family; 822, Clinical Decision Making II; 850, Clinical Decision Making III; 850C, Transition to Professional Nursing; 900, The Discipline of Nursing; 901, Nursing and Change in Health Services; 905, Research in Nursing; 945, Clinical Decision Making in Health Care; 950, Reading & Research in Advanced Nursing; 955, Practicum in Advanced Nursing Practice; 956, Capstone Project Seminar; and one of two electives depending on whether a student elects a thesis or nonthesis option. A formal presentation of the completed project or thesis is required.

Research and Scholarly Activities

The graduate faculty of the University's nursing program believe learning is a creative process wherein students are active participants in their education, growth, and development as advanced practice nurses. Faculty members are facilitators and mentors to students within a supportive scholarly environment. Students are prepared to be skilled, knowledgeable, and reflective leaders in health care who practice as nurse practitioners, clinical nurse specialists, or clinical nursing leaders.

The generation, dissemination, and application of evidence-based nursing knowledge and practice are a central mission for the nursing department. Health care of vulnerable populations is the research focus among the faculty. Faculty engage in scholarly inquiry across diverse topics such as care-giving, violence identification and prevention, clinical decision-making, adolescent pregnancy, elder care giving, and cultural diversity. Faculty publications, research, public policy initiatives, and other consultative/professional activities can be viewed at the department's Web site at www.unh.edu/nursing.

Courses

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| NURS 801 | Introduction to Nursing | 2 cr. |
| NURS 802 | Concepts in Pathophysiology/Pharmacology | 4 cr. |
| NURS 808 | Foundations of Nursing Judgment | 4 cr. |
| NURS 810 | Families in Health and Illness | 3 cr. |
| NURS 814 | Techniques of Clinical Nursing | 4 cr. |
| NURS 815 | Care of the Adult | 8 cr. |
| NURS 818 | Caring for People with Alterations in Mental Health | 4 cr. |
| NURS 819 | Clinical Decision Making I | 4 cr. |
| NURS 820 | Caring for the Childbearing and the Childbearing Family | 8 cr. |
| NURS 822 | Clinical Decision Making II | 4 cr. |
| NURS 823 | Nursing Leadership/Management and the Organizational Context | 4 cr. |
| NURS 824 | Community Health Nursing | 4 cr. |
| NURS 845 | Nursing Research | 2 to 4 cr. |

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| NURS 850 | Clinical Decision Making III | 4 cr. |
| NURS 850C | Transition to Professional Nursing | 6 cr. |
| NURS 894 | Special Topics | 1 to 4 cr. |
| NURS 899 | Master's Thesis | 6 cr. |
| NURS 900 | Discipline of Nursing | 3 cr. |
| NURS 901 | Nursing and Change in Health Services | 3 cr. |
| NURS 905 | Research | 3 cr. |
| NURS 907 | Pharmacology | 3 cr. |
| NURS 908 | Clinical Application of Human Physiology | 3 cr. |
| NURS 909 | Health and Illness Appraisal | 3 cr. |
| NURS 920 | Administrative Theories in Nursing | 3 cr. |
| NURS 935 | Primary Care of the Adult | 3 cr. |
| NURS 936 | Practicum in the Primary Care of Adults | 3 cr. |
| NURS 937 | Primary Care of Children | 3 cr. |
| NURS 938 | Practicum in the Primary Care of Children | 3 cr. |
| NURS 939 | Seminar and Practicum in the Primary Care of Families | 6 cr. |
| NURS 941 | Population Focused Practicum | 3 cr. |
| NURS 945 | Clinical Decision Making in Health Care | 3 cr. |
| NURS 946 | Practicum in Adult Health Care | 6 cr. |
| NURS 950 | Reading and Research in Advanced Nursing | 2 to 8 cr. |
| NURS 955 | Practicum in Advanced Nursing Practice | 3 to 6 cr. |
| NURS 956 | Capstone Project Seminar | 3 cr. |
| NURS 996 | Independent Study | 1 to 3 cr. |

Occupational Therapy (OT)

www.shhs.unh.edu/ot/

Professor: Elizabeth L. Crepeau

Associate Professors: Lou Ann Griswold, Shelley E. Mulligan, Judith D. Ward, Barbara Prudhomme White

Degree Offered: M.S.

The Department of Occupational Therapy offers the master of science degree in occupational therapy. The Professional Master's Degree Track prepares students to enter the profession.

Admission Requirements

Professional Master's Degree Track

The professional master's degree track 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 entry-level Professional Master's Track 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 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/performance. 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.

M.S. Degree

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 courses include: OT 841, OT 851, OT 852, OT 861, OT 862, OT 863, OT 865,

OT 871, OT 872, OT 875, OT 885, OT 892, OT 894, OT 896.

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 course work and field work. 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.

Courses

| | | | |
|----|-----|---|-------|
| OT | 822 | Assistive Technology | 4 cr. |
| OT | 824 | Assistive Technology and Physical Disabilities | 4 cr. |
| OT | 826 | Assistive Technology and Sensory, Communicative, and Cognitive Disabilities | 4 cr. |
| OT | 841 | Human Occupation | 4 cr. |
| OT | 851 | Mind Body Systems/Neurologically-based Function and Dysfunction | 4 cr. |
| OT | 852 | Human Movement and Environmental Effects on Everyday Occupations | 4 cr. |
| OT | 861 | Occupational Therapy: Professional Roles and Principles of Practice | 3 cr. |

| | | | |
|----|-----|--|------------|
| OT | 862 | Occupational Therapy Evaluation | 4 cr. |
| OT | 863 | Occupational Therapy Intervention | 4 cr. |
| OT | 865 | Occupational Therapy Practice and Professional Reasoning | 3 cr. |
| OT | 871 | Enabling Participation in Community Groups | 4 cr. |
| OT | 872 | Occupation, Health, and Community Programming | 4 cr. |
| OT | 875 | Leadership in Occupational Therapy Systems of Practice | 3 cr. |
| OT | 885 | Research Methods and Application to Practice | 3 cr. |
| OT | 892 | Level I Fieldwork | 1 cr. |
| OT | 893 | Special Topics | 2 to 4 cr. |
| OT | 894 | Level II Fieldwork I | 9 cr. |
| OT | 895 | Readings and Research in Occupational Therapy | 1 to 6 cr. |
| OT | 896 | Level II Fieldwork II | 9 cr. |
| OT | 897 | Graduate Project | 1 to 6 cr. |
| OT | 898 | Capstone | 2 cr. |
| OT | 899 | Master's Thesis | 6 cr. |
| OT | 904 | Health Care Trends and Occupational Therapy | 4 cr. |

Ocean Engineering (OE)

www.unh.edu/oe/

Professors: Kenneth C. Baldwin, Barbaros Celikkol, Pedro A. De Alba, Christian P. De Moustier, David L. Gress, Nancy E. Kinner, Larry A. Mayer, Kondagunta U. Sivaprasad, M. Robinson Swift, Colin Ware

Research Professors: Jim Gardner, Lloyd Huff

Associate Professors: Thomas P. Ballestero, Allen D. Drake

Research Associate Professors: Lee Alexander, Yuri Rzhonov

Research Assistant Professor: Brian P. Calder

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 Interna-

tional 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.

M.S. Degree Requirements

Each student is required to take one oceanography course: ESCI 852, Chemical Oceanography; ESCI 858, Introductory Physical Oceanography; ESCI 859, Geological 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, Introduction to 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, Introduction to 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, Special Topic (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, Geological 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 854 | Ocean Waves and Tides | 4 cr. |
| OE 856 | Principles of Naval Architecture and Model Testing | 4 cr. |
| OE 857 | Coastal Engineering and Processes | 3 cr. |
| OE 867 | Interactive Data Visualization | 3 cr. |
| OE 870 | Introduction to Ocean Mapping | 4 cr. |
| OE 871 | Geodesy and Positioning for Ocean Mapping | 3 cr. |
| OE 885 | Underwater Acoustics | 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 956 | Dynamics of Moored Systems | 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, Scott Schnepf, David R. Smith, Mara R. Witzling

Associate Professors: Patricia A. Emison, Eleanor M. Hight, Craig A. Hood, Jennifer K. Moses, Langdon C. Quin

Assistant Professors: Benjamin S. Cariens, Brian W.k. Chu

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.

M.F.A. Degree Requirements

Each student in the master of fine arts degree in painting program shall complete 60

credit hours of work. Twenty-eight credits of work will be in the area of concentration (painting) leading toward a thesis exhibition. Sixteen credits will be in graduate-level drawing. Eight credits will be in graduate-level art history and the final 8 credits will be in art electives to be chosen from drawing, printmaking, and painting and/or art history. In addition to the thesis exhibition, degree candidates will be required to submit a written artist statement focusing on aesthetic, technical, and historical issues related to their work. Also required is participation in two major critiques per year. The graduate student will present their work with a verbal or written rationale to the entire graduate faculty, invited guests and student peers.

Courses

| | | |
|----------|--------------------------------------|------------|
| ARTS 832 | Advanced Drawing | 4 cr. |
| ARTS 846 | Advanced Painting | 4 cr. |
| ARTS 884 | Dutch Genre Painting | 4 cr. |
| ARTS 897 | Seminar in Art History | 4 cr. |
| ARTS 932 | Graduate Drawing | 6 cr. |
| ARTS 996 | Independent Study in the Visual Arts | 1 to 6 cr. |
| ARTS 997 | Graduate Painting Thesis | 10 cr. |
| ARTS 998 | Graduate Painting Seminar | 6 cr. |

Physics (PHYS)

www.physics.unh.edu/

Professors: L. Christian Balling, Amitava Bhattacharjee, John R. Calarco, Edward L. Chupp, Olof E. Echt, James M.E. Harper, Jochen Heisenberg, F. William Hersman, Joseph Hollweg, Richard L. Kaufmann, Martin A. Lee, Eberhard Möbius, James M. Ryan, Harvey K. Shepard, Roy B. Torbert, John J. Wright

Research Professors: Terry Forbes, Philip A. Isenberg, R. Bruce McKibben, Charles W. Smith III

Associate Professors: James Connell, Lynn M. Kistler, Mark L. McConnell, Dawn C. Meredith, Joachim Raeder

Research Associate Professors: Charles J. Farrugia, Antoinette B. Galvin, Vania K. Jordanova, Mark R. Lessard, Clifford Lopate, Jack M. Quinn, Edward F. Tedesco, Bernard J. Vasquez

Assistant Professors: Silas Robert Beane III, Per Berglund, Maurik Holtrop, Karsten Pohl

Research Assistant Professors: Yuri E. Litvinenko, Chung-Sang Ng

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, theo-

retical nuclear and high-energy physics, experimental physics of solids and nanomaterials, and string theory.

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.

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.

Courses

| | | |
|----------|---|------------|
| PHYS 805 | Experimental Physics | 4 cr. |
| PHYS 806 | Introduction to Physics Research | 1 cr. |
| PHYS 808 | Optics | 4 cr. |
| PHYS 810 | Introduction to Astrophysics | 4 cr. |
| PHYS 811 | Topics in Modern Physics | 1 to 4 cr. |
| PHYS 812 | Introduction to Space Plasma Physics | 4 cr. |
| PHYS 818 | Introduction to Solid-State Physics | 4 cr. |
| PHYS 820 | Nuclear Physics | 4 cr. |
| PHYS 864 | General Relativity and Cosmology | 4 cr. |
| PHYS 895 | Independent Study | 1 to 8 cr. |
| PHYS 899 | Master's Thesis | 6 cr. |
| PHYS 901 | Physics Teaching Seminar | 1 cr. |
| PHYS 902 | Issues in Teaching and Learning Physics | 1 to 3 cr. |
| PHYS 931 | Mathematical Physics | 3 cr. |
| PHYS 932 | Mathematical Physics | 3 cr. |
| PHYS 935 | Statistical Physics | 3 cr. |
| PHYS 939 | Classical Mechanics | 3 cr. |
| PHYS 940 | Physics of Fluids | 3 cr. |
| PHYS 941 | Electromagnetic Theory I | 3 cr. |
| PHYS 942 | Electromagnetic Theory II | 3 cr. |
| PHYS 943 | Quantum Mechanics I | 3 cr. |
| PHYS 944 | Quantum Mechanics II | 3 cr. |
| PHYS 951 | Plasma Physics | 3 cr. |
| PHYS 954 | Heliospheric Physics | 3 cr. |
| PHYS 961 | Advanced Quantum Mechanics I | 3 cr. |
| PHYS 962 | Advanced Quantum Mechanics II | 3 cr. |
| PHYS 965 | Advanced Solid-State Physics | 3 cr. |
| PHYS 987 | Magnetospheres | 3 cr. |
| PHYS 988 | High Energy Astrophysics | 3 cr. |
| PHYS 995 | Special Topics | 1 to 3 cr. |
| PHYS 999 | Doctoral Research | 0 cr. |

Plant Biology (P BIO)

www.pbio.unh.edu/

Professors: Garrett E. Crow, Thomas M. Davis, Curtis V. Givan, Leland S. Jahnke, J. Brent Loy, Arthur C. Mathieson, Subhash C. Minocha, Barrett N. Rock

Affiliate Professors: Clinton J. Dawes, Rakesh Minocha, Walter C. Shortle, Kevin T. Smith

Associate Professors: Alan L. Baker, Wayne R. Fagerberg, Paul R. Fisher, Estelle M. Hrabak, Anita S. Klein, Christopher D. Neefus, James E. Pollard, John M. Roberts

Affiliate Associate Professor: Janet R. Sullivan

Research Assistant Professors: Rosanna Freyre, Dennis E. Mathews

Affiliate Assistant Professor: Jianhua Li

Extension Professors: Alan T. Eaton, Catherine A. Neal, Cheryl A. Smith, Stanley R. Swier

Extension Associate Professor: Rebecca C. Grube

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 biology, including breeding and genetics, cell biology, cell and tissue culture, ecology, molecular biology, genetic engineering, marine and freshwater biology, morphology and anatomy, pathology, psychology, 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.

