Northeastern University

# Graduate Catalog
# 2014–2015

# General Admission and Transfer Credit

## REGULATIONS APPLYING TO ALL DEGREE PROGRAMS

A copy of each graduate degree program as approved by the Board of Trustees and as officially amended is on file in the Office of the Provost. This record contains the goals of all requirements for the program. All descriptions of the program in the university, college, and department publications must conform to this officially approved record. Descriptions of PlusOne programs are also on file in the provost's office.

Standards of admission are specific to certificate and degree programs.

## Admission Requirements

Prior to beginning a graduate program, students must meet one of the following conditions:

- Have received a bachelor's degree or equivalent from an accredited college or university
- Have received a master's degree or equivalent degree from an accredited college or university
- Have received a first professional or equivalent degree from an accredited college or university
- Have been accepted into an approved bachelor's-to-graduate-degree program

## Registration

Northeastern University has a policy of continuous registration while enrolled full-time in a graduate degree program.

All students must register for course work, research, thesis, dissertation, or continuation courses for each semester in order to be in good standing in the program. Registration is continuous with the exception of summer. A student must be registered in summer only if he or she will be graduating in the summer or holds an award that requires registration. Students must be registered during the semester in which they complete all requirements for their degree.

When circumstances warrant, e.g., medical exigency, a student may seek a leave of absence.

The university parental leave policy is available in the University Policies section of the Office of the Provost website (www.northeastern.edu/provost/policies/graduate.html).

## Transfer Credit

A maximum of 9 semester hours of credit (or 12 quarter hours) obtained at another institution may be accepted toward the degree, provided the credits consist of work taken at the graduate level for graduate credit, carry grades of 3.000 or better, have been earned at an accredited institution, and have not been used toward any baccalaureate or advanced degree or certificate at another institution.

Transfer credits must be no more than five academic years old at the time the student is admitted to graduate study. Courses older than five years will be accepted only in rare circumstances.

Grades earned in transferred credits are not counted as part of the overall grade-point average earned at Northeastern.

Transfer credits will only be accepted at the discretion of the academic department and the college's graduate office.

*Note:* For the College of Professional Studies' (CPS) transfer policy, see page 166.

## Special Student Status

Those students who are not pursuing a specific degree program are classified as special students. Special students must satisfy the requirements for admission and perform at a satisfactory level in course work in order to continue as special students. Performance of a special student in graduate courses should average at least 3.000 in order for the student to be allowed to register for any subsequent classes. The number of credits that may be earned by a student enrolled as a special student is at the discretion of each graduate office. However, only a maximum of 12 graduate semester hours may be applied to a graduate program. Students interested in pursuing a degree program must make a formal application to the degree program. Special students who do not register for four consecutive semesters, excluding summer semester, will be subject to review and possible withdrawal.

Special students are not eligible for Northeastern financial aid awards or federal financial aid.

## Provisional Student Status

Provisional students are students whose academic records do not qualify them for acceptance as regular students. Provisional students must obtain a 3.000 grade-point average in the first 9 semester hours of graduate courses in order to continue in the graduate program or meet specifically delineated departmental requirements to qualify for full acceptance to a degree program. Students may not earn more than 9 semester hours while enrolled in provisional status. After the completion of 9 semester hours, students must either satisfy regular admission standards or be denied further registration in the graduate program.

Provisional students are not eligible for Northeastern financial aid awards or federal financial aid.

International students cannot be admitted provisionally or conditionally.

## Undergraduate Credit for Graduate Courses

Undergraduate students who are juniors or seniors may enroll in graduate courses for credit toward their undergraduate degrees if they meet all prerequisites as determined by the graduate director and they receive permission from the instructor of the course and from the student's undergraduate academic advisor.

## Inter- and Intracollege Graduate Courses

In colleges that have a graduate school, units within the college that do not offer graduate degree programs may offer a maximum of two courses per year if the courses are approved within a unit or units offering a graduate degree program. These courses will be subject to the same review process as other graduate courses.

## University-Mandated Training

All students must fulfill all university-mandated ethics and safety training.

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### REGULATIONS APPLYING ONLY TO DOCTOR OF PHILOSOPHY (PhD) PROGRAMS

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## Committee in Charge of the Graduate Student's Degree Program

The committee in charge of the graduate student's degree program is that body charged with overseeing all academic and administrative matters relating to the program. This committee will be a departmental or, in the case of colleges without departments, a college committee.

## PhD Dissertation Committees

No dissertation committee shall have fewer than three faculty members, two of whom shall be from Northeastern University. The chair of the dissertation committee will be a full-time tenured or tenure-track member of the faculty of Northeastern University and will hold an appropriate doctorate. A research faculty member may chair a dissertation committee if he or she holds an appropriate doctorate and has received the approval to do so from the tenured and tenure-track faculty members of the unit(s) in which his or her appointment resides.

If a student's major advisor leaves Northeastern, that person may continue the research direction of the dissertation or thesis. However, a co-advisor must be appointed from the academic department or program. The student will then have two advisors, one an official member of the Northeastern faculty who will be available for research and administrative matters and the ex-Northeastern advisor. If a new major advisor is appointed, the ex-Northeastern faculty member may serve as an outside member of the committee.

The PhD committee should be appointed early enough to advise in the formulation of the student's program and in refining the research topic for the dissertation. Within the constraints of the above criteria, the PhD program faculty will determine the process by which dissertation committees are established. The final list of dissertation committee members shall be reported to the Associate Dean for Graduate Education.

Each PhD student shall have an annual review of his or her progress toward the degree. A copy of the review shall be submitted to the student.

After reaching candidacy, students must register for Dissertation for a minimum of two semesters in order to fulfill their formal residency requirement. Continuation status enrollment is for students who are postcandidacy, have completed all course work, and are actively engaged in completing a thesis or dissertation.

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### GENERAL REGULATIONS AND REQUIREMENTS FOR NONDEGREE CERTIFICATE PROGRAMS

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## Certificates That Appear on the Transcript

### DEFINITION

A nondegree certificate program is a program of study requiring at least four graduate courses, or 12 semester hours of graduate credit, but no more than 30 semester hours of graduate credit. In CPS the number of credits for a certificate varies from 16 quarter hours to 30 quarter hours. Successful completion of such a certificate program will be recorded on the student's transcript. Appropriate graduate credits taken as part of a nondegree certificate program may be counted toward a regular graduate degree at the discretion of the committee in charge of the graduate program.

### ADMISSION

All students admitted to a certificate program must satisfy the general requirements for admission as a graduate student and the requirements for the specific certificate program.

### PROCEDURES FOR THE APPROVAL OF NEW CERTIFICATE PROGRAMS

New certificate programs are developed following the procedure outlined in the Guidelines for New Degree Programs found in the Office of the Provost website at www.northeastern.edu/provost/policies/documents/New_Program_Proposal_Guidelines.pdf.

### PROCEDURES FOR CERTIFICATE PROGRAM REVIEW

Certificate programs will be reviewed in the context of departmental reviews. Information about these reviews can be found in the Office of the Provost website at www.northeastern.edu/provost/policies/documents/Dept_Review_Guidelines.pdf.

### GENERAL REGULATIONS

Except as indicated herein, certificate programs shall be subject to the same regulations and procedures as master's degree programs.

## Course Programs That Do Not Appear on the Transcript

Colleges offering graduate programs may choose to recognize the completion of sequences of courses requiring fewer courses than a certificate program. No such recognition shall be placed on the student's transcript. Such a nontranscript program shall not involve more than four graduate courses or 12 semester hours of graduate credit. The requirements of any such nontranscript program will be forwarded to the Vice Provost for Graduate Education for record-keeping purposes.

## GENERAL REGULATIONS AND REQUIREMENTS FOR THE MASTER'S DEGREE

### Admission

All students admitted to a master's program must satisfy the general requirements for admission as a graduate student and the requirements for the specific master's program.

### Academic Classifications

Those students who have a bachelor's degree from an accredited college or university and satisfy the admissions requirements of the appropriate graduate school are classified as regular students. Domestic students whose records are not of acceptable quality may be accepted as provisional students. International students cannot be accepted provisionally. Provisional students must obtain a 3.000 grade-point average in the first 9 semester hours or otherwise fulfill the delineated departmental requirements to continue in the graduate program; they then become regular students. Any student whose record is not satisfactory may be dropped by action of the committee in charge of the degree program.

### Course Requirements

A candidate for the master's degree must satisfactorily complete an approved program conforming to the requirements of the graduate school and department or program in which the candidate is registered.

The requirements for the master's degree are a minimum of 30 semester hours of graduate work beyond the bachelor's degree, except in the College of Professional Studies, in which 45 quarter hours of graduate work are required. There may also be other study required by the graduate school and department or program concerned. Students enrolled in a PlusOne program will be allowed to double-count prescribed graduate courses as part of their undergraduate degree.

Lower-division undergraduate course work will not be accepted to meet the minimum of postbaccalaureate semester or quarter hours required for the master's degree. No more than 4 upper-level undergraduate semester hours can be used to meet the minimum 30 graduate-semester-hour requirement and then only after approval by the local unit and the Associate Dean for Graduate Education.

### Language Requirement

The committee in charge of the degree program may establish a language requirement.

### Comprehensive Examination

At the discretion of the committee in charge of the degree program, final written or oral comprehensive examination(s) may be required. Such examinations will be given at least two weeks before the Commencement at which the degree is to be awarded.

### Thesis

If a thesis is required in partial fulfillment of degree requirements, it must show independent work based, in part, on original material and must meet the approval of the student's thesis committee. The committee in charge of the degree program is responsible for providing instructions concerning preparation of the thesis.

The student must submit the thesis to ProQuest in sufficient time to allow for acceptance before the Commencement clearance deadline. Information on archiving a thesis with ProQuest is available in the program-relevant graduate office.

### Time Limitation

Course credits earned in the program of graduate study, or accepted by transfer, are valid for a maximum of seven years unless the relevant graduate office grants an extension.

## GENERAL REGULATIONS AND REQUIREMENTS FOR THE CERTIFICATE OF ADVANCED GRADUATE STUDY

The Certificate of Advanced Graduate Study (CAGS) provides specialized study above the master's degree. It is a course of study that falls between the master's and doctoral degree and culminates in a graduate certificate.

### Admission

An applicant for the Certificate of Advanced Graduate Study must hold a master's degree in a related field from an accredited institution and must complete the admission procedure described in the material of the graduate school. All students admitted to a CAGS program must satisfy the general requirements for admission as a graduate student and the requirements for the specific CAGS program.

### Academic Classifications and Degree Candidacy

Students admitted to a Certificate of Advanced Graduate Study program will be designated as candidates for the Certificate of Advanced Graduate Study.

### Course Requirements

A candidate for the CAGS must satisfactorily complete an approved program conforming to the requirements of the graduate

school and department or program in which the candidate is registered. The candidate must complete a minimum of 24 semester hours or, in the case of the College of Professional Studies, 32 quarter hours of credit beyond the master's degree.

## Time Limitation

Course credits earned in the program of graduate study, or accepted by transfer, are valid for a maximum of seven years unless the relevant graduate office grants an extension.

## GENERAL REGULATIONS AND REQUIREMENTS FOR THE RESEARCH DOCTORATE (PhD AND EdD)

The formal requirements for the PhD degree are the following: completion of the course work mandated by the individual degree program, fulfillment of the residency requirement, formal training in the Responsible Conduct of Research (ori.hhs.gov/documents/rcrintro.pdf) for students as appropriate, a comprehensive examination or equivalent if required by the degree program, continuous registration, a final examination conducted by the student's PhD committee, and submission of a dissertation to the relevant graduate office and to ProQuest for archiving. The dissertation must be based on original and independent research.

## Admission

All students admitted to a doctor of philosophy program must satisfy the general requirements for admission as a graduate student and the requirements for the specific PhD program.

## Academic Classification and Degree Candidacy

### DOCTORAL STUDENT

Students in this classification have been admitted to a doctoral program.

### DOCTORAL CANDIDATE

Every degree program shall have a policy defining candidacy. Students in this classification will have completed all departmental, college, and university requirements except for the dissertation. These requirements vary by program but minimally include completion of approximately 30 semester hours of acceptable graduate work beyond the bachelor's degree or possession of a previously earned master's degree that is acceptable to the department and certification by the graduate office. The requirements frequently include a comprehensive examination or a proposal defense.

## Residence

Every degree program shall have a policy defining residency for candidates for doctoral degrees. The committee in charge of the degree program defines residency and specifies the method by which any residence requirement is satisfied.

## Course Requirements

The program committee in charge of the degree program specifies the doctoral course requirements.

## Language Requirements

The committee in charge of the degree program establishes the nature of the language requirement, if any.

## Responsible Conduct of Research

By the end of their third year, all doctoral students for whom the Responsible Conduct of Research training is required must have completed this training. Training sessions are highly recommended for all doctoral students. The Office of the Vice Provost for Research is responsible for ensuring that appropriate training is available for doctoral students.

## Qualifying Examination(s)

In departments that require qualifying examinations, students must be notified in writing of the nature and regulations governing these examinations and of how their performance on the examinations will affect their normal progress toward the degree. The graduate office should be made aware of the department regulations concerning such examinations.

## Comprehensive Examination(s)

Degree programs may require a comprehensive examination as the final step before becoming a PhD candidate. The purpose of this examination(s) is to test the knowledge and skills of the student in a particular area and his or her knowledge of recent research developments in the field. The PhD program faculty will determine the process by which comprehensive examination committees are established.

## Dissertation

Candidates for the degree of Doctor of Philosophy must complete a dissertation that embodies the results of extended research and makes an original contribution to the field. This work should give evidence of the candidate's ability to carry out independent investigation and to interpret in a logical manner the results of the research. The committee in charge of the degree program establishes the method of approval of the dissertation.

Candidates for the degree of Doctor of Education must complete a dissertation that embodies the results of extended, creative, and independent research and proper evaluation and interpretation of the results. The committee in charge of the degree program establishes the method of approval of the dissertation.

## Final Oral Examination and Submission of Dissertation

The final oral examination will be carried out after the completion of all other requirements of the degree. The final oral examination will be on the subject matter of the doctoral dissertation and significant

developments in the field of the dissertation. Other fields may be included if recommended by the examining committee.

Students must have completed all degree conferral requirements (including having successfully defended their thesis and having submitted their approved thesis as required by the department and to ProQuest) by the last day of the final exam period in order to be graduated in that semester. Graduate students must be continuously enrolled through the end of the term in which they have successfully completed all degree conferral requirements.

## Time Limitation

After the establishing of degree candidacy, a maximum of five years will be allowed for the completion of the degree requirements. Under extenuating circumstances, a student may request an extension of this time frame.

## GENERAL REGULATIONS AND REQUIREMENTS FOR INTERDISCIPLINARY GRADUATE DEGREES

Northeastern University offers individually designed and ongoing interdisciplinary graduate programs. The individually designed program is for the student who wishes to pursue graduate studies in an area that substantially overlaps two or more units. In such cases, that student may design, in consultation with his or her faculty advisor(s), an interdisciplinary program. The program will correspond in scope and depth to Northeastern's established degree standards but need not agree exactly with the regulations of individual units. There are also ongoing programs for students who wish to pursue graduate studies in areas in which two or more units have jointly established a graduate program. As with individually designed programs, ongoing programs correspond in scope and depth to Northeastern's established degree standards but do not agree exactly with the regulations of individual units.

The general regulations and requirements for graduate programs (above) apply to interdisciplinary programs. Additional regulations and requirements are stated below.

## Admission

### UNIVERSITY-APPROVED INTERDISCIPLINARY PROGRAMS

Ongoing interdisciplinary programs are university-approved programs in areas of study that combine study in two or more units.

Each interdisciplinary graduate program shall be managed as established in the approved design of the program. All interdisciplinary programs, both master's and PhD, shall identify a committee with representation from all of the units involved to oversee the administration of the program in accordance with the guidelines established above. All administrative details, including but not limited to admission, probation notification, and graduation clearance, shall be carried out by the registration unit. Curriculum design and any subsequent modifications to a program shall be approved by the established procedures within all of the units involved.

### INDIVIDUALLY DESIGNED INTERDISCIPLINARY PROGRAMS

In order to pursue an individually designed, interdisciplinary graduate program, a student must have been accepted into an approved graduate program that will serve as the registration unit for the interdisciplinary program.

Successful application for admission to an individually designed interdisciplinary program consists of a carefully thought-out, written proposal describing the areas of proposed study and research. Part of this proposal will be a list of courses to be taken; a description of the qualifying and comprehensive examination process to be used, if any; a timeline; and any other requirements of the program. This proposal must be designed and prepared in consultation with a terminally prepared faculty member at Northeastern University. In the case of an interdisciplinary PhD proposal, this faculty member must meet the qualifications defined above. At least two units must be participating in order for the proposal to be deemed interdisciplinary. The proposal must correspond in scope and depth to Northeastern's established degree standards. All of the units and the associate dean(s) for graduate education of the participating college(s) must approve the proposal. Approval of the proposal indicates that appropriate curricular and other academic norms for the specified degree are satisfied. A proposal for a PhD must define an area of study in which original and independent research can take place.

Admission of the student to the interdisciplinary program of study requires favorable recommendation by all units involved, including the registration unit. It also requires the commitment by a faculty member at Northeastern University to be the advisor of the student and chair of the interdisciplinary committee for the student. In the case of an interdisciplinary PhD program, this faculty member must meet the qualifications defined above. This faculty member may or may not be a member of the registration unit. The committee must be assembled within the first semester of the program and must include faculty members from all of the participating units. At least two units must be represented on the committee.

This committee will be responsible for overseeing the completion of the degree requirements. It will also be responsible for the administrative elements of the program, such as the monitoring of satisfactory progress; the design and grading of the preliminary and comprehensive exams, if applicable; graduation clearance; etc. This interdisciplinary committee is also responsible for an annual review of the progress of the student and for reporting this progress to the registration unit on an annual basis.

# *Information for Entering Students*

## INFORMATION FOR NEW GRADUATE STUDENTS

Welcome to graduate studies at Northeastern University. Get to know Northeastern University through the eyes of some of our graduate students, alumni, and faculty by looking at the resources at www.northeastern.edu/graduate/prospective-students.

Graduate education at Northeastern integrates the highest level of scholarship across disciplinary boundaries with significant research and experiential learning opportunities in Boston and around the world. Northeastern offers more than 165 graduate programs, ranging from doctoral and full-time master's programs to part-time programs and graduate certificates, including an array of innovative PhD and master's programs designed to prepare students for emerging new fields. Students are able to take courses on campus, online, or in hybrid formats. This multidimensional learning environment offers students the knowledge and experience to excel and the flexibility to create the educational experience that best meets their needs. Our graduates are well positioned to meet the diverse demands of careers in academia, industry, and the professions.

## LIVING IN BOSTON

Boston is an exciting city that is the perfect place for students. For links to Boston landmarks, cultural institutions, news sources, city guides, and off-campus apartment listings, please visit www.northeastern.edu/graduatestudentlife.

### Off Campus Student Services

226 Curry Student Center
617.373.8480
offcampus@neu.edu
www.northeastern.edu/offcampus

Off Campus Student Services provides a wide range of information, resources, and educational workshops for students who are interested in living off campus or who already live off campus.

Off Campus Student Services provides assistance in searching for off-campus housing, finding roommates, and learning more about the communities surrounding Northeastern University. Our website offers a host of resources including an apartment search database, information on transportation, and City of Boston tenant services, as well as contact information for area real estate professionals.

Off Campus Student Services publishes a monthly e-newsletter that provides valuable tips and information on upcoming programs and events both on campus and off campus.

Individuals interested in receiving our newsletter can email us at offcampus@neu.edu or stop into the office Monday through Friday.

For more information, please visit the Off Campus Student Services website at www.northeastern.edu/offcampus.

## INFORMATION FOR INTERNATIONAL STUDENTS

### International Student and Scholar Institute

405 Ell Hall
617.373.2310
617.373.8788 (fax)
www.northeastern.edu/issi

The International Student and Scholar Institute (ISSI) offers a vast array of programs and services to more than 7,500 international students and scholars who represent approximately 140 nations.

The ISSI also works to promote meaningful interaction and intercultural understanding among citizens of other countries and their peers from the United States, providing educational and cultural enrichment opportunities for all members of Northeastern and the community at large.

The ISSI oversees the Student and Exchange Visitor Information System (SEVIS) at Northeastern, as mandated by the U.S. federal government, in order to ensure compliance with regulations and procedures affecting those international students and scholars in specified nonimmigrant visa classifications.

Affiliation with the ISSI begins with admssion to the academic program and continues through such initiatives as the ISSI's two-month cultural festival, "ISSI Carnevale," which celebrates the cultural diversity of the entire university community. For a list of ISSI services and programs, visit the website.

International students must maintain full-time status at Northeastern to be in compliance with immigration and SEVIS regulations. Also, they must not engage in any type of employment unless authorized by the ISSI. Note that timely registration for courses is especially important so that they may remain in compliance with current federal regulations. They should consult with the ISSI if they have questions about their individual status.

### Coming to Boston

Preparing to travel to Boston and begin your studies at Northeastern University is exciting, and you have many things to do in preparation for both. When you plan carefully, your travels and arrival in Boston should go smoothly. Here are some of the key things you should do in preparation.