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

| | | |
|----------|--------------------------------|-------|
| PBIO 801 | Plant Physiology | 3 cr. |
| PBIO 802 | Plant Physiology Laboratory | 2 cr. |
| PBIO 809 | Plant Stress Physiology | 3 cr. |
| PBIO 813 | Biochemistry of Photosynthesis | 4 cr. |
| PBIO 814 | Electron Microscopy | 2 cr. |
| PBIO 815 | Electron Microscopy Lab | 3 cr. |
| PBIO 817 | Biology of Lakes | 4 cr. |
| PBIO 819 | Field Studies in Lake Biology | 4 cr. |
| PBIO 821 | Microscopic Algae | 4 cr. |
| PBIO 822 | Marine Phycology | 4 cr. |
| PBIO 825 | Marine Ecology | 4 cr. |
| PBIO 826 | Integrated Pest Management | 4 cr. |
| PBIO 827 | Algal Physiology | 3 cr. |



Thompson Hall in winter

| | | |
|----------|---|-------------|
| PBIO 832 | Lake Management: A Multidisciplinary Approach | 4 cr. |
| PBIO 847 | Aquatic Higher Plants | 4 cr. |
| PBIO 851 | Cell Culture | 5 cr. |
| PBIO 852 | Mycology | 4 cr. |
| PBIO 853 | Cytogenetics | 4 cr. |
| PBIO 854 | Laboratory in Biochemistry and Molecular Biology of Nucleic Acids | 5 cr. |
| PBIO 858 | Plant Anatomy | 5 cr. |
| PBIO 861 | Biodiversity: Phytogeographic Perspective | 4 cr. |
| PBIO 866 | Plant-Microbe Interactions | 3 cr. |
| PBIO 872 | Evolutionary Genetics of Plants | 4 cr. |
| PBIO 874 | Plant Biotechnology and Genetic Engineering | 3 cr. |
| PBIO 875 | Plant Biotechnology and Genetic Engineering Lab | 2 cr. |
| PBIO 899 | Master's Thesis | 6 to 10 cr. |
| PBIO 985 | Advanced Topics | 1 to 6 cr. |
| PBIO 995 | Investigations | 1 to 6 cr. |
| PBIO 997 | Graduate Seminar | 1 cr. |
| PBIO 999 | Doctoral Research | 0 cr. |

Political Science/Public Administration (POLT)

www.unh.edu/political-science/

Professors: Marilyn Hoskin, B. Thomas Trout

Associate Professors: Marla A. Brettschneider, Warren R. Brown, John R. Kayser, Aline M. Kuntz, Lawrence C. Reardon, Susan J. Siggelakis, Stacy D. Vandever, Clifford J. Wirth

Research Associate Professors: Charles T. Putnam, Andrew E. Smith

Assistant Professors: Alynna J. Lyon, Bernard T. Schuman, J. Mark Wrighton

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

The Department of Political Science offers programs leading to a master of arts in political science, or a master of public administration. The master of arts program provides students with broad exposure to the discipline of political science, and concentration within one of four subfields of political science: American politics; international relations; comparative politics; and political thought.

The master of public administration program is an interdisciplinary degree for mid-career professionals and individuals seeking to enter local, state and national government services, and public/non-profit sector management and 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. It is only required for M.P.A. students requesting consideration for graduate assistant or tuition assistance awards.

M.A. Degree Requirements

The M.A. in political science program is designed to provide students with: familiarity with the breadth of the discipline; training in research techniques; and opportunities to develop specific knowledge within a subfield of political science. The degree program has the following course-related and thesis requirements: one advanced course or semi-

nar in three of the four subfields offered by the department; two additional advanced courses or seminars offered by the department or in a related discipline; one advanced course in research methods (POLT 905 or equivalent); one advanced course on research design and methods of inquiry (POLT 910-Proseminar); and the master's thesis in the selected field of concentration. Each degree candidate must complete seven courses or seminars (25-28 credits) and the thesis (8 credits) for a total of 33-36 credits.

M.P.A. Degree Requirements

The master of public administration requirements for students currently enrolled or matriculated for fall 2005, spring 2006 semesters, and summer session 2006 are eight courses (30-32 credits), and a 4-credit internship (POLT 970, Administrative Internship) for a total of 34-36 credits. A comprehensive examination is also require.

Course-related requirements are: three required core courses (POLT 905, 906, 907); two elective courses in public administration and political science; and three courses in the student's area of specialization which may be from the political science department or other departments in related fields such as administration, health management and policy, resource economics, and others. Such students who have had significant experience in public administration/non-profit management may be exempted from the internship upon petition for such exemption. Such students will be required to undertake independent research on an approved topic related to public administration (POLT 995 or 996, 4 credits). Please contact the Department of Political Science and the Graduate School for information about degree requirements for students applying for fall 2006 semester and beyond.

Courses

| | | |
|-----------|--|-------|
| POLT 801 | Courts and Public Policy | 4 cr. |
| POLT 802 | Public Planning and Budgeting | 4 cr. |
| POLT 803 | Urban and Metropolitan Politics | 4 cr. |
| POLT 804 | Policy and Program Evaluation | 4 cr. |
| POLT 805 | American Public Policy | 4 cr. |
| POLT 807 | Criminal Justice Administration | 4 cr. |
| POLT 808 | Administrative Law | 4 cr. |
| POLT 810 | Public Human Resource Management | 4 cr. |
| POLT 821 | Feminist Political Theory | 4 cr. |
| POLT 843 | Comparative Political Economy | 4 cr. |
| POLT 860 | Theories of International Relations | 4 cr. |
| POLT 862 | International Political Economy | 4 cr. |
| POLT 878 | International Organization | 4 cr. |
| POLT 880 | International Environmental Politics, Policy and Law | 4 cr. |
| POLT 897B | Seminar in American Politics | 4 cr. |

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| POLT 897C | Seminar in Comparative Politics | 4 cr. |
| POLT 897E | Seminar in International Politics | 4 cr. |
| POLT 897F | Seminar in Public Administration | 4 cr. |
| POLT 897I | Seminar in Political Thought | 4 cr. |
| POLT 898B | Seminar in American Politics | 4 cr. |
| POLT 898C | Seminar in Comparative Politics | 4 cr. |
| POLT 898F | Seminar in Public Administration | 4 cr. |
| POLT 898I | Seminar in Political Thought | 4 cr. |
| POLT 899 | Master's Thesis | 8 cr. |
| POLT 905 | Methods of Policy Analysis | 4 cr. |
| POLT 906 | Theories and Processes of Public Administration | 4 cr. |
| POLT 907 | Cases in Public Management | 4 cr. |
| POLT 910 | Pro-seminar | 4 cr. |
| POLT 970 | Administrative Internship | 4 cr. |
| POLT 995 | Reading and Research | 1 to 4 cr. |
| POLT 996 | Reading and Research | 1 to 4 cr. |

Psychology (PSYC)

www.unh.edu/psychology/

Professors: Victor A. Benassi, Ellen S. Cohn, Peter S. Fernald, Kenneth Fuld, Benjamin Harris, Robert G. Mair, John D. Mayer, Edward J. O'Brien, David B. Pillemer, Rebecca M. Warner, William R. Woodward

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 Professor: Kathleen A. Kendall-Tackett

Assistant Professors: Toni L. Bisconti, J. Pablo Chavajay, Brett M. Gibson, Jill A. McGaughy

Research Assistant Professors: Lisa M. Jones, Kimberly J. Mitchell

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 and the score on the subject test in psychology along with other standard application forms. Scores must be current, within five years.

Ph.D. Degree Requirements

Required courses include two semesters of the graduate proseminar (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.

Courses

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| PSYC 894 | Advanced Research | 4 or 8 cr. |
| PSYC 899 | Master's Thesis | 8 cr. |
| PSYC 901 | Graduate Proseminar | |
| PSYC 902 | Graduate Proseminar | |
| PSYC 905 | Research Methodology and Statistics I | 4 cr. |
| PSYC 906 | Research Methodology and Statistics II | 4 cr. |
| PSYC 907 | Research Methods and Statistics III | 4 cr. |
| PSYC 908 | Mathematical Methods and Behavioral Models | 4 cr. |
| PSYC 914 | Advanced Seminar in Cognition | 4 cr. |
| PSYC 917 | Advanced Seminar in Sensory and Perceptual Processes | 4 cr. |
| PSYC 933 | Advanced Seminar in Physiological Psychology | 4 cr. |
| PSYC 945 | Advanced Seminar in Behavioral Analysis | 4 cr. |
| PSYC 954 | Advanced Seminar in Social Psychology | 4 cr. |
| PSYC 974 | Advanced Seminar in the History and Theory of Psychology | 4 cr. |
| PSYC 982 | Advanced Seminar in Developmental Psychology | 4 cr. |
| PSYC 991 | Practicum and Seminar in the Teaching of Psychology | 6 cr. |
| PSYC 992 | Practicum and Seminar in the Teaching of Psychology | 6 cr. |
| PSYC 995 | Reading and Research | 1 to 4 cr. |
| PSYC 998 | Problems and Issues | 4 cr. |
| PSYC 999 | Doctoral Research | 0 cr. |

Public Health Policy (PHP)

www.shhs.unh.edu/hmp/

Professors: Cynthia M. Duncan, James F. McCarthy, Jeffrey Colman Salloway, John W. Seavey, Lee F. Seidel, Robert S. Woodward

Clinical Professors: Edgar J. Helms, Jr., Leslie N.H. MacLeod

Associate Professors: Marc D. Hiller, James B. Lewis

Research Assistant Professor: David J. Laflamme

Degree Offered: M.P.H.

The School of Health and Human Services offers an interdisciplinary curriculum leading to the master of public health (M.P.H.). The program is designed to provide students with an M.P.H. degree with options available in three areas of study: public health policy and management, public health nursing, and public health ecology. The program is accredited by the Council on Education for Public Health (CEPH).

The program is only offered at the University of New Hampshire Manchester through the Center for Graduate and Professional Studies. Classes are offered in the evenings. Working professionals can complete the program on a part-time basis over two years or over a longer period of time.

Admission Requirements

Admissions is done through the UNH Graduate School for both fall and spring semesters. Students are expected to have experience in public health. The Admission Committee uses previous academic records, current experience, and recommendations as indicators of success. While we do not require GRE scores, we do encourage those who have taken the GRE to submit their scores. Interviews with the program director are encouraged. An application must include: the UNH Graduate School Application Form, a letter of intent explaining your reasons for applying to the M.P.H. Program and the option for which you are applying, official transcripts from previous undergraduate and graduate education, a current résumé, and three letters of recommendation.

M.P.H. Degree Requirements

The M.P.H. program is a 48-credit curriculum. In addition to the five core courses found in every public health program (public health systems, epidemiology, environmental health, biostatistics, and social and behavioral health), the program requires four additional courses

for all students (administration, finance and budgeting, policy, and ethics). The curriculum requires students to select one of the following options: public health policy and management, public health ecology, or public health nursing. Within each option there are required courses and electives. The option includes a field experience in which the student is expected to apply theory and practice of public health to a particular area of student interest. The final course in the curriculum is an integrating seminar in which the students from the three options are brought together to work on a particular public health problem.

Courses

| | | |
|----------|--|------------|
| PHP 900 | Public Health Care Systems | 3 cr. |
| PHP 901 | Epidemiology | 3 cr. |
| PHP 902 | Environmental Health | 3 cr. |
| PHP 903 | Biostatistics | 3 cr. |
| PHP 904 | Social and Behavioral Health | 3 cr. |
| PHP 905 | Public Health Administration | 3 cr. |
| PHP 906 | Public Health Finance and Budgeting | 3 cr. |
| PHP 907 | Public Health Policy | 3 cr. |
| PHP 908 | Public Health Ethics | 3 cr. |
| PHP 912 | Public Health Law | 3 cr. |
| PHP 914 | Public Health Policy Analysis | 3 cr. |
| PHP 916 | Survey Research in Public Health | 3 cr. |
| PHP 920 | Social Marketing | 3 cr. |
| PHP 922 | Public Health Economics | 3 cr. |
| PHP 924 | Policy and Practice of Community Health Assessment | 3 cr. |
| PHP 926 | Evaluation in Public Health | 3 cr. |
| PHP 930 | Climate Change and Health | 3 cr. |
| PHP 932 | Disease Ecology | 3 cr. |
| PHP 934 | Work Environment Policy and the Health of Workers | 3 cr. |
| PHP 940 | Public Health Nursing I | 3 cr. |
| PHP 942 | Public Health Nursing II | 3 cr. |
| PHP 950 | Seminar in Epidemiologic Study Design | 3 cr. |
| PHP 960 | Nutritional Epidemiology | 3 cr. |
| PHP 985A | Special Topics in Policy and Management | 1 to 3 cr. |
| PHP 985B | Special Topics in Public Health Ecology | 1 to 3 cr. |
| PHP 985C | Special Topics in Public Health Nursing | 1 to 3 cr. |
| PHP 990 | Field Study | 3 cr. |
| PHP 995 | Independent Study | 1 to 3 cr. |
| PHP 998 | Integrating Seminar | 3 cr. |

Recreation Management and Policy (RMP)

www.unh.edu/rmp/

Professors: Lou G. Powell, Janet R. Sable

Associate Professor: Ann L. Morgan

Assistant Professors: Robert J. Barcelona, Jason N. Bocarro

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.

M.S. 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

Required Core Competencies (12 credits):

- RMP 800 Concepts of Recreation and Leisure
- RMP 805 Management and Policy in Therapeutic Recreation

or

- RMP 806 Recreation Administration and Organizational Behavior

Graduate-level statistics course

Graduate-level research methods course

Four or five approved electives, at least one from the following (12-15 credits):

- RMP 811 Recreation Resource Management
- RMP 830 Camp Administration and Leadership
- RMP 860 Community Sport Organizations: Administration and Development
- RMP 870 Management and Design of Recreation and Park Facilities
- RMP 872 Law and Public Policy in Recreation Services
- RMP 910 Conceptual Issues and Trends in Therapeutic Recreation
- RMP 912 Nonprofit Administration and Leadership
- RMP 924 Grant Writing and Fund Development

Remaining electives are selected from the graduate offerings at UNH that support the student's option.

Courses

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| RMP 800 | Concepts of Recreation and Leisure | 3 cr. |
| RMP 805 | Management and Policy in Therapeutic Recreation | 3 cr. |
| RMP 806 | Recreation Administration and Organizational Behavior | 3 cr. |
| RMP 811 | Recreation Resource Management | 3 cr. |
| RMP 830 | Camp Administration and Leadership | 3 cr. |
| RMP 860 | Community Sport Organizations: Administration and Development | 3 cr. |
| RMP 870 | Management and Design of Recreation and Park Facilities | 3 cr. |
| RMP 872 | Law and Public Policy in Leisure Services | 3 cr. |
| RMP 897 | Master's Project | 3 cr. |
| RMP 899 | Master's Thesis | 6 cr. |
| RMP 910 | Conceptual Issues and Trends in Therapeutic Recreation | 3 cr. |
| RMP 912 | Non-Profit Administration and Leadership | 3 cr. |
| RMP 924 | Grantwriting and Fund Development | 3 cr. |
| RMP 964 | Graduate Internship | 3 cr. |
| RMP 970 | Teaching Practicum | 3 cr. |
| RMP 980 | Independent Study | 1 to 3 cr. |
| RMP 995 | Colloquium Seminar | 3 cr. |

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, Sally W. Jacoby, 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 management 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.