- **Obtain your F-1 or J-1 visa** from the U.S. embassy or consulate in your home country to be eligible to study in the United States. An international student may attend Northeastern in a nonimmigrant status other than F-1 or J-1 only if U.S. Immigration regulations allow for study in the United States under that specific nonimmigrant visa classification. Some international students must apply and be approved for a change of status (e.g., from F-2 to F-1) before beginning the program at Northeastern. For detailed information/instructions specific to your current nonimmigrant status, as well as eligibility to participate in co-op or other forms of experiential learning required by your academic program, please contact the ISSI at www.northeastern.edu/issi/visaprocess.html.

- **Mandatory Student Health Insurance:** Since September 1989, Massachusetts law (M.G.L. c.15A, § 18) has required every full-time and part-time student enrolled in a certificate, diploma, or degree-granting program in a Massachusetts institution of higher learning to participate in a Student Health Program or in a health benefit plan with comparable coverage. The Student Health Program defines a part-time student as a student enrolled in at least 75 percent of the full-time curriculum. (CPS graduate students–seven credits, part-time graduate students–six credits). Purchase health insurance coverage if you are not already covered by a policy that meets Massachusetts state requirements. See www.northeastern.edu/issi/insurance.html for more information.

Make sure you receive a copy of the Northeastern University health report form. If you have any questions, contact University Health and Counseling Services in person at 135 Forsyth Building, by calling 617.373.2772 option #2, or by email at UHCS@neu.edu.

## Planning Information

As a new international student you are expected to arrive by the start date of your program stated on the I-20 issued by Northeastern or on the DS-2019 issued by Northeastern or by your sponsoring agency/government.

When you plan your travel arrangements, you should seek admission to the United States no more than 30 days prior to the report date on your I-20 or DS-2019, and you should not arrive after the report date on your I-20 or DS-2019.

All international students will need to report to the ISSI at their scheduled immigration clearance session during orientation. Check the orientation schedule (www.northeastern.edu/issi/ orientation.html) for the date and time of your session.

## International Student Orientation

At the beginning of each semester, the ISSI organizes sessions,events, and activities designed to assure you have completed all U.S. documentation requirements and to provide you with information and support to ease your transition to life in the United States and at Northeastern University. During these sessions, you will also have the opportunity to meet other international students, learn from shared experiences, and find any assistance you may need.

Orientation week is very important. Please make sure you are following all the instructions provided by your academic department and the ISSI about the weeks' schedule, and attend as many scheduled events as you can to avoid missing other important information during your first few weeks on campus.

For a schedule of required sessions and other events, please see the ISSI website: www.northeastern.edu/issi/schedule.html.

If you are a U.S. citizen living abroad, you are not required to complete ISSI's activities and sessions. You are more than welcome, however, to attend other sessions and events planned by the ISSI during orientation. Please visit the orientation schedule to see a full listing of other sessions and events: www.northeastern .edu/issi/schedule.html.

## Participate in Cultural Events

We are proud to offer cultural events throughout the academic year to the Northeastern community. For more information and to register, please check the schedule of events on the ISSI website.

## SEVIS Compliance

The ISSI is required to comply with immigration regulations governing your student status and must submit information every semester as required by the Department of Homeland Security.

## The ISSI: Your Resource for SEVIS Advice and Assistance

The ISSI advises students on the complexities of immigration compliance and interfaces with various U.S. government agencies. The ISSI maintains and updates the SEVIS system and advises students on relevant issues related to nonimmigrant student status by individual appointments or through workshops and information sessions. Consult the ISSI whenever you have a question relating to your nonimmigrant student status or any aspect of SEVIS compliance.

## ACADEMIC RESOURCES

## Libraries

*Northeastern University Libraries*
617.373.8778
www.library.northeastern.edu

Snell Library is the university's primary research library, with collections and services supporting research and teaching across disciplines. Holdings are extensive, with a large proportion available digitally. Collections include more than 800,000 print volumes, more than 360,000 e-books, 70,000 serial subscriptions, 60,000 licensed e-journals, and more than 6,000 feet of archival and manuscript collections. Additionally, Northeastern University Libraries is a selective federal depository, maintaining a collection of materials (mostly online) published and distributed by the federal government.

Snell Library is also the primary study environment on campus, open 24/7 to the whole university community, year-round. Spaces include group, quiet, and silent work areas, with more than thirty group study rooms with whiteboards and plug-in displays for collaborative group work. Individual study rooms are also available for graduate students on a long-term reservation basis. In partnership with Information Technology Services, the library supports the Digital Media Commons and InfoCommons computing areas, providing high-level media creation and editing capabilities. The Digital Media Commons also includes a 3D printing studio with a full suite of fabrication technologies and professional-level audio and video recording studios.

Services provided by Snell Library include both on-site and distance reference, the latter including 24/7 live chat with a reference librarian; subject-specialist librarians who provide in-depth consultation and research support for each academic program at the university; and an interlibrary loan system for providing materials not readily available at Northeastern. Digital scholarship project support and tools are also available through an institutional repository and data management services. The library also teaches workshops on digital media tools and resources and instructional sessions about library research for students and faculty.

The School of Law Library, located on five floors in the Knowles Law Center, includes a comprehensive collection of U.S. legal materials in print and in electronic format. Of particular note is the library's collection in the areas of public interest law; international human rights law; and public health, death penalty issues, and progressive lawyering. Access to print and electronic materials is provided through Scholar OneSearch, the university's online library catalog. More information can be found at www.northeastern.edu/law/library.

## Office of the Registrar

120 Hayden Hall
617.373.2300
617.373.5360 (TTY)
www.northeastern.edu/registrar

The Office of the University Registrar provides an important link between the university's academic programs and policies and the student. It administers a number of specific services, including class scheduling, registration, record functions, verification of enrollment, reporting, transcript services, and Commencement.

The registrar's office utilizes the myNEU Web portal (www.myneu.neu.edu) and public campus computers to provide students convenient access to information and services, including class schedules and registration, most recent grades, and unofficial transcripts. Additional information is available at www.northeastern.edu/registrar.

## Information Technology Services

617.373.4357 (xHELP)
help@neu.edu
www.northeastern.edu/infoservices

Information Technology Services (ITS) is the centralized technology resource for students, faculty, and staff. ITS provides secure, high-speed Internet access through the on-campus networks NUnet and ResNet; wireless Internet connectivity through NUwave; centralized computer labs—the InfoCommons and the Digital Media Commons (DMC)—with the latest software; on-site and remote printing; access to the Blackboard learning management system; a vast array of software applications for Windows and Mac; access to myNEU, Northeastern's online portal; on-site and online training on popular software; and high-performance research computing.

## ITS Service Desk

Help and Information Desk, Snell Library
617.373.4357 xHELP
help@neu.edu

The ITS Service Desk provides phone-based and walk-up technology support services to students, faculty, and staff. The ITS Service Desk staff also offers support for ITS-managed printers and answers general computing questions. Contact the ITS Service Desk for the following services:

- Troubleshooting Northeastern University–provided accounts and applications, including email
- Investigating wired and wireless network connection problems
- Troubleshooting network printer problems
- Assisting students with myNEU and Blackboard questions
- Support with ITS-managed labs
- Access to equipment available for loan, including AV equipment and laptop adapters

The ITS Service Desk is located at the Help and Information Desk on the first floor of Snell Library near the InfoCommons and provides assistance on computer-related issues to students, faculty, and staff with a valid Northeastern ID.

## myNEU

www.myneu.neu.edu

The central resource for students, faculty, and staff is myNEU—the online portal for the Northeastern community. Your myNEU username and password provide access to key university platforms and to other university systems, including wireless network access, printing, and email.

The myNEU portal offers services based on your role at Northeastern for all academic, personal, and recreational needs. Resources available for students include links to student email,

information channels, financial aid, Blackboard, and online course registration. NU Alert, our real-time university emergency notification system, utilizes the contact information provided within myNEU. It is your responsibility to maintain accurate personal and emergency contact information.

## ResNet and the ResNet Resource Center

Speare Commons
617.373.HELP (x4357)
resnet@neu.edu
www.northeastern.edu/resnet

ResNet—a service of Information Technology Services and Housing Services—provides Internet access to all students living in Northeastern residence halls. The ResNet Resource Center, located in Speare Commons, provides students with support for the HuskyCable TV service, mobile devices, gaming systems and other devices, student email, computer troubleshooting, and repair services for Apple and Dell computers.

## Printing

The Northeastern Printing Program provides a limited amount of free printing each year to students, faculty, and staff. Each September, as an active member of the community, you are given a credit of 120 print dollars on your Husky Card to use at your discretion at any of the ITS-managed printers located across campus. Print credits do not carry over from one academic year to the next.

Print jobs can be directly sent to the appropriate printer queue from any ITS computer labs or from your own computer by using the Virtual Print Client software to remotely print. When you locate a printer associated with the appropriate printing queue, simply swipe your Husky Card, select your print job, and it will print.

## Appropriate Use Policy

The information systems of Northeastern University are intended for the use of authorized members of the community in the conduct of their academic and administrative work. The Appropriate Use Policy (AUP) describes the terms and conditions of Northeastern information systems use. For more information, visit the Appropriate Use Policy page at www.northeastern.edu/aup.

## Training Services

Snell Library
617.373.5858
training@neu.edu

Information Technology Services training provides the following instructor-led and Web-based courses to all members of the Northeastern community:

- **Web-based training.** ITS training offers computer training over the Internet, including Mac tutorials, MS Office tutorials, some application-specific training provided by the application vendors and via Lynda.com, which offers 24/7 access to an extraordinary breadth of training modules. Web-based training is an innovative, self-paced learning method that allows students, faculty, and staff to train anytime or anywhere, using a computer with an Internet connection.
- **Instructor-led training** includes classes such as Public Speaking for Presentations, Advanced Excel, SharePoint, Adobe Photoshop, and Blackboard. These workshops are available at no charge to the entire university community.

To register for a class, visit the training section of the ITS website.

## Academic Technology Services (ATS)

212 Snell Library
www.ats.neu.edu
ats@neu.edu

For graduate students performing teaching assistant/graduate assistant work, Academic Technology Services (ATS) is a resource for choosing and implementing technological solutions for a wide range of classroom goals. Whether creating online classes or incorporating flipped classroom techniques into on-ground classes, ATS offers consultation and support for implementation. Additionally, ATS manages the Discovery Lab, located on the first floor of Snell Library, which is a space for showcasing ideas and innovations at Northeastern. The Discovery Lab is an area to host both events and exhibitions.

## CAMPUS RESOURCES

## Career Services

103 Stearns Center
617.373.2430
617.373.4231 (fax)
careerservices@neu.edu
www.northeastern.edu/careerservices

Career Services provides resources, guidance, and opportunities that help students and alumni with the following:

- Choose a major and explore career options that fit their unique attributes
- Make career decisions that will engage them in productive and fulfilling work
- Prepare for and conduct successful job searches
- Create meaningful and effective engagement with employers
- Contribute to meeting global and societal needs

Northeastern's Career Services does not guarantee employment nor do student referrals to prospective employers regarding job openings.