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

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| RAM 805 | Ecotourism: Managing for the Environment | 4 cr. |
| RAM 841 | Critical Issues in Solid Waste Management | 2 cr. |
| RAM 867 | Social Impact Assessment | 4 cr. |
| RAM 877 | Topics in Community Planning | 4 cr. |
| RAM 896 | Investigations | 2 to 4 cr. |
| RAM 898 | Directed Research | 4 to 6 cr. |
| RAM 899 | Master's Thesis | 6 to 10 cr. |
| RAM 900 | Resource Administration and Management Internship | 4 cr. |
| RAM 911 | Natural and Environmental Resource Management | 4 cr. |
| RAM 993 | Natural and Environmental Resources Seminar | 1 cr. |

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.

Courses

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| RECO 800 | Marketing Communications Research: Methodological Foundations | 4 cr. |
| RECO 808 | Environmental Economics | 4 cr. |
| RECO 815 | Linear Programming and Quantitative Models | 4 cr. |
| RECO 856 | Rural and Regional Economic Development | 4 cr. |
| RECO 895 | Investigations | 2 to 4 cr. |
| RECO 898 | Directed Research | 4 to 6 cr. |
| RECO 899 | Master's Thesis | 6 to 10 cr. |
| RECO 911 | Natural and Environmental Resource Management | 4 cr. |
| RECO 993 | Natural and Environmental Resources Seminar | 1 cr. |

Social Work (SW)

www.shhs.unh.edu/sw/

Associate Professors: Mary Banach, Linda Rene Bergeron, Cynthia Anne Broussard, Robert E. Jolley, Jerry D. Marx, Sharyn J. Zunz

Assistant Professors: Vernon Brooks Carter, 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, but the part-time program can be taken in Durham or in 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. Though 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 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 Pettee 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 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.

Courses

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| SW 801 | Women and Aging | 3 cr. |
| SW 805 | Child Welfare: Policies, Programs, and Practice | 3 cr. |
| SW 811 | Social Work and Mental Illness | 3 cr. |
| SW 812 | Social Work and Developmental Disabilities | 3 cr. |
| SW 814 | Introduction to Addiction: Assessment and Intervention | 3 cr. |

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| SW 815 | Practice with Gay, Lesbian, and Bisexual Clients | 3 cr. |
| SW 820 | Social Welfare Policy I | 3 cr. |
| SW 830 | Social Work Practice I | 3 cr. |
| SW 831 | Social Work Practice II: Practice in Small Groups and Community Organizations | 3 cr. |
| SW 840 | Implications of Race, Culture, and Oppression for Social Work Practice | 3 cr. |
| SW 850 | Human Behavior and the Social Environment I | 3 cr. |
| SW 851 | Human Behavior and the Social Environment II | 3 cr. |
| SW 860 | Research Methods in Social Work | 3 cr. |
| SW 873 | Intervention with Groups | 3 cr. |
| SW 880 | Field Internship I | 3 cr. |
| SW 881 | Field Internship II | 3 cr. |
| SW 885 | Comparative Social Welfare Systems | 3 cr. |
| SW 897 | Special Topics in Social Work and Social Welfare | 3 cr. |
| SW 900 | Advanced Standing Practice and Field Seminar | 3 cr. |
| SW 926 | Social Welfare Policy II | 3 cr. |
| SW 932 | Direct Practice III: Clinical Assessment and Intervention | 3 cr. |
| SW 933 | Direct Practice IV: Advanced Clinical Assessment and Intervention | 3 cr. |
| SW 936 | Community and Administrative Practice III: Community Organization and Political Strategies | 3 cr. |
| SW 937 | Community and Administrative Practice IV: Management of Human Service Organizations | 3 cr. |
| SW 952 | HB/SE III: Adaptive and Maladaptive Functioning | 3 cr. |
| SW 957 | Program and Resource Development in the Social Service Arena | 3 cr. |
| SW 962 | Research II Statistics | 3 cr. |
| SW 965 | Research III: Program and Practice Evaluation | 3 cr. |
| SW 974 | Social Work Supervision | 3 cr. |
| SW 975 | Theory and Practice of Family Therapy | 3 cr. |
| SW 979 | Social Work and the Law | 3 cr. |
| SW 982 | Field Internship III | 4 cr. |
| SW 983 | Field Internship IV | 4 cr. |
| SW 992 | Special Projects and Independent Study | 1 to 3 cr. |

Sociology (SOC)

www.unh.edu/sociology/

Professors: Michele Dillon, Cynthia M. Duncan, David Finkelhor, Lawrence C. Hamilton, Murray A. Straus, Heather A. Turner, Sally Ward

Associate Professors: Linda M. Blum, Benjamin C. Brown, Sharyn J. Potter, James Tucker

Research Associate Professors: Glenda Kaufman Kantor, John T. Kirkpatrick

Assistant Professors: Cesar Rebellon, Karen VanGundy

Research Assistant Professor: Wendy A. Walsh

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

The Department of Sociology offers M.A. and Ph.D. degrees in sociology. The master's degree program emphasizes theory and methodology. Students in the doctoral program are expected to select one major area and one minor area from the areas of departmental specialization for intensive study and examination. There are four major substantive areas for possible specialization: crime and conflict, family, social stratification, and medical sociology. Students may pursue specialties within or across the major areas of specialization or propose to the Graduate Committee other major areas of specialization that fall within the faculty's competence.

Admission Requirements

In addition to meeting the general Graduate School requirements, applicants must submit current scores (within five years) from the general test of the GRE.

Undergraduate majors in other fields may be admitted. However, if the student's undergraduate work has not included an introductory course in sociological theory, research methods and statistics, these courses must be taken, or equivalent knowledge demonstrated, in addition to the requirements outlined above.

All students entering the program must complete the M.A. before admission to the Ph.D. program. The department welcomes applicants who plan to continue for the Ph.D. as well as students planning for the M.A. only.

M.A. Degree Requirements

Students must complete at least 26 credit hours (seven courses) of graduate-level coursework in sociology, including the Proseminar in Sociology (900, 2 cr.), Sociological 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 thirteen 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 and II (901 and 902), and one other course in methods or statistics (SOC 903 or 904), three courses in a major area, and two in a minor area of sociology, and two elective courses. In addition to the thirteen required courses in sociology, students must complete a second minor consisting of three related courses whether or not sociological in content (no preliminary examination is required). Students must also pass written examinations in the major and minor areas of sociological specialization and in advanced theory and methodology, demonstrate reading-level proficiency in a foreign language or a research tool appropriate to the overall program of the student, and write and defend the doctoral dissertation.

Courses

| | | |
|---------|--|-------------|
| SOC 815 | Criminological Theory | 4 cr. |
| SOC 820 | Sociology of Drug Use | 4 cr. |
| SOC 840 | Sociology of Mental Health | 4 cr. |
| SOC 845 | Race, Ethnicity, and Inequality | 4 cr. |
| SOC 860 | Aging and Late Life Family | 4 cr. |
| SOC 873 | Sociology of Childhood | 4 cr. |
| SOC 880 | Social Conflict | 4 cr. |
| SOC 897 | Special Topics | 4 cr. |
| SOC 899 | Master's Thesis | 6 to 10 cr. |
| SOC 900 | Proseminar | 2 cr. |
| SOC 901 | Sociological Methods I: Intermediate Social Statistics | 4 cr. |
| SOC 902 | Sociological Methods II: Research Design | 4 cr. |
| SOC 903 | Sociological Methods III: Advanced Social Statistics | 4 cr. |
| SOC 904 | Sociological Methods IV: Qualitative and Historical Research Methods | 4 cr. |
| SOC 911 | Sociological Theory I | 4 cr. |
| SOC 912 | Sociological Theory II | 4 cr. |
| SOC 921 | Crime and Conflict | 4 cr. |
| SOC 975 | Sociology of the Family | 4 cr. |
| SOC 976 | Violence in the Family | 4 cr. |
| SOC 980 | Social Stratification | 4 cr. |
| SOC 988 | Medical Sociology: Health, Healing, and Society | 4 cr. |
| SOC 990 | Teaching Sociology Seminar | 4 cr. |
| SOC 995 | Reading and Research | 2 to 8 cr. |
| SOC 996 | Reading and Research | 2 to 8 cr. |
| SOC 997 | Advanced Special Topics | 2 or 4 cr. |
| SOC 999 | Doctoral Research | 0 cr. |

Spanish (SPAN)

www.unh.edu/spanish/

Professor: F. William Forbes

Associate Professors: John M. Chaston, Marco Dorfsman, Janet Gold, Lori Hopkins, Lina Lee

Assistant Professors: Carmen Garcia De La Rasilla, Jaume Marti-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 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 studies.

Admission Requirements

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

M.A. 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. Graduate assistants teaching in the department must take Spanish 903 (a 1-credit course in applied linguistics).

Courses

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|----------|--|------------|
| SPAN 833 | History of the Spanish Language | 3 cr. |
| SPAN 872 | Latin American Novel | 3 cr. |
| SPAN 873 | Latin American Short Story | 3 cr. |
| SPAN 882 | Summer Seminar for Teachers | 3 cr. |
| SPAN 890 | Grammatical Structure of Spanish | 3 cr. |
| SPAN 897 | Special Studies in Spanish Language and Literature | 3 cr. |
| SPAN 898 | Special Studies in Spanish Language and Literature | 3 cr. |
| SPAN 901 | Bibliography and Methods of Research | 1 cr. |
| SPAN 903 | Applied Linguistics | 1 cr. |
| SPAN 995 | Independent Study | 1 to 3 cr. |
| SPAN 997 | Graduate Seminar | 3 cr. |

Zoology (ZOOL)

zoology.unh.edu/

Professors: John F. Burger, Donald S. Chandler, James F. Haney, Larry G. Harris, W. Hunting Howell, Thomas D. Kocher, Michelle P. Scott, James T. Taylor, Charles W. Walker, Winsor H. Watson III

Research Professor: Michael Lesser

Affiliate Professors: Miyoshi Ikawa, John J. Sasner, Edward K. Tillinghast

Associate Professors: Jessica A. Bolker, Marianne Klausner Litvaitis

Research Associate Professors: Karen L. Carleton, Raymond E. Grizzle, Molly E. Lutcavage

Affiliate Associate Professor: Richard Langan

Assistant Professors: David L. Berlinsky, James E. Byers

Affiliate Assistant Professor: Dwight D. Trueblood

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

The Department of Zoology offers M.A. 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 commit-

tee. 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 (EO), 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 moni-

toring 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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|----------|---|-------------|
| ZOOL 801 | Conservation Biology | 4 cr. |
| ZOOL 805 | Population Genetics | 4 cr. |
| ZOOL 808 | Stream Ecology | 4 cr. |
| ZOOL 810 | Ichthyology | 4 cr. |
| ZOOL 811 | Zooplankton Ecology | 4 cr. |
| ZOOL 812 | Mammalogy | 4 cr. |
| ZOOL 813 | Animal Behavior | 4 cr. |
| ZOOL 815 | Molecular Evolution | 4 cr. |
| ZOOL 817 | Biology of Lakes | 4 cr. |
| ZOOL 819 | Field Studies in Lake Biology | 4 cr. |
| ZOOL 823 | Quantitative Genetics | 4 cr. |
| ZOOL 825 | Marine Ecology | 4 cr. |
| ZOOL 832 | Lake Management: A Multidisciplinary Approach | 4 cr. |
| ZOOL 833 | Behavioral Ecology | 4 cr. |
| ZOOL 840 | Introduction to Biogeography | 4 cr. |
| ZOOL 845 | Biology and Diversity of Insects | 4 cr. |
| ZOOL 850 | Biological Oceanography | 4 cr. |
| ZOOL 872 | Fisheries Biology | 3 cr. |
| ZOOL 873 | Physiology of Fish | 4 cr. |
| ZOOL 877 | Neurobiology and Behavior | 4 cr. |
| ZOOL 895 | Advanced Studies | 1 to 4 cr. |
| ZOOL 896 | Advanced Studies | 1 to 4 cr. |
| ZOOL 899 | Master's Thesis | 6 to 10 cr. |
| ZOOL 901 | Research Methods | 2 cr. |
| ZOOL 997 | Seminar | 1 to 2 cr. |
| ZOOL 998 | Seminar | 1 to 2 cr. |
| ZOOL 999 | Doctoral Research | 0 cr. |

Visit us online!
www.gradschool.unh.edu



University of New Hampshire



Dimond Library

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; School 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.

Research and Scholarship

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 Intellectual Property Management.

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

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 steward for externally-sponsored programs, promotes accountability, and engages in outreach to the UNH community. 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 Intellectual Property Management

www.unh.edu/oipm/

The Office of Intellectual Property Management (OIPM) is charged with the responsibility to manage UNH's intellectual property in accordance with UNH's Intellectual Property Policy.

Agricultural Experiment Station

www.colsa.unh.edu/aes.htm

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.

Browne Center

www.brownecenter.com/

An internationally recognized teaching, training, and research site for professional development, the Browne Center is an auxiliary enterprise of the Outdoor Education Program. The Browne Center is dedicated to advancing the standards of excellence in experiential learning.

The Carsey Institute

www.carseyinstitute.unh.edu/

The Carsey Institute is a center for innovative research in the social, behavioral, and health sciences at the University of New Hampshire. Its distinctive mark will be an emphasis on collaborative scholarship, aimed at understanding the larger forces that shape individual behavior and affect the well-being of families and communities.

• Center for Integrative Regional Problem Solving

www.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

www.wsbe.unh.edu/Centers_CBER/about_us.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 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

www.fbg.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 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 Structural Biology

www.glycome.unh.edu/

The Center for Structural Biology (CSB) focuses on sophisticated proteomic analysis.

Center for Teaching Excellence

www.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

www.unh.edu/cvr/

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

www.unh.edu/csdc/

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

www.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.ANSCandNUTR.unh.edu/

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.

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.

• **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.crrc.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 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 Center for Stormwater Technology Evaluation and Verification**
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.

Hubbard Center for Genome Studies
hcg.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.

• **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. The center is currently a research and analysis hub for NASA's Compton Gamma Ray Observatory, participates in several solar terrestrial satellite programs, and is a Center of Excellence in theoretical solar-terrestrial research.

• **Complex Systems Research Center**
www.csrc.unh.edu/

The Complex Systems Research Center investigates the effects of human disturbance on the Earth's biogeochemical processes. Utilizing satellite remote sensing, field and laboratory investigation, computer modeling, and policy analysis, Complex Systems Research Center faculty, staff, and students are currently examining the ocean's role in the global carbon cycle, the geochemistry of deep ocean ridge vent systems, forest decline and land-use change, nutrient cycling and decomposition in terrestrial ecosystems, processes contributing to changes in climate and atmospheric chemistry, and the impact of policy decisions on the global environment.

• **Ocean Process Analysis Laboratory**
www.opal.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 topics include changes in global distributions of phytoplankton biomass and productivity documented with ocean color imagery, the use of molecular population genetic analysis

to trace zooplankton dispersal in the coastal and open ocean, the dynamical role of the North Brazil Current in climate change, and the relation of changes in water properties and circulation to external forcing in the Gulf of Maine.

• **Climate Change Research Center**
www.ccr.unh.edu/

The Climate Change Research Center investigates atmospheric dynamics and chemistry and various aspects of regional climate change. 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.

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 practice 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.

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.

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:

• **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.

• **R/V Gulf Challenger**

The R/V Gulf Challenger is a 50-foot research vessel. The vessel was built to meet current and future research and educational needs, providing a safe, stable platform suitable for estuarine and coastal research in the Northeast.

• **University Diving Program**

The University Diving Program courses range from basic SCUBA diving to advanced and scientific diving and are offered through the Department of Kinesiology. Workshops in rescue diving and diving accident management are also offered. Many certified student divers participate in University-sponsored underwater research projects.

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**

www.unh.edu/pnl/

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 Industrial Research Center

www.nhirc.unh.edu

Assisting New Hampshire industry in becoming more competitive, the New Hampshire Industrial Research Center helps companies through technical assistance grants, training, and market research assistance.

New Hampshire Industries Group

www.unh.edu/management/nhind/nhind.htm

The mission of the New Hampshire Industries Group is to further knowledge of industrial and economic competitiveness and facilitate endeavors that advance growth and development.

New Hampshire Institute for Health Policy and Practice

www.nhhealthpolicyinstitute.unh.edu

Seeking to improve the health of and health care received by citizens in the state, the New Hampshire Institute for Health Policy and Practice (NHIPP) provides the information and skills necessary for fact-based policy and program development.

New Hampshire Sea Grant College Program

www.seagrants.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 Small Business Development 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/

Non-Lethal Technology Innovation Center (NTIC) identifies and develops materials and technologies that can produce the next generation of non-lethal weapons.

Office of Sustainability Programs

www.sustainableunh.unh.edu/

The Office of Sustainability Programs (OSP) develops University-wide education programs that link the principles of sustainability to community life. OSP initiatives integrate sustainability practices into all facets of our land-grant mission, including teaching, research, operations, campus culture, and public service.

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. The Research Computing Center also operates the InterOperability Lab.

• InterOperability Lab

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.

Robotics and 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.

Shoals Marine Laboratory

www.marine.unh.edu/sml/

The Shoals Marine Laboratory is located on Appledore Island, just six miles off the coast of Portsmouth, New Hampshire. This field station caters to undergraduate students interested in focusing on marine topics in their college majors. The Shoals Marine Laboratory is jointly operated by the Division of Biological Sciences at Cornell University and the University of New Hampshire.

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.wsbe.unh.edu/centers_wrcif/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.

Academic and Support Services



Portsmouth, N.H.

The home of the main campus of the University is in Durham—one of the oldest towns in northern New 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, 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 its listserv, Web page, and newsletter.

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 edu-

cational 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, register, 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 announcements 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 consists of 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, and manuscripts. The library offers extensive electronic resources. Experienced librarians and staff provide expert service to people seeking information or research assistance.

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 DeMeritt Hall. All branch materials are indicated in the UNH Library catalog.

Computing and Information Services (CIS)

www.unh.edu/cis/

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.

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.

Walk-In Services: CIS Telecommunications and Client Services coordinates Walk-

In Services, located at MUB 109. Walk-In Services offers kiosks for e-mail access, Web browsing, and CIS Knowledge Base searches. Staff are available to discuss UNH computing and voice communication-related issues including central system account distribution, voice mail and account password resets, cell phones, virus scanning services, file conversion, and disk/file repair and recovery. Walk-In Services also distributes CD Loaner Kits containing the latest anti-virus software and UNH network software programs.

ResNet, <http://at.unh.edu/resnet>: UNH's Residential Network provides a high-speed network connection for each student living on campus. There are no monthly fees or time limits for using ResNet. There are minimum standards for hardware and software.

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

Babcock Hall is a community of more than 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. A kitchenette, lounge, and laundry facility are available in the building. Table tennis, a piano, and a fireplace are on the lobby level.

Following acceptance to the Graduate School, each student will be contacted about housing by the University's Department of Housing.

Family Housing

Forest Park Apartment Complex provides campus housing for newly appointed faculty members, married students, and students with dependent children. The community at Forest Park is diverse, with students and faculty members from all over the world. The six and one-half 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 154 apartments. These include studio (efficiency), one-bedroom, and two-bedroom apartments.

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 and Commuter Services

www.unhmub.com/

The Leadership Center, located in the Memorial Union Building, provides resources for off-campus and commuter students. These include listings for off-campus housing and tenants' rights information. Also available is information about daycare, transportation options, and student organizations. Off-campus housing is listed on the Web at www.unhmub.com/housinglist/.

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, and Panache offer grab-and-go foods. A variety of meal plans are available to all UNH community members. Cash and Cat's Cache (the UNH debit program) 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, and new 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 23 different sports and activities offered to co-rec and to men's and women's teams. There are also many 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.

Memorial Union Building

www.unhmub.com/

The University's community center is the Memorial Union Building (MUB). The original building was a gift from UNH alumni and is the official state war memorial.

Currently the MUB is the only building on campus to have complete wireless capabilities in all public spaces and meeting rooms. Housed in the MUB are the Information Center; two movie theaters; a Games Room, the UNH Copy Center; the UNH Bookstore; the Ticket Office; 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 130 student organizations and assists students with the mandatory registration process.

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.

Health Insurance

A student health insurance policy is available to students. Please contact Health Services for current information.

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 by the Counseling Center during regular business hours and after hours.

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.

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

Center for International Education

www.unh.edu/cie

The Center for International Education is the clearinghouse for international activities on campus. The center runs the New Hampshire International Seminar Series and houses study abroad programs and academic programs in international affairs. Small travel grants are available to graduate students for international travel to conferences or for research. Annual competitions for the Student Fulbright and National Security Education Program are administered by the center.

Disability Services for Students

www.unh.edu/access/disabilityservices.html

The University is committed to providing students with documented disabilities a living and learning experience with equal access to all programs and facilities. The University will make reasonable adjustments and accommodations, and provide academic aids to promote student 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 as soon as possible after acceptance to smooth coordination of available services e.g., academic aids, scheduling of classes, parking permits, health and dietary needs, and housing accommodations. Access is located in the Memorial Union Building, Room 118, (603) 862-2607 (voice/TTY).

International Students and Scholars

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, which 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 are 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/

The mission of the Office of Multicultural Student Affairs (OMSA) at UNH is twofold: (1) to provide services to Black, Latino/a, Asian/Asian Americans and Pacific Islanders, Native American, and Lesbian, Gay, Bisexual, Transgender and Questioning students, in order to increase their retention and graduation rates; (2) to support, promote, and assist students and student groups that contribute to making the University a more diverse, inclusive, and understanding community.

In addition, OMSA often advises and collaborates on programming with organizations within the Diversity Support Coalition: Mosaico (the Latino/a Student Association),

Black Student Union (BSU), United Asian Coalition (UAC), The Alliance (the Lesbian, Gay, Bisexual, Transgender Student Association), the Native American Cultural Association (NACA), and Hillel (the Jewish Student Association), among others.

OMSA is open to all students at the University of New Hampshire.

President's Commissions

President's Commission on the Status of Gay, Lesbian, Bisexual, and Transgender Issues

www.unh.edu/glbtc/

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/

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/

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.

Sexual Harassment and Rape Prevention Program

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/

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/

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.

Admission and Registration



A New Hampshire brook

In this section you'll find details regarding the University's admission and course registration process. Please contact us at the Graduate School or at the Registrar's Office if you need further clarification. We will be happy to answer your questions regarding University procedures and policy.

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, or 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 TOEFL (Test of English as a Foreign Language) scores. A minimum TOEFL score of 550 (213 computer-based) is required for admission. TOEFL scores are valid for only two years. 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.

Foreign 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. Foreign 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 pro-

grams, 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.

Additional Information

Special 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 “special students.” Special students are not required to file an application for admission to the Graduate School and are not candidates for a graduate degree. Special students are not normally permitted to register as full-time students.

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). C.A.G.S. students must enroll for course credits 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 in the Time and Room Schedule. Deadlines are also published annually in the Graduate School calendar.

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 regarding readmission will be made based on the information received, and forwarded to the Admissions Office. For graduate students, the dean of the Graduate School will make the final decision.

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.

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.

Fees and Financial Support



R/V Gulf Challenger, flagship of the UNH marine program

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.

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 Accident and Sickness Insurance

The University strongly urges all students to be insured against illness or injury that may arise in the course of the academic year. International students are required to purchase UNH health insurance. Domestic graduate students may enroll in the student accident and sickness insurance policy on a voluntary basis during graduate registration or through University Health Services. The cut-off date for enrollment is the second Friday following graduate registration. Insurance coverage is also available for the spouse or children of a student, provided the student is also enrolled in the plan.

Refunds

Tuition and mandatory fees are refundable during the academic year in accordance with the calendar published in the Time and Room Schedule and the Graduate School calendar. Students receiving federal financial aid will have their refund calculated in accordance with the U.S. Department of Education regulations in effect at the time of their withdrawal. Specific details regarding the regulations are available in the UNH Financial Aid Office.

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 a stipend and a waiver 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). 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 recommend 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 will act 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 making 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.nhheaf.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.

Academic Regulations and Degree Requirements



Rye, N.H.

It is the student's responsibility to become familiar with the academic regulations and degree requirements of the Graduate School as well as the special requirements of his or her own academic program. The general requirements of the Graduate School are found in the catalog. Individual program requirements may be found in the catalog or obtained from the respective department.

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 colisted and cotaught 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.

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 may only be repeated once.

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 let-

ter of admission in order to remain in 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.

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 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.

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.

Transfer Credit

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.

Special Student Credits

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.

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, ready for binding, 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.

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 after 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. Resident 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.

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.

The final oral examination is conducted by the doctoral committee and is intended to give the candidate an opportunity to defend the dissertation. A written final examination, on subject matter not covered in the qualifying examination, may also be required. This written examination is conducted by the major department. These final examinations must be completed by the date listed in the Graduate School calendar. After consultation with the major program, the dean of the Graduate School may appoint, for participation in the final oral examination, additional members of the faculty under whom the student has worked. The doctoral committee alone shall decide on the merits of the candidate's performance by a majority vote.

Submission of Dissertation

Three copies of the approved dissertation, ready for binding, must be submitted to the Graduate School Office by the appropriate deadline as published in the Graduate School calendar. Binding, microfilming, and copyright fees will be paid at the Graduate School and are due when the final copies are submitted. Most departments require one additional copy of the dissertation. Students

should consult their advisers concerning dissertation requirements.

Publication of the dissertation by University Microfilms is required, and the student assumes the cost. Students may choose to copyright their dissertation at the time of microfilming. If the dissertation material is further published, it should be designated as having been accepted as a doctoral dissertation by the University of New Hampshire.

Graduation

Graduation occurs three times a year, in September, December and May. All students MUST file an intent-to-graduate card with the Graduate School for one of the above dates by the appropriate deadline specified in the Graduate School calendar. Specific information is available at the Graduate School or www.gradschool.unh.edu.

All coursework completed prior to the official conferral of the degree will be applied only to that degree program. Graduate students MUST have a cumulative GPA of 3.0 or higher in order to graduate.

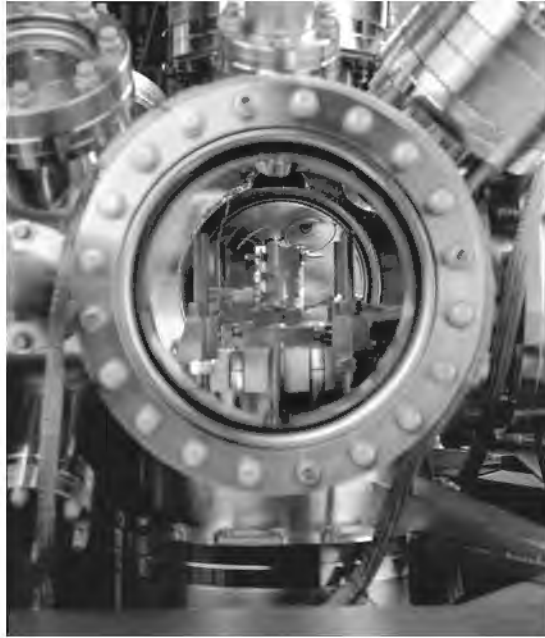
Commencement

The annual commencement ceremony is held in May. Students who have completed their degree requirements in the preceding September and December are invited to participate in commencement ceremonies in May.

Master's and C.A.G.S. students who expect to complete their degree program in May, as well as those who expect to complete their programs at the end of the summer term following the commencement ceremony (September), are eligible to participate in May commencement. Students who file their intent-to-graduate form for either May or September by the last deadline for filing for May will be listed in the commencement book.

To participate in the May ceremony, doctoral students must have completed all requirements for the Ph.D. by the published deadlines. Only those candidates who have completed their program are listed in the commencement book.

For more information on how to register for commencement go to www.unh.edu/presidentialevents/commencement/.



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Dean of the University Library
CLAUDIA J. MORNER, PH.D.

Faculty

Aber, John D. (1987)

Vice President for Research and Public Service and Professor of Natural Resources and Earth, Oceans, and Space; Ph.D., Yale University, 1976.

Abrams, Eleanor D. (1994)

Associate Professor of Education; Ph.D., Louisiana State University, 1993.

Afolayan, Funso (1996)

Associate Professor of History; Ph.D., Obafemi Awolowo University, Nigeria, 1991.

Aikins, Janet (1979)

Professor of English; Ph.D., University of Chicago, 1980.

Aitkenhead-Peterson, Jacqueline Ann (2002)

Research Assistant Professor of Natural Resources; Ph.D., University of New Hampshire, 2002.

Alexander, Lee (2000)

Research Associate Professor of Ocean Engineering; Ph.D., Yale University, 1986.

Amato-Wierda, Carmela C. (1995)

Associate Professor of Materials Science; Ph.D., Rensselaer Polytechnic Institute, 1993.

Ament, Lynette A. (2004)

Associate Professor of Nursing; Ph.D., University of Wisconsin at Milwaukee, 1996.

Andrew, David S. (1976)

Professor of Art History and the Humanities; Ph.D., Washington University, 1977.

Andrew, Michael D. (1966)

Professor of Education; Ed.D., Harvard University, 1969.

Annicchiarico, Michael J. (1991)

Associate Professor of Music; Ph.D., Brandeis University, 1993.