## Campus Recreation

*Marino Recreation Center*
617.373.4433
www.campusrec.neu.edu

Exercise your body, mind, and spirit. The campus recreation program provides many outlets to help clear your mind and recharge your spirit. Our fitness facilities, unique among Boston area colleges and universities, are open year-round. All programs were designed with you in mind; so whether you enjoy group fitness classes, ice hockey or street hockey, basketball, weight training, or swimming, campus recreation has something for everyone.

Full-time Northeastern students in good standing who are enrolled in classes and/or co-op, or scheduled for vacation but have paid the campus recreation fee, have access to the Marino Recreation Center, Cabot Center, and the Badger and Rosen SquashBusters Center. Part-time students in good standing have access during any academic quarter in which they are enrolled and attending classes, as long as they have requested and paid the campus recreation fee. Please help us maintain a safe and secure environment. Your Northeastern photo ID card—which must be a current, valid, and active card—must be swiped upon arrival in order to enter all facilities.

## Northeastern University Bookstore

*Main Campus*
Curry Student Center, ground floor
617.373.2286
www.northeastern.bncollege.com

The bookstore operates during the entire academic year, but days and hours may vary in accordance with the university's calendar.

Purchases can be made by cash, check, American Express, MasterCard, VISA, Discover, or Husky Card.

## Russell J. Call Children's Center

1 Fencourt Street (alley right after Qdoba Restaurant)
617.373.3929
Regina Nazzaro, *Director*

The Russell J. Call Children's Center is available to faculty, staff, and students; children from two years and nine months to five years of age are eligible to attend.

The center is licensed by the Massachusetts Department of Early Education and Care and staffed by professional teachers and co-op and work-study students.

Tours and enrollment information are available at the center or by emailing r.nazzaro@neu.edu.

## Disability Resource Center

20 Dodge Hall
617.373.2675
617.373.7800 (fax)
617.373.2730 (TTY)
www.northeastern.edu/drc

The Disability Resource Center (DRC) strives to create an environment in which all are empowered to make their unique contributions to the rich academic and social life of Northeastern. Its staff takes a creative approach to assisting students who have disabilities or who are Deaf or hard of hearing by providing services that will enable them to succeed.

In accordance with federal laws and guidelines, services cannot be provided unless acceptable documentation is submitted to the DRC. Students must provide recent diagnostic documentation indicating that the disability substantially limits one or more major life activities. They must also register with the DRC and meet with a counselor.

Students who are disabled, Deaf, or hard of hearing are strongly encouraged to contact the DRC upon their acceptance to Northeastern. It is also most beneficial to schedule a meeting with a DRC counselor at least three months prior to arriving on campus in order to register and request services. Early contact with the center will allow enough time to assemble the required diagnostic documentation, register at the DRC, and set up services.

Services are individually tailored on a case-by-case basis to meet each student's needs. Support services are available for, but are not limited to, students with a documented diagnosis of learning disabilities, blindness or visual disabilities, mobility disabilities, deafness or hard of hearing disability, head injuries, psychiatric disorders, degenerative or chronic conditions, HIV-positive status or AIDS, and temporary disabilities.

The center's services include examination modification and accommodation; disability-related academic advising and course modification; note-taking services; readers and scribes; sign-language interpreters and transliterators; computer-aided, real-time information about classrooms' accessibility; advising and referral services; campus orientations; acquisition of assistive listening devices, Braille materials, taped textbooks, and raised-line drawings; and assistive technology, such as the Reading Edge machine. The center also provides liaison, advocacy, and training services for faculty, staff, and administration and coordinates special-interest groups.

DRC does not provide personal care assistance (PCA) services; the center will provide referral to local PCA service agencies, such as the Boston Center for Independent Living, www.bostoncil.org.

Northeastern does not offer transportation services; however, public transportation in greater Boston is run by the Massachusetts Bay Transportation Authority (MBTA), which offers a curb-to-curb transportation service known as The Ride for persons with disabilities. Several stops on the Orange Line branch of the MBTA subway system are very convenient to the Northeastern campus. See www.mbta.com for more information.

## Graduate Student Government

236 Curry Student Center
617.373.4502
GSG@neu.edu
www.northeastern.edu/gsg

The Graduate Student Government (GSG) represents graduate students at Northeastern University, serving as a liaison among the administration, faculty, staff, and students. The role of the GSG is to address the professional, financial, social, and representative needs of the graduate community as follows:

- Seeks to improve the quality of graduate student life, academic affairs, and research.
- Offers access to professional development resources and networking.
- Facilitates cooperation among the graduate student groups and organizations.
- Distributes the graduate activity fee.
- Sponsors graduate orientation programs .
- Fosters interdepartmental and intercultural communication and appoints graduate representatives to serve on university committees. All graduate students are eligible to be part of the GSG General Assembly. Representatives from the eight graduate and professional schools and graduate student organizations assist the Executive Board in the affairs of this governing organization. The General Assembly meets regularly during the fall and spring semesters. Meetings are open to all students.

## University Health and Counseling Services

Forsyth Building, Suite 135
617.373.2772
UHCS@neu.edu
www.northeastern.edu/uhcs

The University Health and Counseling Services team is eager to serve you. We hope that you will use our center as a resource to help stay healthy, physically and mentally, and for care when you are ill or injured, depressed or stressed.

## Husky Card Services

4 Speare Commons
617.373.8740
HuskyCard@neu.edu

Husky Card Services prints Husky Cards, the official identification card of Northeastern University. The Husky Card is used for many purposes, including access to locations, parking, laundry, printing, vending machines, dining services, off- and on-campus vendors, and library book checkout.

Students who are registered for courses on the Boston campus of Northeastern University can come to the Husky Card Services office to obtain their card. A government-issued photo ID must be presented when receiving your Husky Card.

Students who have registered for courses at the Charlotte and Seattle campuses may contact their campus to obtain a Husky Card.

Students who are registered in online courses only are eligible to have their Husky Cards mailed to them. If you are an online student and would like a Husky Card mailed to you, please send an email to HuskyCard@neu.edu with your name, Northeastern University ID number, address, and college/degree. Once we have this information, we will open the photo upload option through your myNEU account, which will allow you to upload a photo. Once your photo is submitted, it will take up to **two weeks** for the photo to be approved and the Husky Card to be mailed to you.  Please allow more time for international mail.

## Parking

Student Financial Services
354 Richards Hall
617.373.7010
www.northeastern.edu/parking

Parking spaces in the university lots and garages are filled on a first-come, first-served basis. To park in a university lot or garage, students must have a valid parking permit displayed on their vehicles. A parking permit does not guarantee a parking space.

New students may purchase a day-parking permit. Only eligible students will receive a permit. To be eligible, students must be registered for a class or on co-op. The cost of the permit will be charged to the student's tuition account.

Overnight parking permits are limited.

To apply for a parking permit, visit the self-service tab on myNEU and select "Apply for Parking."

To park in a handicap space, individuals must purchase a parking decal and display a state-issued handicap license plate, placard, or hangtag. Handicap parking spaces are located throughout campus.

Operators of vehicles driven or parked on university property are responsible for knowing and complying with university driving and parking regulations.

Please refer to the parking website for more information.

## Public Safety

*Public Safety Division Administrative Offices*
100 Columbus Place
617.373.2696
www.northeastern.edu/publicsafety

*Police Operations Center*
100 Columbus Place
617.373.3333 (EMERGENCY—police, fire, or medical)
617.373.2121 (nonemergency regular business)
617.373.3934 (TTY emergency or nonemergency)

*Personal Safety Escort Service*
617.373.2121
www.northeastern.edu/publicsafety/services/escort.html

The Public Safety Division's mission is to provide a comprehensive program of police, security, fire safety, and emergency medical services to help ensure the campus remains a safe and pleasant place to live, work, and learn.

The University Police Department is the largest and most visible unit of the division and consists of professionally trained officers charged with the protection of life and property and the prevention and detection of crime on campus. University police officers have the same authority as municipal police officers and enforce both the Massachusetts laws and university regulations. Regulations mandate that students show their university ID cards whenever requested to do so by any university police officer. For more information, visit www.northeastern.edu/publicsafety.

The Public Safety Division takes pride in its comprehensive plan to minimize crime and protect the safety of the Northeastern community. But the division needs students' help and urges students to take responsibility for creating and maintaining a safe and secure environment. For tips on safety around campus and in the neighborhood, pick up a brochure or visit the website.

Fire egress drills are held each semester in all residence halls to familiarize residents and staff with the alarm system and the evacuation routes. Special fire safety and evacuation training is provided for students, faculty, researchers, and staff in high-risk laboratories. All building occupants are required to participate when an egress drill is held. For tips on fire safety, pick up a brochure or visit the website.

The Personal Safety Escort Service provides a door-to-door escort from one on-campus location to another whenever personal safety is a concern. After receiving your call, the university police dispatcher will assign an officer or cooperative education cadet within ten to fifteen minutes (if necessary, the dispatcher will advise you of any expected delays).

A special, nighttime off-campus escort service runs from dusk to dawn to transport students who reside within approximately one mile of the campus from the campus to their residence after dark. The only destination this service will take you to is your residence. A van stops at Snell Library and the Ruggles Public Safety Substation on the hour from 7:00 p.m. to 6:00 a.m. to pick up students.

If you are sexually assaulted, either by a stranger or an acquaintance, get to a safe place, then telephone the university police and a friend or family member. A university police officer who is a state-certified sexual assault investigator will meet with you and address your physical and emotional needs, as well as inform you of your rights and options regarding filing charges against the perpetrator. The police will provide you with important information about on-campus as well as off-campus counseling services as well as other options regarding changing your residence or class schedule.

If the sexual assault took place off campus, the University Police Department can still provide emergency medical treatment, transportation to a medical facility, and counseling referrals. owever, the criminal investigation of such cases is the responsibility of the police department that has jurisdiction in the locale where the assault took place, and university police will assist you with making contact with the appropriate agency.

## John A. and Marcia E. Curry Student Center

434 Curry Student Center
617.373.2642
www.northeastern.edu/curry

This campus "living room" serves as a hub of student activity. It is the crossroads of community life at Northeastern, offering cultural, social, and recreational programs and services.

The center offers ATM machines, an art gallery, the afterHOURS late-night club, food court and cafeteria, game room, lounge space, meeting rooms, Starbucks Coffee, student organization offices, a TV viewing area, and WRBB-FM.

Student center facilities may be reserved by recognized student organizations and university departments. The university reserves the right to limit the use of its facilities when the general public is involved.