Attard, Thomas L. (2003)

Assistant Professor of Civil Engineering; Ph.D., Arizona State University, 2003.

Babbitt, Kimberly J. (1996)

Associate Professor of Wildlife Ecology; Ph.D., University of Florida, 1996.

Baber, Kristine M. (1984)

Associate Professor of Family Studies; Ph.D., University of Connecticut, 1983.

Bachrach, David (2003)

Assistant Professor of History; Ph.D., University of Notre Dame, 2001.

Bacon, Charlotte M. (1998)

Associate Professor of English; M.F.A., Columbia University, 1994.

Bailey, Brigitte Gabcke (1987)

Associate Professor of English; Ph.D., Harvard University, 1985.

Baker, Alan L. (1972)

Associate Professor of Plant Biology (Phycology); Ph.D., University of Minnesota, 1973.

Baldwin, Kenneth C. (1982)

Director, Center for Ocean Engineering and Professor of Mechanical Engineering and Ocean Engineering; Ph.D., University of Rhode Island, 1982.

Ballesterio, Thomas P. (1983)

Associate Professor of Civil/Environmental Engineering; Ph.D., Colorado State University, 1981.

Ballig, L. Christian (1967)

Professor of Physics; Ph.D., Harvard University, 1965.

Banach, Mary (1995)

Associate Professor of Social Work; D.S.W., Columbia University, 1995.

Banyard, Victoria L. (1995)

Associate Professor of Psychology; Ph.D., University of Michigan at Ann Arbor, 1994.

Barber, Heather (1993)

Associate Professor of Kinesiology; Ph.D., University of Oregon, 1992.

Barcelona, Robert J. (2003)

Assistant Professor of Recreation Management and Policy; Ph.D., Indiana University at Bloomington, 2001.

Barkey, Dale P. (1987)

Professor of Chemical/Environmental Engineering; Ph.D., University of California at Berkeley, 1987.

Barnett, Carole K. (1994)

Associate Professor of Management; Ph.D., University of Michigan at Ann Arbor, 1994.

Bartos, Radim (1997)

Associate Professor of Computer Science; Ph.D., University of Denver, 1997.

Basterra, Maria (2001)

Assistant Professor of Mathematics; Ph.D., University of Chicago, 1998.

Basu, Jyoti P. (2003)

Affiliate Professor of Electrical and Computer Engineering; Ph.D., Texas Tech University, 1972.

Bauer, Christopher F. (1981)

Professor of Chemistry; Ph.D., Colorado State University, 1979.

Baughman, Reagan A. (2003)

Assistant Professor of Economics; Ph.D., Syracuse University, 2001.

Beane, Silas Robert, III (2003)

Assistant Professor of Physics; Ph.D., University of Texas at Austin, 1994.

Becker, Mimi Larsen (1993)

Associate Professor of Natural Resources and Environmental Policy; Ph.D., Duke University, 1993.

Bedker, Patricia D. (1985)

Associate Professor of Animal Science; Ph.D., Cornell University, 1985.

Bell, Erin S. (2003)

Assistant Professor of Civil Engineering; Ph.D., Tufts University, 2003.

Bellamy, Elizabeth Jane (1993)

Professor of English; Ph.D., Duke University, 1982.

Beller-McKenna, Daniel (1998)

Associate Professor of Music; Ph.D., Harvard University, 1994.

Benassi, Victor A. (1982)

Professor of Psychology; Ph.D., City College of New York, 1974.

Bennett, Albert B., Jr. (1967)

Professor of Mathematics; Ed.D., University of Michigan at Ann Arbor, 1966.

Benoit, Jean (1983)

Professor of Civil Engineering; Ph.D., Stanford University, 1983.

Bergeron, Linda Rene (1997)

Associate Professor of Social Work; Ph.D., Boston College, 1997.

Bergeron, R. Daniel (1974)

Professor of Computer Science; Ph.D., Brown University, 1973.

Berglund, Per (2003)

Assistant Professor of Physics; Ph.D., University of Texas at Austin, 1993.

Berlinsky, David L. (2001)

Assistant Professor of Zoology; Ph.D., University of Rhode Island, 1989.

Berndtson, William E. (1979)

Professor of Animal Science; Ph.D., Cornell University, 1971.

Bhattacharjee, Amitava (2003)

Professor of Physics and Earth, Oceans, and Space; Ph.D., Princeton University, 1981.

Bianchi, Charles H. (2001)

Affiliate Associate Professor of Electrical and Computer Engineering; Ph.D., University of New Hampshire, 1995.

Birch, Francis S. (1972)

Professor of Earth Sciences; Ph.D., Princeton University, 1969.

Bisconti, Toni L. (2001)

Assistant Professor of Psychology; Ph.D., University of Notre Dame, 2001.

Black, Kelly J. (1994)

Associate Professor of Mathematics; Ph.D., Brown University, 1992.

Blum, Linda M. (1996)

Associate Professor of Sociology and Women's Studies; Ph.D., University of California at Berkeley, 1987.

Bobilya, Dennis J. (1991)

Associate Professor of Nutritional Sciences; Ph.D., University of Missouri, 1989.

Bocarro, Jason N. (2003)

Assistant Professor of Recreation Management and Policy; Ph.D., Texas A & M University, 2001.

- Bolander, Steven F. (2000)**
Dean of the Whittemore School of Business and Economics and Professor of Decision Sciences; Ph.D., Kent State University, 1972.
- Bolker, Jessica A. (1997)**
Associate Professor of Zoology; Ph.D., University of California at Berkeley, 1993.
- Bolster, W. Jeffrey (1991)**
Associate Professor of History; Ph.D., Johns Hopkins University, 1991.
- Bornstein, Steven P. (1989)**
Director of Audiology Clinic and Associate Professor of Communication Sciences and Disorders; Ph.D., University of Connecticut, 1981.
- Bothner, Wallace A. (1967)**
Professor of Geology; Ph.D., University of Wyoming, 1967.
- Boulton, Elizabeth P. (1988)**
Associate Professor of Animal Science; D.V.M., University of Georgia, 1980.
- Boysen, Andrew A. (1998)**
Associate Professor of Music; D.M.A., Eastman School of Music, University of Rochester, 1998.
- Braswell, Bobby H. (2001)**
Research Assistant Professor of Earth, Oceans, and Space; Ph.D., University of New Hampshire, 1996.
- Brettschneider, Marla A. (1996)**
Associate Professor of Political Science and Women's Studies; Ph.D., New York University, 1993.
- Broussard, Cynthia Anne (2000)**
Associate Professor of Social Work; Ph.D., Washington State University, 1986.
- Brown, Benjamin C. (1996)**
Associate Professor of Sociology; Ph.D., Emory University, 1996.
- Brown, David P. (2004)**
Assistant Professor of Geography and N.H. State Climatologist; Ph.D., University of Arizona, 2004.
- Brown, Warren R. (1972)**
Associate Professor of Political Science and the Humanities; Ph.D., Claremont Graduate School and University Center, 1976.
- Bryce, Julia G. (2003)**
Assistant Professor of Geochemistry; Ph.D., University of California at Davis, 1998.
- Bstiel, Ludwig A. (2001)**
Assistant Professor of Marketing; Ph.D., University of Innsbruck, Austria, 1997.
- Bucklin, Ann C. (1992)**
Director of UNH Sea Grant College Program and Professor of Zoology and Earth, Oceans, and Space and Genetics; Ph.D., University of California at Berkeley, 1980.
- Burdick, David M. (1992)**
Research Associate Professor of Marine Wetland Ecology and Restoration; Ph.D., Louisiana State University, 1988.
- Burger, John F. (1977)**
Professor of Zoology; Ph.D., University of Arizona, 1971.
- Burke, Joanne D. (2004)**
Clinical Assistant Professor of Nutritional Sciences; Ph.D., University of New Hampshire, 2001.
- Byers, James E. (2001)**
Assistant Professor of Zoology; Ph.D., University of California at Santa Barbara, 1999.
- Calarco, John R. (1981)**
Professor of Physics; Ph.D., University of Illinois at Urbana-Champaign, 1969.
- Calculator, Stephen N. (1983)**
Professor of Communication Sciences and Disorders; Ph.D., University of Wisconsin at Madison, 1980.
- Calder, Brian P. (2001)**
Research Assistant Professor of Electrical and Computer Engineering; Ph.D., Heriot-Watt University, 1997.
- Campbell, Janet W. (1993)**
Research Professor of Earth Sciences and Earth, Oceans, and Space; Ph.D., Virginia Polytechnic Institute and State University, 1973.
- Carey, Gale B. (1989)**
Professor of Nutritional Sciences; Ph.D., University of California at Davis, 1981.
- Cariens, Benjamin S. (2002)**
Assistant Professor of Art (Sculpture and Drawing); M.F.A., Boston University, 1993.
- Carleton, Karen L. (1997)**
Research Associate Professor of Zoology; Ph.D., University of Colorado, 1987.
- Carney, John J. (1973)**
Professor of Education; Ph.D., Syracuse University, 1973.
- Carnicelli, Thomas A. (1967)**
Professor of English; Ph.D., Harvard University, 1966.
- Carr, Russell T. (1984)**
Professor of Chemical/Environmental Engineering; Ph.D., University of Rochester, 1984.
- Carroll, John E. (1974)**
Professor of Environmental Conservation; Ph.D., Michigan State University, 1974.
- Carter, Michael J. (1987)**
Associate Professor of Electrical and Computer Engineering; Ph.D., University of Michigan at Ann Arbor, 1984.
- Carter, Vernon Brooks (2003)**
Assistant Professor of Social Work; Ph.D., Boston College, 2003.
- Celikkol, Barbaros (1969)**
Professor of Mechanical Engineering and Ocean Engineering; Ph.D., University of New Hampshire, 1972.
- Cerullo, John J. (1983)**
UNHM Professor of History; Ph.D., University of Pennsylvania, 1980.
- Chamberlin, Kent A. (1985)**
Professor of Electrical and Computer Engineering; Ph.D., Ohio University, 1982.
- Chandler, Donald S. (1981)**
Curator and Professor of Zoology; Ph.D., Ohio State University, 1976.
- Charpentier, Michel (1999)**
Assistant Professor of Computer Science; Ph.D., Institut National Polytechnique, 1997.
- Chasteen, N. Dennis (1972)**
Professor of Chemistry; Ph.D., University of Illinois at Urbana-Champaign, 1969.
- Chaston, John M. (1989)**
Associate Professor of Spanish; Ph.D., University of Texas at Austin, 1987.
- Chavajay, J. Pablo (2002)**
Assistant Professor of Psychology; Ph.D., University of California at Santa Cruz, 1999.
- Chen, Dora Wu (2005)**
Assistant Professor of Family Studies; Ph.D., University of Maryland, 1998.
- Chini, Gregory P. (1999)**
Associate Professor of Mechanical Engineering; Ph.D., Cornell University, 1999.
- Chiu, Monica E. (1998)**
Associate Professor of English; Ph.D., Emory University, 1996.
- Choi, Chi-young (2001)**
Assistant Professor of Economics; Ph.D., Ohio State University, 2000.
- Christie, Drew (1981)**
Associate Professor of Philosophy; Ph.D., Massachusetts Institute of Technology, 1983.
- Chu, Brian W.k. (2001)**
Assistant Professor of Art (Painting/Drawing); M.F.A., Queens College, City University of New York, 1993.
- Chupp, Edward L. (1962)**
Professor of Physics and Earth, Oceans, and Space; Ph.D., University of California at Berkeley, 1954.
- Ciccone, Stephen J. (2000)**
Assistant Professor of Finance; Ph.D., Florida State University, 2000.
- Cioffi, Grant L. (1980)**
Associate Professor of Education; Ph.D., University of Minnesota, 1980.
- Clark, Lisa B. (2001)**
Assistant Professor of Microbiology; Ph.D., Dartmouth College, 1996.
- Clark, Mary Morris (1978)**
Professor of English; Ph.D., University of Massachusetts at Amherst, 1978.
- Claverie, Jerome P. (2002)**
Research Associate Professor of Materials Science; Ph.D., California Institute of Technology, 1995.
- Clyde, William C. (1998)**
Associate Professor of Paleontology; Ph.D., University of Michigan at Ann Arbor, 1997.

- Cohn, Ellen S. (1978)**
Professor of Psychology; Ph.D., Temple University, 1978.
- Collins, John J. (1988)**
Associate Professor of Biochemistry and Molecular Biology and Genetics; Ph.D., University of Wisconsin at Madison, 1984.
- Collins, Karen E. (2002)**
Assistant Professor of Kinesiology; Ph.D., University of North Carolina at Greensboro, 2002.
- Collins, Michael R. (1985)**
Professor of Civil/Environmental Engineering; Ph.D., University of Arizona, 1985.
- Collopy, Katherine S. (2000)**
Assistant Professor of Nursing; Ph.D., Boston College, 2000.
- Condon, William A. (1976)**
Professor of Animal Science; Ph.D., University of Massachusetts at Amherst, 1975.
- Congalton, Russell G. (1991)**
Professor of Remote Sensing & Geographic Information Systems; Ph.D., Virginia Polytechnic Institute and State University, 1984.
- Connell, James (2002)**
Associate Professor of Physics and Earth, Oceans, and Space; Ph.D., Washington University, 1988.
- Connelly, Vincent J. (2004)**
Assistant Professor of Education; Ed.D., Johns Hopkins University, 2004.
- Conway, Karen Smith (1987)**
Professor of Economics; Ph.D., University of North Carolina at Chapel Hill, 1987.
- Cook, Jenni Carbaugh (2001)**
Assistant Professor of Music; D.M.A., University of Illinois at Urbana-Champaign, 2001.
- Cook, Raymond A. (1992)**
Associate Professor of Civil Engineering; Ph.D., Cornell University, 1992.
- Cooper, Andrew B. (2002)**
Research Assistant Professor of Natural Resources; Ph.D., University of Washington, 2000.
- Cooper, Barbara T. (1978)**
Professor of French; Ph.D., University of Wisconsin at Madison, 1974.
- Cooper, Vaughn (2004)**
Assistant Professor of Microbiology and Genetics; Ph.D., Michigan State University, 2000.
- Cote, Rick H. (1988)**
Professor of Biochemistry and Molecular Biology; Ph.D., University of Wisconsin at Madison, 1980.
- Cotter, Paul F. (1987)**
Affiliate Assistant Professor of Animal & Nutritional Sciences; Ph.D., University of New Hampshire, 1973.
- Couse, Leslie J. (2003)**
Assistant Professor of Education; Ph.D., Syracuse University, 2001.
- Crepeau, Elizabeth L. (1981)**
Professor of Occupational Therapy; Ph.D., University of New Hampshire, 1994.
- Croce, Ronald V. (1986)**
Professor of Kinesiology; Ph.D., University of New Mexico, 1983.
- Crow, Garrett E. (1975)**
Professor of Plant Biology(Systematics); Ph.D., Michigan State University, 1974.
- Curran-Celentano, Joanne (1982)**
Associate Professor of Nutritional Sciences; Ph.D., University of Illinois at Urbana-Champaign, 1982.
- D'Agruma, Hallie D. (2004)**
Clinical Assistant Professor of Education; Ph.D., University of California at Santa Barbara, 2004.
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Research Assistant Professor of Education; Ed.D., University of Massachusetts at Boston, 2003.
- Daniel, Jo S. (2001)**
Assistant Professor of Civil Engineering; Ph.D., North Carolina State University, 2001.
- Davis, J. Matthew (1993)**
Associate Professor of Hydrogeology; Ph.D., New Mexico Institute of Mining and Technology, 1994.
- Davis, P. Thompson (2001)**
Affiliate Professor of Earth Sciences; Ph.D., University of Colorado, 1980.
- Davis, Thomas M. (1984)**
Professor of Plant Biology and Genetics; Ph.D., University of California at Davis, 1985.
- Davis, Wendell (1999)**
Clinical Associate Professor of Animal Science; D.V.M., Ohio State University, 1987.
- Dawes, Clinton J. (2001)**
Affiliate Professor of Plant Biology; Ph.D., University of California at Los Angeles, 1961.
- De Alba, Pedro A. (1977)**
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- Foust, Janice B. (2001)**
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- Harris, Larry G. (1969)**
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President and Professor of Education; Ph.D., University of Utah, 1983.
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Associate Professor of Art(Painting/Drawing); M.F.A., Indiana University at Bloomington, 1981.
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- Johnson, Richard P. (1985)**
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- Kendall-Tackett, Kathleen A. (2004)**
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- Kenefick, Robert W. (1995)**
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- Kinner, Nancy E. (1983)**
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- Kinsey, Brad Lee (2001)**
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- Kirkpatrick, John T. (1984)**
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- Kuntz, Aline M. (1988)**
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- Latham, Paul W., II (2002)**
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- Lee, Martin A. (1984)**
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- Lee, Thomas D. (1980)**
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- Leverly, Steven B. (2002)**
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Assistant Professor of Political Science; Ph.D., University of South Carolina, 1999.
- MacFarlane, Lisa Watt (1987)**
Director, University Honors Program and Professor of English; Ph.D., University of Michigan at Ann Arbor, 1987.
- MacLeod, Leslie N.H. (2004)**
Clinical Professor of Health Management and Policy; Ed.D., University of Massachusetts at Amherst, 1984.
- Mair, Robert G. (1985)**
Professor of Psychology; Ph.D., Brown University, 1979.
- Malley, James P. (1988)**
Professor of Civil/Environmental Engineering; Ph.D., University of Massachusetts at Amherst, 1988.
- Mallory, Bruce L. (1979)**
Provost and Executive Vice President for Academic Affairs and Professor of Education; Ph.D., George Peabody College, 1979.
- Manalo, Alberto B. (1986)**
Associate Dean of the College of Life Sciences and Agriculture and Associate Professor of Environmental and Resource Economics; Ph.D., Kansas State University, 1986.
- Mao, Huiting (2001)**
Research Assistant Professor of Earth, Oceans, and Space; Ph.D., State University of New York at Albany, 1999.
- Margolin, Aaron B. (1988)**
Professor of Microbiology; Ph.D., University of Arizona, 1986.
- Marti-Olivella, Jaume (2003)**
Assistant Professor of Spanish; Ph.D., University of Illinois at Urbana-Champaign, 1988.
- Martin, Mary E. (1998)**
Research Assistant Professor of Natural Resources and Earth, Oceans, and Space; Ph.D., University of New Hampshire, 1994.
- Marx, Jerry D. (1995)**
Associate Professor of Social Work; D.S.W., Boston College, 1994.
- Mathews, Dennis E. (1998)**
Research Assistant Professor of Plant Biology; Ph.D., University of Wisconsin at Madison, 1988.
- Mathieson, Arthur C. (1965)**
Professor of Plant Biology (Phycology); Ph.D., University of British Columbia, 1965.
- Mathur, Virendra K. (1974)**
Professor of Chemical/Environmental Engineering; Ph.D., University of Missouri at Rolla, 1970.
- Matsuda, Aya (2000)**
Assistant Professor of English; Ph.D., Purdue University, 2000.
- Matsuda, Paul Kei (2001)**
Assistant Professor of English; Ph.D., Purdue University, 2000.
- Mautz, William W. (1969)**
Professor of Wildlife Ecology; Ph.D., Michigan State University, 1969.
- Mayer, John D. (1989)**
Professor of Psychology; Ph.D., Case Western Reserve University, 1982.
- Mayer, Larry A. (2000)**
Professor of Earth Sciences and Ocean Engineering; Ph.D., University of California at San Diego, 1979.
- Mayne, Howard R. (1985)**
Professor of Chemistry; Ph.D., University of Manchester, England, 1977.
- McBride, Mekeel (1979)**
Professor of English; B.A., Mills College, 1972.
- McCann, Francis D., Jr. (1971)**
Professor of History; Ph.D., Indiana University at Bloomington, 1967.
- McCarthy, James F. (2001)**
Dean of the School of Health and Human Services and Professor of Health Management and Policy; Ph.D., Princeton University, 1977.
- McConnell, Mark L. (1991)**
Associate Professor of Physics and Earth, Oceans, and Space; Ph.D., University of New Hampshire, 1987.
- McDowell, William H. (1989)**
Director, Water Resources Research Center and Professor of Water Resources Management; Ph.D., Cornell University, 1982.
- McGaughy, Jill A. (2004)**
Assistant Professor of Psychology; Ph.D., Ohio State University, 1998.
- McHugh, John Philip (1986)**
Associate Professor of Mechanical Engineering; Ph.D., University of Michigan at Ann Arbor, 1986.
- McKibben, R. Bruce (2002)**
Research Professor of Physics and Earth, Oceans, and Space; Ph.D., University of Chicago, 1972.
- McKinsey, Martin (2002)**
Assistant Professor of English; Ph.D., University of Virginia, 2002.
- McMahon, Gregory (1988)**
Associate Professor of History and the Humanities; Ph.D., Oriental Institute of the University of Chicago, 1988.
- Mebert, Carolyn J. (1979)**
Associate Professor of Psychology; Ph.D., Boston University, 1978.
- Melton, Jeffrey S. (2002)**
Research Assistant Professor of Civil Engineering; Ph.D., Dartmouth College, 1999.
- Meredith, Dawn C. (1987)**
Associate Professor of Physics; Ph.D., California Institute of Technology, 1987.
- Merenda, Michael J. (1977)**
Professor of Strategic Management; Ph.D., University of Massachusetts at Amherst, 1978.
- Merton, Andrew H. (1972)**
Professor of English; B.A., University of New Hampshire, 1967.
- Messner, Richard A. (1985)**
Associate Professor of Electrical and Computer Engineering; Ph.D., Clarkson University, 1985.
- Middleton, Michael J. (2001)**
Assistant Professor of Education; Ph.D., University of Michigan at Ann Arbor, 2000.
- Miller, Glen P. (1995)**
Associate Professor of Chemistry; Ph.D., Clarkson University, 1991.

- Miller, John P. (1992)**
Associate Professor of Kinesiology; Ph.D., University of Maryland, 1992.
- Miller, Lisa C. (1993)**
Associate Professor of English; M.A., University of New Hampshire, 1988.
- Miller, W. Thomas, III (1979)**
Professor of Electrical and Computer Engineering; Ph.D., Pennsylvania State University, 1977.
- Minocha, Rakesh (1991)**
Affiliate Professor of Plant Biology and Natural Resources; Ph.D., University of New Hampshire, 1985.
- Minocha, Subhash C. (1974)**
Professor of Plant Biology and Genetics; Ph.D., University of Washington, 1974.
- Mitchell, Kimberly J. (2001)**
Research Assistant Professor of Psychology; Ph.D., University of Rhode Island, 1999.
- Mitchell, Wanda S. (2003)**
Vice Provost for Diversity and Affiliate Associate Professor of Education; Ed.D., College of William and Mary, 1995.
- Möbius, Eberhard (1990)**
Professor of Physics and Earth, Oceans, and Space; Ph.D., Ruhr-Universität, Bochum, Germany, 1977.
- Mohr, Robert D. (2001)**
Assistant Professor of Economics; Ph.D., University of Texas at Austin, 2001.
- Moody, Thomas P. (2000)**
Research Assistant Professor of Biochemistry and Molecular Biology; Ph.D., University of New Hampshire, 1994.
- Moore, Berrien, III (1969)**
Director of the Institute for the Study of Earth, Oceans, and Space and Associate Professor of Mathematics and Professor of Earth, Oceans, and Space; Ph.D., University of Virginia, 1969.
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Affiliate Associate Professor of Computer Science; Ph.D., University of Michigan at Ann Arbor, 1999.
- Moore, Joseph J. (1975)**
Clinical Professor and Director, New Hampshire State Veterinary Diagnostic Lab; V.M.D., University of Pennsylvania, 1970.
- Moore, Sean D. (2003)**
Assistant Professor of English; Ph.D., Duke University, 2003.
- Moorhead, Cari (2000)**
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- Morgan, Ann L. (1981)**
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- Morris, Douglas E. (1984)**
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- Morrison, J. Ruairidh (2003)**
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- Moses, Jennifer K. (1990)**
Associate Professor of Art(Painting/Drawing); M.F.A., Indiana University at Bloomington, 1988.
- Moses, Mark D. (2005)**
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- Moyer, Judith N. (2001)**
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- Mulligan, Shelley E. (1996)**
Associate Professor of Occupational Therapy; Ph.D., University of Washington, 1997.
- Murphy, Sharon B. (2005)**
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- Nagy, Naomi G. (1996)**
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- Naumes, William (1989)**
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- Neal, Catherine A. (1999)**
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- Neefus, Christopher D. (1998)**
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- Newkirk, Thomas R. (1977)**
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- Ng, Chung-Sang (2003)**
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- Nikshych, Dmitri A. (2001)**
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- Niman, Neil B. (1985)**
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- Nimmo, John W. (2003)**
Executive Director, Child Study and Development Center and Associate Professor of Family Studies; Ed.D., University of Massachusetts at Amherst, 1992.
- Nisbet, Jane A. (1987)**
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- Nordgren, Eric A. (1964)**
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- Ogembo, Justus M. (2000)**
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- Onosko, Joseph J. (1989)**
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- Orovich, Nicholas N. (1980)**
Professor of Music; M.M., New England Conservatory of Music, 1978.
- Park, Jeong Eun (2004)**
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- Parsons, Alexander M. (2002)**
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- Pekins, Peter J. (1987)**
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- Pennock, Jonathan R. (2002)**
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- Pillemer, David B. (2003)**
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- Pistole, Thomas G. (1971)**
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- Planalp, Roy Paul (1987)**
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- Polasky, Janet L. (1981)**
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- Pollard, James E. (1970)**
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- Potter, Sharyn J. (1998)**
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- Powell, Lou G. (1981)**
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- Prentice, Michael L. (1994)**
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- Putnam, Charles T. (2005)**
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- Quin, Langdon C. (1998)**
Associate Professor of Art(Painting/Drawing); M.F.A., Yale University, 1976.
- Quinn, Jack M. (1996)**
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- Quinn, Timothy J. (1989)**
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- Raeder, Joachim (2003)**
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- Ramadanovic, Petar (1999)**
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- Ray, Alan (2004)**
Vice Provost for Academic Affairs and Affiliate Associate Professor of Philosophy and Justice Studies; Ph.D., Harvard University, 1986.
- Reagan, Daniel (1999)**
Affiliate Professor of College Teaching; Ph.D., University of New Hampshire, 1984.
- Reardon, Lawrence C. (1993)**
Associate Professor of Political Science; Ph.D., Columbia University, 1991.
- Rebellow, Cesar (2002)**
Assistant Professor of Sociology; Ph.D., Emory University, 2002.
- Reid, R. Daniel (1987)**
Associate Professor of Operations Management; Ph.D., Ohio State University, 1987.
- Reilly, Ruth A. (1996)**
Clinical Assistant Professor of Nutritional Sciences; Ph.D., University of New Hampshire, 1998.
- Reinhold, Vernon N. (1998)**
Research Professor of Biochemistry and Molecular Biology and Chemistry; Ph.D., University of Vermont, 1965.
- Riabov, Vladimir (2005)**
Affiliate Associate Professor of Mechanical Engineering; Ph.D., Moscow Institute of Physics and Technology, Russia, 1979.
- Richards, Harry J. (1979)**
Dean of the Graduate School and Associate Professor of Education; Ph.D., Florida State University, 1978.
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- Robb, Judith A. (1982)**
Associate Professor of Education; Ed.D., University of Rochester, 1982.
- Roberts, John M. (1979)**
Extension Specialist, Turf and Associate Professor of Plant Biology(Turf); Ph.D., Purdue University, 1977.
- Robertson, Robert A. (1993)**
Associate Professor of Tourism Planning and Development; Ph.D., University of Illinois at Urbana-Champaign, 1990.
- Rock, Barrett N. (1987)**
Director of the Complex Systems Research Center and Professor of Natural Resources and Earth, Oceans and Space; Ph.D., University of Maryland, 1972.
- Rodgers, Frank G. (1985)**
Professor of Microbiology; Ph.D., University of Surrey, England, 1977.
- Rodriguez, Julia E. (1999)**
Assistant Professor of History and Women's Studies; Ph.D., Columbia University, 1999.
- Rogers, John E. (1967)**
Professor of Music; M.F.A., Princeton University, 1966.
- Rompalla, Ronald E. (2000)**
Affiliate Professor of Animal and Nutritional Sciences; Ph.D., Northeastern University, 1987.
- Rosenberg, Andrew A. (2000)**
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- Rubinstein, Zachary (2002)**
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- Rucinski, Andrzej (1984)**
Professor of Electrical and Computer Engineering and Earth, Oceans, and Space; Ph.D., Technical University of Gdansk, Poland, 1982.
- Russell, Robert D. (1975)**
Associate Professor of Computer Science; Ph.D., Stanford University, 1972.
- Russell, Sylvia Weber (1979)**
Affiliate Associate Professor of Computer Science; Ph.D., Stanford University, 1975.
- Ryan, James M. (1984)**
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- Rzhanov, Yuri (2004)**
Research Associate Professor of Ocean Engineering; Ph.D., Russian Academy of Sciences, 1983.
- Sable, Janet R. (1989)**
Professor of Recreation Management and Policy; Ed.D., Boston University, 1988.
- Sahagian, Dork L. (1995)**
Affiliate Professor of Earth Sciences; Ph.D., University of Chicago, 1987.
- Salloway, Jeffrey Colman (1988)**
Professor of Health Management and Policy; Ph.D., Boston University, 1969.
- Salvio, Paula M. (1992)**
Associate Professor of Education; Ph.D., University of Rochester, 1989.
- Salyer, Lucy E. (1989)**
Associate Professor of History; Ph.D., University of California at Berkeley, 1989.
- Sasner, John J. (1965)**
Affiliate Professor of Zoology; Ph.D., University of California at Los Angeles, 1965.
- Schibanoff, Susan (1971)**
Professor of English; Ph.D., University of California at Los Angeles, 1971.
- Schmidt, Torsten (1988)**
Associate Professor of Economics; Ph.D., University of Florida, 1990.
- Schnepf, Scott (1981)**
Professor of Art(Painting/Drawing/Printmaking); M.F.A., Kansas State University, 1981.
- Schram, Thomas H. (1990)**
Associate Professor of Education; Ph.D., University of Oregon, 1990.
- Schuh, Mary C. (2002)**
Research Assistant Professor of Education; Ph.D., University of New Hampshire, 2002.
- Schuman, Bernard T. (1999)**
Assistant Professor of Political Science; Ph.D., University of Tennessee, 1998.