## We Care

104 Ell Hall
617.373.4384
we_care@neu.edu
www.northeastern.edu/wecare

We Care is a program that assists students experiencing unexpected challenges maintaining their academic progress. We Care works with the student to coordinate among university offices and to offer appropriate on- and off-campus referrals to support successfully resolving issues.

# *College Expenses*

## Tuition

| Graduate Program | Cost per Credit Hour |
|---|---|
| Applied Behavior Analysis | $      965 |
| Arts, Media and Design | 1,260 |
| Audiology (AuD) (per term) | 10,920 |
| Audiology (AuD) clinical | 8,112 |
| Bouvé College of Health Sciences | 1,270 |
| Business Administration, including online graduate programs | 1,433 |
| College of Professional Studies— Doctorate in Education | 705 |
| College of Professional Studies— Graduate on campus and online (excluding MEd and MAT) | 594 |
| College of Professional Studies—MEd and MAT quarter programs | 650 |
| Computer and Information Science | 1,355 |
| Engineering | 1,354 |
| Executive MBA (full program) | 94,500 |
| Health Informatics | 1,115 |
| High-Tech MBA | 1,524 |
| Marine Biology | 1,125 |
| MS in Accounting | 1,433 |
| MS/MBA (full program) | 61,394 |
| Nurse Anesthetist clinical (in addition to tuition) | 3,175 |
| Nursing, direct entry (per term) | 15,225 |
| Physical Therapy—postbaccalaureate direct entry (DPT) (per semester) | 14,495 |
| Physical Therapy—postbaccalaureate direct entry (DPT) clinical (per semester) | 10,070 |
| Physician Assistant (per term) | 11,497 |
| RN to BSN online | 750 |
| School of Technological Entrepreneurship | 1,433 |
| Science | 1,270 |
| Social Sciences and Humanities | 1,225 |
| Dissertation (flat rate) | Equivalent to 1.5 times the college per-credit-hour rate listed above |
| Master's or doctoral continuation fee (flat rate) | Equivalent to the college per-credit-hour rate listed above |

## Fees

| Item | Fee |
|---|---|
| Student center fee (per term, Boston campus only) | $      70 full-time  10 part-time |
| College of Professional Studies student center fee (per quarter, Boston campus only) | 8.25 |
| Student recreation fee (per term) | 46 full-time  15 part-time |
| College of Professional Studies student recreation fee (per quarter, Boston campus only) | 10 |
| Student activities fee (per year, Boston campus only) | 13 |
| Health and counseling fee | 225 |
| Health plan fee (yearly, optional) | 2,159 |
| Parking (optional, per semester) | Visit the parking website: www.northeastern.edu/ parking/fees |
| International student fee | 250 |

## Refund Policies

Inquiries about credit balances should be directed to Student Accounts. Credit balances will be refunded to the student unless otherwise directed by the student or the bill payer.

   Please note the following exception:

- Payment plans—Credit balances created from overpayment to the monthly payment plan will be refunded to the bill payer on record unless a letter of authorization, stating that funds may be released directly to the student, is received from that borrower.

## Official Withdrawal Adjustments

Students who officially withdraw, either from a course or from the university, during an academic term will receive a tuition refund based on the policy specified below. Institutional funds awarded by Northeastern University will be adjusted based on the actual charges incurred during the semester. Funds from federal Title IV programs will be returned to the government according to federal regulations. The federal government return-of-funds policy dictates that a student's eligibility for federal financial aid is determined by the number of days enrolled during the semester. The refund will be calculated from the day the student submits a notification of withdrawal to the registrar's office.

Tuition credits are granted through the first five weeks of a semester or first four weeks of a half-semester, based on the date of the official withdrawal processed by the registrar's office. Nonattendance does not constitute official withdrawal. Credit policies vary according to the duration of the course. Typical tuition adjustments are made according to the following schedule. (The end of week three corresponds with the last day to drop a class without a W grade.)

### DURING FULL SEMESTER

During weeks one through three—100% refund
During the fourth week—60% refund
During the fifth week—40% refund
After the fifth week—no refund

### SUMMER HALF SEMESTERS AND COURSES OFFERED IN PART-OF-TERM FORMAT

During weeks one through two—100% refund
During the third week—50% refund
During the fourth week—25% refund
After the fourth week—no refund

## Medical Leave Tuition and Fee Adjustments

Medical and nonmedical leaves are granted when a student cannot complete the current academic period for health or personal reasons but is confident that he or she will reenroll within six months. Northeastern's medical and nonmedical leave policy states that all tuition paid for such periods of leave will be held by the university and applied to future charges. Outstanding balances (including unpaid balances) for the academic semester in which leave is taken are still due the university during that semester. Financial aid recipients should contact the graduate financial aid office to understand the effects on aid received. Medical leave information is available at www.northeastern.edu/uhcs/access/medical_leave.html. Students who take leaves should be aware that more than six months on leave will cause many student loans to go into repayment.

## Disability Resource Center Tuition Adjustments

Students who are registered with Northeastern's Disability Resource Center (DRC) and are approved for reduced course loads may be eligible to petition the center for tuition adjustments directly related to their documented disability. Students who take leaves should be aware that more than six months on leave will cause many student loans to go into repayment. Further information is available from the DRC.

## State-Specific Refund Policies

For refund information for Maryland, Oregon, and Wisconsin residents, please visit www.northeastern.edu/financialaid/studentaccounts/MarylandWisconsinRefund.html.

## FINANCIAL AID ASSISTANCE

## Student Financial Services

354 Richards Hall
617.373.5899
617.373. 2897 (College of Professional Studies)
617.373.5714 (TTY)
sfs@neu.edu
www.northeastern.edu/financialaid

Northeastern University is eager to assist students in developing a plan for financing a Northeastern education. Through a variety of options—federal financial aid, Northeastern's monthly payment plan, supplemental loans, and your own resources—a plan can be designed that will make your education costs affordable. Visit the Office of Student Financial Services on the Web at www.northeastern.edu/financialaid or call 617.373.5899 for additional information.

## Federal Financial Aid

For many students, financial aid is a major element in making Northeastern University affordable. The Office of Student Financial Services is committed to working with you to identify federal financial aid options that can help make a Northeastern education affordable. To take advantage of federal financial aid programs, students must submit the Free Application for Federal Student Aid (FAFSA) form. Meeting priority filing dates will allow the review of your eligibility for all available financial aid programs. The priority deadline for graduate students is March 1. For information regarding your financial aid application, please visit the myNEU Web Portal (www.myneu.neu.edu), click on the "Self-Service" tab, and select "My Financial Aid Status."

Students in the graduate colleges must meet the following criteria to be eligible for federal financial aid:

- Be enrolled in at least 6 semester hours per term for federal financial aid, unless you are on a co-op, clinical rotation, or residency or are enrolled in a full-time stand-alone course listed on www.northeastern.edu/registrar/ref-udc-fulltime.pdf
  *Note:* Although some programs may consider students enrolled in 4 credits to have half-time status, in order to qualify for federal financial aid, students must be enrolled in a minimum of 6 credits.
- Be citizens or eligible noncitizens of the United States
- Be matriculated in a degree-granting program
- Have received high school diploma or GED
- Be registered with Selective Service if required
- Not be convicted of a drug-related crime in the last year
- Not be in default from previous student loans
- Maintain satisfactory academic progress

## How to Apply

File the FAFSA  by March 1 in order to be considered for all available federal aid. Northeastern's FAFSA school code is 002199.

You will need your Department of Education PIN to electronically sign your FAFSA online. If you do not have one or have forgotten your PIN, go to PIN.ed.gov to obtain one before starting the FAFSA online.

## Awarding Timelines

New students are awarded on an ongoing basis throughout the spring after we have been notified that they have been accepted into their program.

Returning students who have met the March 1 priority filing deadline are awarded throughout the summer.

## Typical Graduate Financial Aid Award

Students who file FAFSA will be eligible to receive up to $20,500 in a Federal Unsubsidized Stafford Loan, assuming that all eligibility requirements have been met.

For more information about Stafford loans, please visit www.northeastern.edu/financialaid/loans/stafford.html.

## Graduate Assistantships and Scholarships

These positions and awards are offered directly by the individual graduate schools or academic departments. Students seeking such assistance should contact their graduate school for eligibility criteria.

To review a description of available graduate assistantships and scholarships, please visit www.northeastern.edu/financialaid/grants-scholarships/graduate.html.

## Federal Perkins Loans, Health Professions Student Loans, and Nursing Student Loans

These federal loan programs carry a 5 percent interest rate during repayment. You must demonstrate financial need and meet Northeastern's priority filing date for consideration, as funds are limited. Northeastern serves as the lender, and the loan is made with government funds. Repayment is made to Northeastern. For Perkins and nursing loans, there is a 9-month grace period prior to repayment following graduation, withdrawal, or a drop below half-time status. The grace period is 12 months for Health Professions Student Loans. Repayment on the loan is for a period of up to 10 years with a minimum $40 monthly payment. The loan may be prepaid at any time without penalty.

To be eligible for the Health Professions Loan Program, applicants must be enrolled full-time in the School of Pharmacy in the Bouvé College of Health Sciences. To be eligible for the Federal Nursing Student Loan, applicants must be enrolled full-time in the School of Nursing in the Bouvé College of Health Sciences.

## Physician Assistant Loan

The Physician Assistant Loan is awarded to full-time students in the graduate Physician Assistant program who demonstrate financial need after filing the Free Application for Federal Student Aid (FAFSA). The interest rate is fixed at 7 percent. Northeastern University is the lender, and repayment is made directly to Northeastern. The loan amounts range from $1,000 to $3,000, depending upon the student's financial need. Repayment begins one month after the student ceases to be enrolled full-time at Northeastern University.

## Federal Direct Graduate PLUS Loan

Unlike Federal Direct Stafford Loans, the Federal Direct Graduate PLUS Loan requires credit approval by the direct loan servicer. Application requests are submitted to Student Financial Services. Students have up to 25 years to repay the grad PLUS loan. The grad PLUS loan can be consolidated with federal Stafford and Perkins loans upon graduation.

Grad PLUS loans do not have a grace period. Repayment begins after a student is no longer enrolled at least half-time. Students who drop below half-time status then reenroll above half-time status will need to request their loans be deferred again through their assigned direct loan servicer.

Graduate students with myNEU access can apply for a graduate PLUS loan through the student portal by clicking on the "Federal Graduate PLUS Loan Application" link under the "Self-Services" tab. Students that do not have portal access or have trouble applying via the portal should download, print, and complete the paper application that can be found at: www.northeastern.edu/financialaid/loans/plus.html#plusgrad.