- Schwab, Charles G. (1975)**
Professor of Animal Science; Ph.D., University of Wisconsin at Madison, 1974.
- Schwarz, Marc L. (1967)**
Associate Professor of History; Ph.D., University of California at Los Angeles, 1965.
- Scott, Michelle P. (1990)**
Professor of Zoology; Ph.D., Harvard University, 1984.
- Seavey, John W. (1980)**
Professor of Health Management and Policy; Ph.D., University of Arizona, 1973.
- Seidel, Lee F. (1977)**
Director, Center for Teaching Excellence and Professor of Health Management and Policy; Ph.D., Pennsylvania State University, 1976.
- Seiler, David E. (1972)**
Professor of Music; M.M., University of Wisconsin at Madison, 1965.
- Seitz, W. Rudolf (1976)**
Professor of Chemistry; Ph.D., Massachusetts Institute of Technology, 1970.
- Selikowitz, Stuart M. (1987)**
Affiliate Professor of Electrical and Computer Engineering; M.D., State University of New York School of Medicine, 1962.
- Selwyn, Jennifer D. (1998)**
Associate Professor of History; Ph.D., University of California at Davis, 1997.
- Senier, Siobhan (2000)**
Associate Professor of English; Ph.D., University of Illinois at Urbana-Champaign, 1997.
- Sharkey, Judy (2001)**
Assistant Professor of Education; Ph.D., Pennsylvania State University, 2000.
- Shea, Christine M. (1994)**
Associate Professor of Technology and Operations Management; Ph.D., University of Western Ontario, Canada, 1994.
- Shepard, Harvey K. (1969)**
Professor of Physics; Ph.D., California Institute of Technology, 1966.
- Sherman, Sarah Way (1984)**
Associate Professor of English; Ph.D., Brown University, 1983.
- Shetty, Sandhya (1988)**
Associate Professor of English; Ph.D., University of Rochester, 1987.
- Shippee-Rice, Raelene (1979)**
Associate Professor of Nursing; Ph.D., Brandeis University, 1990.
- Shore, Barry (1974)**
Professor of Business Administration; Ph.D., University of Wisconsin at Madison, 1968.
- Shore, Samuel D. (1965)**
Professor of Mathematics; Ph.D., Pennsylvania State University, 1964.
- Short, Frederick T. (1989)**
Research Professor of Natural Resources and Marine Science; Ph.D., University of Alaska at Fairbanks, 1981.
- Short, Kevin M. (1994)**
Professor of Mathematics; Ph.D., Imperial College of Science & Technology, London, 1988.
- Shortle, Walter C. (1996)**
Affiliate Professor of Plant Biology; Ph.D., North Carolina State University, 1974.
- Shubov, Marianna A. (2004)**
Professor of Mathematics; Ph.D., St. Petersburg State University, Russia, 1985.
- Shwaery, Glenn T. (2000)**
Affiliate Assistant Professor of Animal and Nutritional Sciences; Ph.D., University of New Hampshire, 1994.
- Siggelakis, Susan J. (1988)**
Associate Professor of Political Science; Ph.D., Johns Hopkins University, 1988.
- Simic, Charles D. (1973)**
Professor of English; B.A., New York University, 1967.
- Simos, Evangelos O. (1977)**
Professor of Economics; Ph.D., Northern Illinois University, 1977.
- Sitkoff, Harvard (1976)**
Professor of History; Ph.D., Columbia University, 1975.
- Sivaprasad, Kondagunta U. (1969)**
Professor of Electrical and Computer Engineering; Ph.D., Harvard University, 1963.
- Sive, Barkley C. (2002)**
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- Small, Deena J. (2002)**
Assistant Professor of Medical Laboratory Science; Ph.D., University of Maine at Orono, 1998.
- Smith, Andrew E. (2005)**
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- Smith, Charles W., III (2003)**
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- Smith, Cheryl A. (1992)**
Extension Specialist, Plant Health and Extension Professor, Plant Biology; Ph.D., University of New Hampshire, 1992.
- Smith, David R. (1979)**
Professor of Art History; Ph.D., Columbia University, 1978.
- Smith, Kevin T. (1996)**
Affiliate Professor of Plant Biology; Ph.D., University of Georgia, 1982.
- Smith, Marie-louise (2001)**
Affiliate Assistant Professor of Natural Resources; Ph.D., University of New Hampshire, 2000.
- Smith, Nicholas J. (2002)**
Assistant Professor of Philosophy; Ph.D., Vanderbilt University, 2002.
- Sohl, Jeffrey E. (1983)**
Director of Center for Venture Research and Professor of Business Administration; Ph.D., University of Maryland, 1983.
- Solorzano, Eleanne M. (1999)**
Associate Professor of Business Statistics; Ph.D., University of South Carolina, 1999.
- Sonnenmeier, Rae M. (1996)**
Research Assistant Professor of Communication Sciences and Disorders; Ph.D., State University of New York at Buffalo, 1999.
- Sower, Stacia A. (1982)**
Professor of Biochemistry and Molecular Biology; Ph.D., Oregon State University, 1980.
- Sparr, Ted M. (1989)**
Professor of Computer Science; Ph.D., Texas A & M University, 1972.
- Stibler, Robert (1978)**
Professor of Music; D.M.A., Catholic University of America, 1979.
- Stine, William Wren (1984)**
Associate Professor of Psychology; Ph.D., Georgia Institute of Technology, 1983.
- Stokes, Martin (1999)**
Affiliate Professor of Animal Science; Ph.D., University of Glasgow, 1978.
- Stratopoulos, Theophanis (2000)**
Assistant Professor of Decision Sciences; Ph.D., University of New Hampshire, 1994.
- Straus, Murray A. (1968)**
Professor of Sociology; Ph.D., University of Wisconsin at Madison, 1956.
- Stucchi, Arthur F. (1994)**
Affiliate Associate Professor of Animal and Nutritional Sciences; Ph.D., University of New Hampshire, 1988.
- Sullivan, Elise R. (2001)**
Assistant Professor of Microbiology; Ph.D., University of Maryland, 1999.
- Sullivan, Janet R. (1985)**
Affiliate Associate Professor of Plant Biology; Ph.D., University of Oklahoma, 1984.
- Sullivan, Judith A. (1990)**
Professor of Nursing; Ed.D., University of Rochester, 1972.
- Sundberg, Donald C. (1978)**
Associate Professor of Materials Science; Ph.D., University of Delaware, 1970.
- Swartz, Erik E. (2000)**
Assistant Professor of Kinesiology; Ph.D., University of Toledo, 2000.
- Swier, Stanley R. (1978)**
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Swift, M. Robinson (1976)

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Tagliaferro, Anthony R. (1978)

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Talbot, Robert W. (1988)

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Tate, Stefanie (2001)

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Taylor, James T. (1977)

Professor of Zoology; Ph.D., Oregon State University, 1977.

Taylor, Robert L., Jr. (1984)

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Thomas, W. Kelley (2002)

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Thompson, Peter J. (2000)

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Tillinghast, Edward K. (1967)

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Tisa, Louis S. (1994)

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Tomellini, Sterling A. (1985)

Professor of Chemistry; 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 Science; Ph.D., Ohio State University, 1993.

Triplett, Timm A. (1981)

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Trout, B. Thomas (1969)

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Trubowitz, Rachel (1986)

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Trueblood, Dwight D. (2001)

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Tsang, Paul C. (1989)

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Tsukrov, Igor I. (1997)

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Tucker, Corinna Jenkins (2000)

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Tucker, James (1992)

Associate Professor of Sociology; Ph.D., University of Virginia, 1992.

Turner, Elise H. (1990)

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Turner, Heather A. (1991)

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Turner, Roy M. (1990)

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Ulrich, Laurel (1995)

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Upton, Timothy (2005)

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Urquhart, Peter W. (1989)

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Vagts, Peggy A. (1978)

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Van Zandt, Cynthia J. (1998)

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Vandever, Stacy D. (1998)

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VanGundy, Karen (2001)

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Varki, Elizabeth (1997)

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Vasudevan, Palligarnai T. (1988)

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Veal, Larry J. (1982)

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Venkatachalam, A. R. (1992)

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Violette, Catherine A. (1986)

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Von Damm, Karen L. (1992)

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Vroman, Neil B. (1984)

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Wake, Cameron P. (1995)

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Walsh, Wendy A. (2003)

Research Assistant Professor of Sociology; Ph.D., University of New Hampshire, 2002.

Wansart, William L. (1985)

Associate Professor of Education; Ed.D., University of Northern Colorado, 1984.

Ward, Judith D. (1972)

Associate Professor of Occupational Therapy; Ph.D., The Fielding Institute, 1997.

Ward, Larry G. (1989)

Research Associate Professor of Earth Sciences; Ph.D., University of South Carolina, 1978.

Ward, Sally (1980)

Professor of Sociology; Ph.D., Brown University, 1977.

Ware, Colin (2000)

Professor of Computer Science and Ocean Engineering; Ph.D., University of Toronto, Canada, 1980.

Warner, Rebecca M. (1981)

Professor of Psychology; Ph.D., Harvard University, 1978.

- Watson, Winsor H., III (1978)**
Professor of Zoology; Ph.D., University of Massachusetts at Amherst, 1978.
- Watt, David W. (1987)**
Professor of Mechanical Engineering; Ph.D., University of Michigan at Ann Arbor, 1987.
- Watters, David H. (1978)**
Professor of English; Ph.D., Brown University, 1979.
- Webb, Dwight (1967)**
Associate Professor of Education; Ph.D., Stanford University, 1967.
- Webster, Penelope E. (1987)**
Associate Professor of Communication Sciences and Disorders; Ed.D., Boston University, 1984.
- Weiner, James L. (1979)**
Associate Professor of Computer Science; Ph.D., University of California at Los Angeles, 1979.
- Weisman, Gary R. (1977)**
Professor of Chemistry; Ph.D., University of Wisconsin at Madison, 1976.
- Wells, Melissa (2004)**
Assistant Professor of Social Work; Ph.D., University of New Hampshire, 2004.
- Wells, Roger E. (1996)**
Clinical Professor and Senior Veterinary Pathologist; M.S., Michigan State University, 1981.
- Westfall, Mary E. (2005)**
Affiliate Assistant Professor of Natural Resources; Ph.D., University of New Hampshire, 2001.
- Wharton-McDonald, Ruth M. (1997)**
Associate Professor of Education; Ph.D., State University of New York at Albany, 1996.
- Whistler, Cheryl A. (2004)**
Assistant Professor of Microbiology; Ph.D., Oregon State University, 2000.
- White, Barbara Prudhomme (1998)**
Associate Professor of Occupational Therapy; Ph.D., University of Minnesota, 1997.
- Wible, James R. (1984)**
Professor of Economics; Ph.D., Pennsylvania State University, 1980.
- Williams, Daniel C. (1970)**
Associate Professor of Psychology; Ph.D., University of California at Santa Barbara, 1970.
- Williams-Barnard, Carol L. (1978)**
Associate Professor of Nursing; D.N.Sc., Catholic University of America, 1979.
- Wirth, Clifford J. (1981)**
Associate Professor of Political Science; Ph.D., Southern Illinois University at Carbondale, 1976.
- Witzling, Mara R. (1977)**
Professor of Art History; Ph.D., Cornell University, 1978.
- Wolper, Ethel Sara (1996)**
Associate Professor of History; Ph.D., University of California at Los Angeles, 1994.
- Wong, Edward H. (1978)**
Professor of Chemistry; Ph.D., Harvard University, 1975.
- Wood, Craig H. (1990)**
Associate Professor of Operations Management; Ph.D., Ohio State University, 1991.
- Woodward, Robert S. (2001)**
Professor of Health Management and Policy; Ph.D., Washington University, 1972.
- Woodward, William R. (1975)**
Professor of Psychology and Affiliate Professor of History; Ph.D., Yale University, 1975.
- Wright, John J. (1970)**
Professor of Physics; Ph.D., University of New Hampshire, 1969.
- Wright, Steven C. (2002)**
Associate Professor of Kinesiology; Ed.D., Boston University, 1992.
- Wrighton, J. Mark (2000)**
Assistant Professor of Political Science; Ph.D., University of Iowa, 1997.
- Wunder, Amanda (2003)**
Assistant Professor of History; Ph.D., Princeton University, 2002.
- Wunsch, David R. (2000)**
Affiliate Professor of Earth Sciences; Ph.D., University of Kentucky, 1992.
- Xiao, Xiangming (1997)**
Research Associate Professor of Earth, Oceans, and Space; Ph.D., Colorado State University, 1994.
- Xu, Le (2003)**
Assistant Professor of Accounting; Ph.D., University of Massachusetts at Amherst, 2003.
- Zercher, Charles K. (1991)**
Professor of Chemistry; Ph.D., University of Notre Dame, 1989.
- Zhang, Jianqiu (2002)**
Assistant Professor of Electrical and Computer Engineering; Ph.D., State University of New York at Stony Brook, 2002.
- Zhou, Honggeng (2004)**
Assistant Professor of Decision Sciences; Ph.D., Ohio State University, 2003.
- Zhou, Kuan (2004)**
Assistant Professor of Electrical and Computer Engineering; Ph.D., Rensselaer Polytechnic Institute, 2004.
- Zunz, Sharyn J. (1993)**
Associate Professor of Social Work; Ph.D., Fordham University, 1993.

Directions to Campus



Hamilton Smith Hall

By Car

From Boston, Mass. Follow I-95 North. When approaching the Portsmouth, N.H., area, take the exit bearing left, marked “NH Lakes and White Mountains, Routes 4 & 16.” Continue on that road to Exit 6W (Concord-Durham) and follow Route 4 West. Exit at 155A and turn toward Durham. Follow 155A through a short stretch of farmlands and fields 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 Concord, N.H. Follow Route 4 East, and take the UNH/Durham exit at 155A. Follow a short stretch of farmlands and fields to the UNH campus.

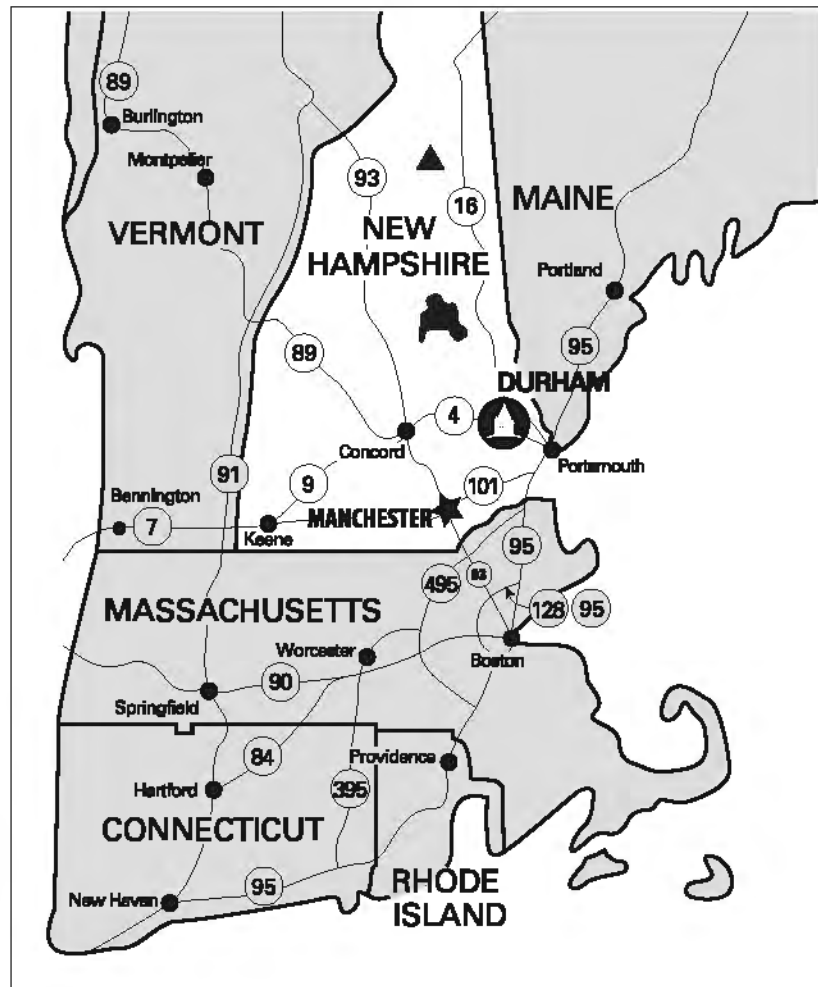
From Manchester, N.H. Take Route 101 to the junction of Route 125. Follow Route 125 North to the Lee traffic circle. Drive east on Route 4, and then follow the directions above for driving from Concord.

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) 742-5111 or, outside New Hampshire, (800) 258-7111.

By Bus

Depart C & J Trailways bus service across from South Station in Boston. For further information call (603) 742-5111 from New Hampshire or (800) 258-7111 outside of New Hampshire.



Campus Map

Student Activities/ Lodging

Athletic Arena
Dairy Bar
Field House
New England Center
Memorial Union Building
Whittemore Center

Apartment Complexes

The Gables
Forest Park Apartments
Woodside Apartment

Administrative Offices/ Support Services

Elliott Alumni Center
Grant House, Office of Admissions
Health Services
Hood House
Petee House
Thompson Hall
Verrette House
Visitor Information Center
Wolff House
Zais Hall

Residence and Dining Halls

Alexander Hall
Babcock House
Christenson Hall
Congreve Hall
Devine Hall
Engelhardt Hall
Fairchild Hall
Gibbs Hall
Hetzl Hall
Hitchcock Hall
Holloway Commons
Hubbard Hall
Huddleston Dining Hall
Hunter Hall
Jessie Doe Hall
Lord Hall
McLaughlin Hall
Mills Hall
Mini-dorms
Philbrook Dining Hall
Randall Hall
Sawyer Hall
Scott Hall
Smith Hall
Stillings Dining Hall
Stoke Hall
Williamson Hall

Academic Buildings

Barton/Cole Hall
Conant Hall
DeMerritt Hall
Dimond Library
Equestrian Center
Greenhouses
Hamilton Smith Hall
Hewitt Hall
Horton Social Science Center
Human Nutrition Center
James Hall
Kendall Hall
Kingsbury Hall
McConnell Hall
Morrill Hall
Morse Hall
Murkland Hall
Nesmith Hall
New Hampshire Hall
Ocean Engineering Building
Paul Creative Arts Center
Parsons Hall
Petee Hall
Putnam Hallß
Rudman Hall
Spaulding Life Sciences Center
Taylor Hall



Academic Calendars



UNH at Manchester and river view

2005–2006 Academic Calendar

Semester I

| | |
|----------------------------|---------------------------------------|
| Aug. 29, M | Classes begin |
| Sept. 1, T | Labor Day, University Holiday |
| Oct. 4, Tu | Rosh Hashanah* |
| Oct. 10, M | Columbus Day, Fall break, no classes |
| Oct. 11, Tu | Classes follow MONDAY schedule |
| Oct. 13, Th | Yom Kippur* |
| Oct. 14, F | Midsemester |
| Nov. 8, Tu | Election day; no exams scheduled |
| Nov. 11, F | Veterans Day, University Holiday |
| Nov. 23, W | Classes follow MONDAY schedule |
| Nov. 24–25, Th–F | Thanksgiving Holidays |
| Nov. 28, M | Classes resume |
| Dec. 19, F | Last day of classes |
| Dec. 12, M | Reading day; Final exams begin 6 p.m. |
| Dec. 17, Sat | Final exams end |

Semester II

| | |
|---------------------------|---|
| Jan. 16, M | Martin Luther King Jr. Day, University Holiday |
| Jan. 17, Tu | Classes begin |
| Mar. 10, F | Midsemester |
| Mar. 13–17, M–F | Spring recess |
| Mar. 20, M | Classes resume |
| Apr. 13, Th | Passover* |
| Apr. 14, F | Good Friday* |
| Apr. 21, F | Orthodox Good Friday* |
| May 8, M | Last day of classes |
| May 9–10, Tu–W | Reading days |
| May 11, Th | Final exams begin |
| May 18, Th | Final exams end |
| May 20, Sat | Commencement |

2006–2007 Academic Calendar

Semester I

| | |
|----------------------------|--|
| Aug. 28, M | Classes begin |
| Sept. 4, M | Labor Day, University Holiday |
| Sept. 23, Sat | Rosh Hashanah* |
| Oct. 2, M | Yom Kippur* |
| Oct. 9, M | Columbus Day, Fall break, no classes |
| Oct. 10, Tu | Classes follow MONDAY schedule |
| Oct. 13, F | Midsemester |
| Nov. 7, Tu | Election Day, no exams scheduled |
| Nov. 10, F | Veterans Day, University Holiday |
| Nov. 22, W | Classes follow FRIDAY schedule |
| Nov. 23–24, Th–F | Thanksgiving Holidays |
| Nov. 27, M | Classes resume |
| Dec. 8, F | Last day of class |
| Dec. 11, M | Reading day; Final exams begin 6:00 p.m. |
| Dec. 16, Sat | Final exams end |

Semester II

| | |
|---------------------------|---|
| Jan. 15, M | Martin Luther King Jr. Day, University Holiday |
| Jan. 16, Tu | Classes begin |
| Mar. 9, F | Midsemester |
| Mar. 12–16, M–F | Spring recess |
| Mar. 19, M | Classes resume |
| Apr. 3, Tu | Passover* |
| Apr. 6, F | Good Friday*/ Orthodox Good Friday* |
| May 7, M | Last day of classes |
| May 8–9, Tu–W | Reading days |
| May 10, Th | Final exams begin |
| May 17, Th | Final exams end |
| May 19, Sat | Commencement |

*These holidays, important to many members of the University community, are not University holidays, but they are listed here to facilitate planning of University events.

Directory

Directory Assistance and Information

University Operators
(603) 862-1234 (off-campus)
Dial 0 (on campus)

University of New Hampshire home page
www.unh.edu

Other Helpful Resources

Advising and Career Services

862-2064
www.unh.edu/uacc

Affirmative Action Office

V/TTY 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

V/TTY 862-2607
www.unh.edu/access/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 at Manchester

641-4321
www.unhm.unh.edu

UNH Bookstore

862-2140
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

Program List

Master of Arts

Counseling
Economics
English
* Language and Linguistics
* Literature
* Writing
Environmental Education
History
* Museum Studies
Justice Studies
Music
* Music Education
* Music Studies
Political Science
Psychology
Sociology
Spanish

Master of Science

Accounting
Animal Sciences
Biochemistry
Chemical Engineering
Chemistry
Civil Engineering
Communication Sciences and Disorders
* Early Childhood Intervention
* Language and Literacy Disabilities
Computer Science
Earth Sciences
* Geology
* Ocean Mapping
* Oceanography
Electrical Engineering
Family Studies
* Marriage and Family Therapy
Genetics
Hydrology
Kinesiology
Management of Technology
Materials Science
Mathematics
* Applied Mathematics
* Statistics
Mechanical Engineering
Microbiology
Natural Resources
* Environmental Conservation
* Forestry
* Soil Sciences
* Water Resources
* Wildlife
Nursing
Nutritional Sciences
Occupational Therapy
Ocean Engineering
* Ocean Mapping
Physics
Plant Biology
Recreation Management and Policy
* Recreation Administration
* Therapeutic Recreation Administration
Resource Administration and Management
Resource Economics
Zoology

Master of Arts in Teaching

Elementary Education
Secondary Education

Master of Education

Administration and Supervision
Counseling
Early Childhood Education
* Special Needs
Elementary Education
Reading
Secondary Education
Special Education
Teacher Leadership

Master of Science for Teachers

Chemistry
College Teaching
English
Mathematics

Master of Business Administration

Master of Arts in Liberal Studies

Master of Fine Arts

Painting

Master of Public Administration

Master of Social Work

Certificate of Advanced Graduate Study

Educational Administration and Supervision

Doctor of Philosophy

Animal and Nutritional Sciences
Biochemistry
Chemistry
* Chemistry Education
Computer Science
Earth and Environmental Sciences
* Geology
* Oceanography
Economics
Education
Engineering
* Chemical Engineering
* Civil Engineering
* Electrical Engineering
* Materials Science
* Mechanical Engineering
* Ocean Engineering
* Systems Design
English
Genetics
History
Mathematics
Mathematics Education
Microbiology
Natural Resources and Environmental Studies
Physics
Plant Biology
Psychology
Sociology
Zoology

*Center for Graduate and
Professional Studies at University of
New Hampshire at Manchester*

Master of Arts

Counseling

Master of Arts in Teaching

Elementary Education
Secondary Education

Master of Education

Administration and Supervision
Counseling
Elementary Education
Secondary Education

Master of Business Administration

Health Management

Master of Public Administration

Master of Public Health

Ecology
Nursing
Policy and Management

Master of Social Work

Certificate of Advanced Graduate Study

Educational Administration and Supervision

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Volume XCV, No. 3, October 2005. The *Bulletin of the University of New Hampshire* (ISSN 8750-9040) is published four times per year: twice in April, once in September, and once in October, by University Communications and Marketing, Schofield House, UNH, 8 Garrison Avenue, Durham, NH 03824-3556. Periodicals postage paid at Durham, NH 03824. Postmaster, send address changes to *Bulletin of the University of New Hampshire*, Graduate School, Schofield House, UNH, 8 Garrison Avenue, Durham, NH 03824-3556.

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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.

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This catalog is produced by Editorial and Creative Services for the Graduate School.

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Graduate School Programs

Master of Arts

Counseling
Economics
English

- Language and Linguistics
- Literature
- Writing

Environmental Education
History

- Museum Studies

Justice Studies
Music

- Music Education
- Music Studies

Political Science
Psychology
Sociology
Spanish

Master of Science

Accounting
Animal Sciences
Biochemistry
Chemical Engineering
Chemistry
Civil Engineering
Communication Sciences and Disorders

- Early Childhood Intervention
- Language and Literacy Disabilities

Computer Science
Earth Sciences

- Geology
- Ocean Mapping
- Oceanography

Electrical Engineering
Family Studies

- Marriage and Family Therapy

Genetics
Hydrology
Kinesiology
Management of Technology
Materials Science
Mathematics

- Applied Mathematics
- Statistics

Mechanical Engineering
Microbiology
Natural Resources

- Environmental Conservation
- Forestry
- Soil Sciences
- Water Resources
- Wildlife

Nursing
Nutritional Sciences
Occupational Therapy
Ocean Engineering

- Ocean Mapping

Physics
Plant Biology
Recreation Management and Policy

- Recreation Administration
- Therapeutic Recreation Administration

Resource Administration and Management
Resource Economics
Zoology

Master of Arts in Teaching

Elementary Education
Secondary Education

Master of Education

Administration and Supervision
Counseling
Early Childhood Education

- Special Needs

Elementary Education
Reading
Secondary Education
Special Education
Teacher Leadership

Master of Science for Teachers

Chemistry
College Teaching
English
Mathematics

Master of Business Administration

Master of Arts in Liberal Studies

Master of Fine Arts

Painting

Master of Public Administration

Master of Social Work

Certificate of Advanced Graduate Study

Educational Administration and Supervision

Doctor of Philosophy

Animal and Nutritional Sciences
Biochemistry
Chemistry

- Chemistry Education

Computer Science
Earth and Environmental Sciences

- Geology
- Oceanography

Economics
Education
Engineering

- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Materials Science
- Mechanical Engineering
- Ocean Engineering
- Systems Design

English
Genetics
History
Mathematics
Mathematics Education
Microbiology
Natural Resources and Environmental Studies
Physics
Plant Biology
Psychology
Sociology
Zoology

Center for Graduate and Professional Studies at University of New Hampshire at Manchester

Master of Arts

Counseling

Master of Arts in Teaching

Elementary Education
Secondary Education

Master of Education

Administration and Supervision
Counseling
Elementary Education
Secondary Education

Master of Business Administration

Health Management

Master of Public Administration

Master of Public Health

Ecology
Nursing
Policy and Management

Master of Social Work

Certificate of Advanced Graduate Study

Educational Administration and Supervision

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