## Supplemental Student Loans

There are a number of attractive educational loan programs available to assist students in covering their expenses over and above any federal financial aid that may be awarded to them from Student Financial Services. Most private lenders have credit and income requirements that must be met before being approved for these programs. Additional information regarding private loans is available at www.northeastern.edu/financialaid/loans/supplemental.html. Student Financial Services recommends to students that, when researching the loan and lender that best meets their needs, they make sure they take into consideration the interest rate, origination, disbursement, or repayment fees and the quality of customer service.

## General Financial Policies and Procedures

### FINANCIAL AID POLICIES

Student Financial Services reserves the right to adjust a student's initial offer of assistance based upon information brought to the office's attention subsequent to extension of the offer, including things such as outside scholarships or revised family financial data.

### APPEAL/CHANGE IN CIRCUMSTANCES

If the student feels that the aid process does not accurately reflect his or her situation, or if family circumstances change during the year, the student should notify his or her graduate student financial services counselor for further evaluation. We may request additional documentation from you that might indicate a change in financial circumstances.

### CHANGE IN ENROLLMENT STATUS

Students must notify Student Financial Services about any change in planned period of enrollment, whether due to withdrawal from a class, a leave of absence, a change in co-op or academic division, or withdrawal from the university. Students should be aware that any change in enrollment status may result in a change in federal or institutional aid eligibility. It is the student's responsibility to notify Student Financial Services about any change in enrollment status and to ensure understanding of the ramifications of such changes. It is highly recommended that whenever possible, students discuss the impact of such changes with their financial aid counselor before making them.

### OUTSIDE SOURCES OF AID

Students must notify Student Financial Services of any aid received from outside sources, such as scholarships. Receipt of outside sources of financial aid may require that financial aid offered by Northeastern needs to be adjusted.

### REAPPLICATION PROCESS

Students must reapply for financial aid each year by filing the FAFSA. To receive priority consideration for aid, the federal processor must receive the FAFSA by March 1. There are two ways to file the FAFSA:

- Online at www.fafsa.ed.gov.
- By mail. Complete the FAFSA renewal form mailed by the processor each January. It is suggested that the FAFSA be mailed by February 15 to ensure timely delivery.

Students should not wait to file an income tax return before completing the FAFSA but use estimated information.

### SATISFACTORY ACADEMIC PROGRESS

To continue receiving financial aid, graduate students need to maintain the academic requirements for satisfactory progress set forth by their college. Please refer to www.northeastern.edu/financialaid/policies/sap.html for more information about how satisfactory progress affects financial aid.

### VERIFICATION

If a student is selected for verification, the Student Financial Services office is required to collect tax returns and other financial documents to verify the information provided on the FAFSA. Aid cannot be disbursed until this process is completed.

## BILL PAYMENT

### Student Financial Service

354 Richards Hall
617.373.2270
617.373.8222 (fax)
studentaccounts@neu.edu

Full payment of tuition and other related charges is due on the Saturday at the end of the first week of class. (Payment for second-session courses is due by the first Saturday of the second session.) For questions related to underload and overload charges, the billing process, late fees, payment methods, tuition payment plan, and refunds, contact us at above phone and email address.

### Payment of Tuition

Full payment of tuition, residence hall fees, and other related charges is due before the start of each semester. Accepted methods of payment are:

- Check or money order, payable to Northeastern University.
- International Funds Transfer (IFT) through Western Union Business Solutions. International students may pay student account balances in the currency of their choice and initiate payments electronically through their bank on myNEU.
- Funds wired directly to the university's bank. Reference: Northeastern University, student's name, and student account number (NUID). If needed, the SWIFT# is BOFAUS3N. Please verify with your bank if they assess wire processing fees and adjust your wire payment accordingly.
- Through the monthly payment plan. Call 800.635.0120 or visit www.tuitionpay.salliemae.com/northeastern.
- Supplemental loans. Review options at www.northeastern.edu/financialaid.

Bills must be paid promptly. If a bill has not been received by the first week of the semester, please contact Student Accounts. Transcripts and other academic records will not be released until all financial obligations to the university have been met.

## Discrepancies in Your Bill

Discrepancies in your bill should be addressed in writing to Student Financial Services, Student Accounts. Include your name, account number, dollar amount in question, date of invoice, and any other information you believe is relevant. Address correspondence to Student Financial Services, Student Accounts, 354 Richards Hall, 360 Huntington Avenue, Boston, MA 02115, or email studentaccounts@neu.edu. If there is a billing problem, pay the undisputed part of the bill to avoid responsibility for any late fees.

## Late Fees

In cases where students default on financial obligations, the student is liable for the outstanding balance, collection costs, and any legal fees incurred by the university during the collection process.

## Tuition Paid Directly by Employers

In those situations where the tuition is paid directly to the university by a third party, the student must provide Student Accounts with a purchase order or a written statement of intent to pay by the third party. If there are stipulations associated with the payment agreement, such as a minimum grade level, then the student must either pay the university directly or enroll in one of the payment options. If you need help, please contact us at 617.373.2674; thirdparty@neu.edu.

## Tuition Reimbursement

Many companies, embassies, and agencies directly reimburse students for their educational expenses upon successful completion of courses. In these situations, the student is responsible for paying the bill at the beginning of the semester or selecting another payment option. Tuition may not be left unpaid pending reimbursement by a third party.

## Tuition and Fees and Default Policy

Tuition rates, all fees, rules and regulations, and courses and course content are subject to revision by the president and the Board of Trustees at any time. In cases where the student defaults on his or her tuition, the student shall be liable for the outstanding tuition and all reasonable associated collection costs incurred by the university, including attorneys' fees.

## Mandatory Student Health Insurance

Since September 1989, Massachusetts law (M.G.L. c.15A, § 18) has required every full-time and part-time student enrolled in a certificate, diploma, or degree-granting program in a Massachusetts institution of higher learning to participate in a Student Health Program or in a health benefit plan with comparable coverage. The Student Health Program defines a part-time student as a student enrolled in at least 75 percent of the full-time curriculum. (CPS graduate students–seven credits, part-time graduate students–six credits).

Students who are covered under a comparable hospital insurance plan may waive the Health Services fee. To waive, visit www.myneu.neu.edu.

# *Academic Policies and Procedures*

## GRADUATE SCHOOLS ACADEMIC POLICIES

Please note that this information applies to both undergraduate and graduate students. Not all of the policies and procedures apply to both types of students. *Note:* International students must consult with International Student and Scholar Institute (ISSI) advisors concerning any of the following items in order to maintain compliance with Student and Exchange Visitor Information System (SEVIS) regulations and institutional policy. It is best to set up an appointment to discuss individual cases and learn about appropriate procedures to follow. Find ISSI contact information at www.northeastern.edu/issi.

## Attendance Requirements

The university expects students to meet attendance requirements in all courses to qualify for credit. Attendance requirements vary; it is the student's responsibility to ascertain what each instructor requires.

Failure to meet attendance requirements may force a student to drop the course, as recommended by the instructor and the college.

Permission to make up work may be granted by instructors for reasonable cause. Requests must be made immediately upon a student's return to class.

## Absence Because of Student Activities

If students must miss classes to participate in athletic contests or other forms of scheduled intercollegiate activity, they are entitled to makeup privileges. Faculty members may require a written statement from the administrator in charge of the activity.

## Absence Because of Illness

A student who is absent from school for an extended period of time must inform his or her college by email from an official university email account or by telephone.

## Absence Because of Religious Beliefs

The university maintains the following guidelines regarding student absences because of religious beliefs:

Any student who is unable, because of his/her religious beliefs, to attend classes or to participate in any examination, study, or work requirement shall be provided with an opportunity to make up such examination, study, or work requirement that he/she may have missed because of such absence on any particular day; provided, however, that such makeup examination or work shall not create an unreasonable burden upon such school. No fees of any kind shall be charged by the institution for making available to the said student such opportunity. No adverse or prejudicial effects shall result to any student because of availing himself/herself of the provisions of this section. (Massachusetts General Laws, Chapter 151C, Section 2B, 1985)

## Absence Because of Jury Duty

Members of the university community are expected to fulfill their obligations to serve on a jury if called upon.

A student selected for jury duty should inform his or her instructors and/or activity advisors. They will provide a reasonable substitute or compensatory opportunities for any required work missed. Absence will not be penalized in any way.

## University Leave of Absence Policies

### GENERAL LEAVE OF ABSENCE POLICY

Students who wish to take a leave of absence are encouraged to apply for the leave by filing the proper petition with their college one month prior to the start of the semester during which they plan to take the leave. The usual limit for a leave of absence is one and one-half academic semesters (a semester plus a half semester). International students must contact the ISSI (www.northeastern.edu/issi) regarding specific leave of absence procedures. A leave of absence, if approved, will take into account the following conditions:

- Students who do not return at the end of the leave will be withdrawn and must submit a petition for subsequent readmission to the program.
- Students must return to classes, not cooperative education (co-op).
- Students must be currently enrolled in academic courses or co-op. If a student is withdrawn for any reason, a request for a leave of absence cannot be considered until the withdrawal is resolved.
- Students who receive financial aid should meet with a financial aid counselor before going on a leave.
- Students in university housing should refer to Housing Services for policy information.
- Students' enrollment status cannot include more than one academic year of consecutive nonclass enrollments.
- After the eleventh week of the semester, a student may apply for a leave of absence only for medical reasons or due to military deployment.
- Students who take leaves should be aware that more than six months on leave will cause many student loans to go into repayment. Students should see their financial aid counselor for more information on how their loans may be affected by a leave of absence.

## RETURNING FROM A LEAVE OF ABSENCE

Students returning from an approved leave of absence may be required to submit to their college's student services office a notification of intent to return. It should be submitted no later than one month prior to the start of the semester in which they intend to return. Students are required to preregister for courses upon returning from a leave of absence. Students who are withdrawn and are applying for Commencement may be reentered on a leave of absence, pending the college's approval, prior to the semester in which they will graduate. International students returning from a leave of absence should contact the ISSI regarding SEVIS procedures three to four months prior to anticipated return time.

## LEAVE OF ABSENCE DUE TO MILITARY DEPLOYMENT

When a student in the Reserves or in the National Guard is called to active duty, the student must notify his or her college dean's office and provide proof of deployment prior to being deployed. The proof may be faxed, mailed, or hand-carried to the college dean's office. It may take the form of general orders cut by the company commander.

When a student is activated during the term, the university will:

- Excuse tuition for that term. Any payment made will be credited to the student's account.
- Place a "W" on the student's transcript for each class enrollment.

If a student is called to active duty near the end of the term, the student and faculty members may determine that incomplete (I) grades are more appropriate. In this case, tuition will not be waived.

When a student returns to the university after completion of a tour of duty, he or she will notify the college dean's office. The college dean's office will assist the student with registration.

## MEDICAL OR EMERGENCY LEAVE OF ABSENCE

Medical leave is an option available to those Northeastern students who develop a major medical condition that precludes class attendance, completion of requirements, and/or co-op. Medical leave petitions must be initiated at University Health and Counseling Services (UHCS). Students are not allowed to take courses for credit toward their degree at Northeastern while on medical leave of absence. Students can petition their college for an exception to take courses elsewhere based on extenuating circumstances.

Students who wish to reenter the university following a medical leave must contact UHCS. Reentry from a medical leave requires receipt of all documentation delivered to UHCS on or around one month prior to the planned reentry to classes. Once all documentation is received by UHCS, it will be reviewed and the student will be notified of the decision. Students must attend classes on the Northeastern campus for the semester they wish to return from medical leave of absence.

More specific information about the medical leave and reentry process, along with the application for leave, can be found at www.northeastern.edu/uhcs/access.

Emergency leaves may be granted when a student cannot continue attending class after the start of the term due to life-changing situations beyond the student's control. Petitions for no-medical leaves of absence can be located in the "Forms for All Students" section on the registrar's website at: www.northeastern.edu/registrar/forms.html.

The university's medical leave of absence and emergency leave policy states that all tuition charged for the term in which the leave has been granted will be held by the university and applied toward future tuition charges in the same academic program. Outstanding balances (including unpaid balances) for the academic term in which the leave is taken are still due the university. Tuition adjustments are made depending on the timing of the leave. The adjustments would follow the same schedule as the official withdrawal adjustments. See page 14 for the schedule for "Official Withdrawal Adjustments." Financial aid recipients must contact their financial aid counselor to understand the effects on aid received.

If the leave extends more than six months, student loans may go into repayment. Students enrolled in the Northeastern University Student Health Plan (NUSHP) will remain enrolled in the plan for the plan year, ending August 31. Emergency leave petitions are available in college academic student services offices and specify the conditions and procedures under which such leaves may be granted.

## MEDICAL WITHDRAWAL

Permanent departure from the university due to the diagnosis of a major medical illness or injury, or psychiatric illness, necessitates a petition for medical withdrawal. The procedure follows that for the MLOA.

# University Withdrawal

Students seeking to withdraw from the university for any reason should contact the student services office of their college.

Students may be withdrawn from the university for financial, disciplinary, academic, or health reasons. In the last case, a committee will review the recommendations of the director of health services to determine whether the student should withdraw. The student has an opportunity to present his or her case to the committee. Withdrawals are made only when it is determined that the student is a danger to himself or herself, or to other members of the university community, or when the student has demonstrated behavior detrimental to the educational mission of the university. International students must contact the ISSI regarding any compliance issues implications deriving from university withdrawal.

The graduate schools' programs are offered on a semester calendar consisting of 15 weeks. The College of Professional Studies graduate programs are offered on a quarter calendar consisting of 12 weeks.

### QUARTER PROGRAMS

For student records that include quarter hours, the approved semester-hour conversion rate is (quarter hours) × 0.750. For example, a 4-credit quarter course is equivalent to a 3-credit semester course.

### SEMESTER PROGRAMS

Traditional semester hours apply.

## STUDENT RECORDS AND TRANSCRIPTS

### Full-Time Status

*Note:* Full-time status may be defined differently for federal loan purposes.

A graduate student is considered a full-time student if enrolled in a minimum of 8 semester hours of credit for the semester with the following considerations:

- Students who hold stipended graduate assistantships will be considered full-time if enrolled for a minimum of 6 semester hours of credit.
- Students for whom English is a second language, at the discretion of their departments, will be considered full-time if they are enrolled in a minimum of 8 semester hours or three courses, whichever is less.
- Students holding Dean's scholarships, Diversity fellowships, Double Husky awards, or being supported by Graduate Student Scholarships (GSSs) will be considered full-time if they are enrolled in a minimum of 8 semester hours.
- Students enrolled in Dissertation or Continuation are considered full-time.
- International students enrolled in graduate programs at Northeastern University must consult with the International Student and Scholar Institute on all matters regarding the maintenance of full-time status.

### Overload Conditions for Graduate Assistants

Graduate assistants are expected to devote full-time effort to their studies and the duties of their award.

They are not permitted to hold any other job during the term of their assistantship; however, they may be offered limited extra work on campus. Graduate assistants who are not on F-1 or J-1 visas can be offered overload work that does not exceed an average of 6 hours a week or 90 hours a semester, for a total of 270 hours a year (or three semesters). As part of this work, graduate assistants may be hired to teach one 3-semester-hour course as an overload during the

year (180 hours). The hours worked during the weeks between semesters are included in this total.

The International Student and Scholar Institute (ISSI) issues and verifies on-campus work authorization to eligible students in nonimmigrant visa classifications. Due to federal regulations, international graduate assistants cannot be offered overload work. All international students must acquire the appropriate work authorization from the ISSI, 405 Ell Hall, prior to engaging each and every time in any form of employment.

## Grading System

Grades are officially recorded by letters, evaluated as follows.

| Letter Grade | Numerical Equivalent | Explanation |
| --- | --- | --- |
| A | 4.000 | Outstanding achievement |
| A– | 3.667 | |
| B+ | 3.333 | |
| B | 3.000 | Good achievement |
| B– | 2.667 | |
| C+ | 2.333 | |
| C | 2.000 | Satisfactory achievement |
| C– | 1.667 | |
| F | 0.000 | Failure |
| I | | Incomplete |
| IP | | In progress |
| NE | | Not enrolled |
| NG | | Grade not reported by faculty |
| S | | Satisfactory (pass/fail basis; counts toward total degree requirements) |
| U | | Unsatisfactory (pass/fail basis) |
| X | | Incomplete (pass/fail basis) |
| L | | Audit (no credit given) |
| T | | Transfer |
| W | | Course withdrawal |

An I, IP, or X grade shows that the student has not completed the course requirements.

*Note:* In the CPS, the incomplete, or I, grade may be given only when the student was approved to make up a single key requirement of a course, such as a paper or major report. The student and instructor must complete an Incomplete-Grade Contract (www.northeastern.edu/registrar/form-inc-grade.pdf) before the end of the course. The completed contract should be sent to the Office of Academic and Student Support Services for the signature from the Office of the Dean: 50 Nightingale Hall; fax 617.373.5545; email cpsadviser@neu.edu. The university has a one-year-limit policy to make up incomplete grades. Students have access to their online course materials in Blackboard for up to one year.

The IP grade is intended for courses that extend over several semesters. The time restrictions on the incomplete grade do not apply to the IP grade. While the IP grade is left unchanged, it is not included in computing the GPA. If the IP grade is never changed, the course does not count toward graduation requirements.

## Pass/Fail System

The individual schools and colleges state how and when the pass/fail system may be used.

## Clearing an Incomplete or Changing Other Grades

An incomplete grade may be reported by the instructor when a student has failed to complete a major component of a required course, such as homework, a quiz or final examination, a term paper, or a laboratory project. Students can make up an incomplete grade by satisfying the requirements of the instructor or, if the instructor is absent, the chair of the department. Be aware that instructors' policies on the granting of incomplete grades may vary and that the final decision on an incomplete grade is up to the instructor. The period for clearing an incomplete grade and for changing a grade other than an incomplete or failure (F or U) is restricted to one calendar year from the date it is first recorded on the student's permanent record.

To clear an incomplete grade, a student must obtain an Incomplete-Grade Contract (www.northeastern.edu/registrar/form-inc-grade.pdf) on which the precise agreement for clearing an incomplete grade is specified and that is signed by the student and the instructor. The student must make an appointment with the instructor to arrange for clearing the incomplete grade. He or she must then complete the form, sign the agreement, and obtain the instructor's signature; leave a copy with the instructor, take one copy to the college academic student services office, and retain a copy as a personal receipt. Any exception to this policy on change of grades must be recommended by the Academic Standing Committee (ASC) of the college in which the course was offered and must be forwarded in writing by the ASC to the registrar for implementation. (Finishing the agreed-upon course work must be completed within one calendar year from the end of the semester in which the course was offered.)

Commencing with grades given in the fall of 1986, the university policy is that any grade outstanding for twelve or more months cannot be changed.

Any exception to this policy on change of grades must be recommended by the ASC of the college in which the course was offered and must be forwarded in writing by the dean to the registrar for implementation.

## Repeating Courses

When the appropriate course is available, courses may be repeated in order to earn a better grade. In all cases, the most recent grade earned in a course is the one used in calculating the overall GPA; however, previous grades remain on the transcript followed by the word "Repeat." Consult your academic advisor before repeating a course. Students are required to pay normal tuition charges for all repeated course work.

## Substituting Courses

In some cases, it may not be possible to repeat a course if a student wishes to do so. In certain, unusual circumstances, students may petition to substitute one course for another they have already taken, as long as the subject matter of both courses is substantially alike. With the approval of the student's academic advisor and the agreement of the department that offered the first course taken, a grade received in the new course will be labeled "Substitute" on the transcript and will be treated in the grade-point-average calculation as a "repeat" grade, as described above. The original grade will remain on the student's Northeastern transcript. Consult your academic advisor before enrolling in any proposed substitute course. Students are required to pay normal tuition charges for all substitute course work.

## Audit Policy

Graduate students may, with permission, audit one class per term with no additional charge. Students are permitted to petition from the end of the course-add period to the end of the third week of classes. Permission is based on the availability of a seat in the class and is at the discretion of the instructor and college.

Students must obtain advisor approval and meet the prerequisites and any other required approvals for the class. Instructor permission as well as approval by the associate dean of the college offering the course is required. The course work required is at the discretion of the instructor. Once a student opts to audit a course, the audit status of the course cannot be changed. A signed Petition to Audit must be presented to the Office of the Registrar during the designated audit-add period. Excluded courses are co-op, labs, language courses, any off-campus course, any online course, and any course required for the major or degree. Audits carry no academic credit.

## Clearing an Academic Deficiency

An academic deficiency occurs when a student fails to complete a course with a satisfactory grade. The deficiency may occur because the student has failed the course or because the student has passed the course but with a grade that does not meet the minimum required by the student's program.

Students who have academic deficiencies may be required to clear them before progressing within the curriculum, especially if the course work is a prerequisite for future course work. Deficiencies can affect the student's expected year of graduation.

With the approval of the appropriate program faculty and/or academic advisor, students can clear deficiencies in the following ways:

1. Repeat the same course at one of Northeastern's colleges, which will result in a "repeat" grade (see "Repeating Courses" policy above).
2. Substitute a comparable course at one of Northeastern's colleges, which will result in a "repeat" grade.

## Appeal of Final Grades

Under certain circumstances, students have the right to appeal final grades given by either academic faculty
or cooperative education coordinators. Criteria and procedures can be found on page 25.

## GPA

Numerical equivalents for scholastic averages are weighted according to the number of hours the course carries. For example, suppose a student receives a grade of B in a course carrying 4 semester hours and a grade of A in a course carrying 1 semester hour. The weightings for these example courses are as follows:

| Grade | Numerical Equivalent | Semester Hours | Weight |
|---|---|---|---|
| B | 3.000 | 4 | 12 |
| A | 4.000 | 1 | 4 |
| Totals: | | 5 | 16 |

The GPA for both courses would then be the total weight (16) divided by the total semester hours (5), or 3.200. Grades of I, IP, S, U, and X are not included in the calculation of the GPA. Please see page 21 for a complete list of grades and numerical equivalents.

## Minimum Cumulative Grade-Point Average

Grades submitted to satisfy, in whole or in part, the requirements for any graduate degree or certificate of advanced study must yield a cumulative grade-point average of 3.000 or higher. This requirement may be supplemented by additional restrictions established by the graduate program or the college's graduate office such as, but not limited to, the maximum number of individual courses with grades below 3.000 that may be obtained without being required to withdraw or a minimum grade-point average in each semester.

Students falling below 3.000 are placed on academic probation. If the student remains on academic probation for two semesters, he or she may be terminated from the graduate program.

Not more than two courses or 6 semester hours of credit, whichever is greater, may be repeated to satisfy the requirements for the degree. The last grade earned in each of these repeated courses is counted in the calculation of the cumulative grade-point average.

Any incomplete grades must be made up within one calendar year from the semester in which the student took the class that resulted in the incomplete course grade.

More information regarding course grading and academic disputes may be found at "Academic Appeals" under "Appeals Policies and Procedures," page 25.

## Grade Reports

Grades are available to students approximately three days after the end of each semester via the myNEU Web Portal (www.myneu.neu.edu). A missing grade means that none was received from the instructor. Grades received late from faculty are processed as they are received.

## Transcripts

Currently enrolled students may obtain unofficial transcripts from the myNEU Web Portal (www.myneu.neu.edu) and may also order official transcripts through myNEU. For further information on transcript requests, please visit www.northeastern.edu/registrar/trans_request.html. All questions concerning transcript requests should be directed to 617.373.2199, (TTY) 617.373.5360.

## Northeastern University Course Numbering

### UNDERGRADUATE

0001–0999   **Orientation and basic**
No degree credit

1000–1999   **Introductory level (first year)**
Survey, foundation, and introductory courses, normally with no prerequisites and designed primarily for students with no prior background

2000–2999   **Intermediate level (sophomore/junior year)**
Normally designed for sophomores and above but in some cases open to freshman majors in the department

3000–3999   **Upper-intermediate level (junior year)**
Designed primarily as courses for juniors; prerequisites are normally required, and these courses are prerequisites for advanced courses

4000–4999   **Advanced level (senior year)**
Designed primarily for juniors and seniors; also includes specialized courses such as research, capstone, and thesis

### GRADUATE

0001–0999   **Orientation and basic**
No degree credit

5000–5999   **First-level graduate**
Courses primarily for graduate students and qualified undergraduate students with permission

6000–6999   **Second-level graduate**
Generally for master's and clinical doctorate only

7000–7999   **Third-level graduate**
Master's- and doctoral-level courses; includes master's thesis

8000–8999   **Clinical/research/readings**
Includes comprehensive exam preparation

9000–9999   **Doctoral research and dissertation**

## Maintenance of Student Records

The university registrar is responsible for ensuring appropriate maintenance and safekeeping of student records. The transcript, which is stored electronically and maintained indefinitely, is the holistic record of student attendance and degree progress. In the event that the university discontinues operations, the archive of student records would be maintained by the Massachusetts Department of Higher Education, One Ashburton Place, Room 1401, Boston, MA 02108.

## Course Cancellations

Northeastern University reserves the right to cancel any course if minimum enrollments, appropriate faculty, or academic facilities do not meet standards.

### FINAL EXAMINATIONS AND RELATED POLICIES ON OTHER EXAMS AND FINAL TERM PAPERS/PROJECTS

All final examinations, term papers, or projects must be returned to the student or be retained by the department for a period of one year.

### GRADUATION REQUIREMENTS

All eligible degree candidates must complete the graduation application by the applicable deadline. Before you apply to graduate through your myNEU account, we recommend you take the time to review your current program information, i.e., degree, major, minor, and concentration. To review this information, log in to your myNEU account; under the "Self-Service" tab click "Student Self-Service."

### FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA)

## FERPA for Students—General Information

FERPA is a federal law that applies to educational institutions. Under FERPA, schools must allow students who are 18 years or over or attending a postsecondary institution:

- Access to their education records
- An opportunity to seek to have the records amended (see the student handbook for this procedure)
- Some control over the disclosure of information from the records

## FERPA General Guidance for Parental Disclosure

When a student turns 18 years of age or attends a postsecondary institution, the student, and not the parent, may access, seek to amend, and consent to disclosures of his or her education records.

## Release of Directory Information

The primary purpose of directory information is to allow Northeastern University to confirm attendance for employers, health insurance companies, and loan agencies. Northeastern may disclose appropriately designated "directory information" without written consent, unless you have advised the university to the contrary in accordance with the procedures below. If you choose not to release directory information, all communications with all third parties and agencies will need to be done through your written request to the university or in person.

Northeastern directory information includes the following:

- College and major
- Dean's List or other recognition lists
- Graduation degree(s) and honors
- Dates of attendance
- Sports activity participation, such as for soccer, showing weight and height of team members
- A playbill, showing your role in a drama or music production

If Northeastern currently has permission to release data and you do not want the university to disclose directory information without your prior written consent, you must notify the university by coming to the Office of the Registrar, 120 Hayden Hall.

## Notification of Rights under FERPA

FERPA affords students certain rights with respect to their education records. These rights are:

1. The right to inspect and review the student's education records within forty-five days of the day the university receives a request for access. Students should submit to the registrar, dean, or head of the academic department (or appropriate official) written requests that identify the record(s) they wish to inspect. The university official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the university official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

2. The right to request the amendment of the student's education record that the student believes is inaccurate or misleading. Students may ask the university to amend a record that they believe is inaccurate or misleading. They should write the university official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the university decides not to amend the record as requested by the student, the university will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent. One exception, which permits disclosure without consent, is disclosure to school officials with legitimate educational interest. A school official is defined as a person employed by the university in an administrative, supervisory, academic, or support staff position (including law enforcement unit and health staff); a person or company with whom the university has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a person assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the university to comply with the requirements of FERPA. At Northeastern, the Office of the University Registrar, 120 Hayden Hall, administers FERPA.

5. Information concerning the following items about individual students is public and the offices listed below have the most accurate and up-to-date information:
   - **Office of the Registrar**
     (120 Hayden Hall)
     Full name, major field of study, dates of attendance, class year, degrees and awards received, most recent previous educational institution attended
   - **Department of Athletics**
     (219 Cabot Physical Education Center)
     Participation in formally recognized university athletics, weight and height of members of athletic teams
   - **Campus Activities**
     (434 Curry Student Center)
     Participation in officially recognized university activities and student organizations

## Additional Information

Additional information can be obtained at the following website:

www.ed.gov/policy/gen/guid/fpco/ferpa/index.html

or by writing to:

Family Policy Compliance Office
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202-5920

## FERPA and the USA Patriot Act

The USA Patriot Act preempts FERPA, described above. The act provides federal law enforcement agencies access to otherwise confidential student records upon the presentation of specified authority. The act also says that the university cannot notify the individual whose records or information is being sought that the request has been made. All requests for student information made under the authority of the USA Patriot Act are handled by the Office of University Counsel, 115 Churchill Hall.

<div style="background:red;color:white;padding:4px">STUDENT RIGHT-TO-KNOW ACT</div>

For information about the Student Right-to-Know Act, please visit www.northeastern.edu/registrar/right-to-know.html.

<div style="background:red;color:white;padding:4px">APPEALS POLICIES AND PROCEDURES</div>

## Graduate Student Appeals Procedures

Northeastern University affirms that it is essential to provide an appeals mechanism to students who believe that they have been erroneously, capriciously, inappropriately, or otherwise unfairly treated.

## Academic Appeals

It is the policy of the university that all students shall be treated fairly with respect to evaluations made of their academic performance, standing, and progress. The university presumes that academic judgments by its faculty are fair, consistent, and objective. Students must understand that the substitution of a different academic judgment for that of the original evaluator is a serious intrusion upon teaching prerogatives. Nonetheless, the university believes it is essential to provide an appeals mechanism to students who believe that they were erroneously, capriciously, or otherwise unfairly treated in an academic or cooperative education determination. This includes claims of misinterpretation or inequitable application of any academic provision of the student handbook or *Faculty Handbook*. Issues concerning admission or readmission into a program cannot be appealed beyond the college level.

Before invoking the appeals procedures, students are always encouraged to speak informally to their instructors or academic advisors about any determination or grade about which they have questions. If students choose to pursue an appeal, the process is described in the appeals section that follows.

## Scientific or Research Misconduct

Scientific or research misconduct is defined as fabrication, falsification, plagiarism, or other practices that seriously deviate from those that are commonly accepted within the academic and scientific community for proposing, conducting, or reporting research and does not include honest error or honest differences in interpretation or judgments of data. (Further information can be obtained from the U.S. Office of Research Integrity, Department of Health and Human Services, whose website can be found at www.ori.dhhs.gov.) Possible incidences of misconduct are to be reported immediately to the vice provost for graduate education,

who will initiate the appropriate procedures. Findings of scientific or research misconduct cannot be appealed through the process below.

## Nonacademic Appeals

It is the policy of the university that all students shall be treated with respect and that all evaluations of their employment performance will be fair, consistent, and objective. This includes claims of misinterpretation or inequitable application of any employment provision of the student handbook. The student is always encouraged to speak informally to his or her supervisor about any determination about which he or she has questions prior to invoking the appeals procedures.

If the student chooses to pursue an appeal, the process is described in the appeals section that follows.

## Appeal of Final Grades

It is the policy of the university that all students will be treated fairly in evaluations made of their academic performance, standing, and progress. The university presumes that academic judgments by its faculty are fair, consistent, and objective. Students must understand that the substitution of a different academic judgment for that of the original evaluator is a serious intrusion upon teaching prerogatives. Nonetheless, the university believes it is essential to provide an appeals mechanism to students who believe that they were erroneously, capriciously, or otherwise unfairly treated in an academic or cooperative education determination. This includes claims of misinterpretation or inequitable application of any academic provision of the university's undergraduate or graduate catalog, student handbook, or *Faculty Handbook.* However, graduate student issues involving admission or readmission in a program cannot be appealed beyond the college level.

In most cases, students should first discuss their concerns with the faculty member who taught the course to see if it is possible to reach agreement on the issue(s). If the student is not satisfied with the outcome of this discussion, or if the student is not comfortable discussing the issue with the instructor, the student should request a meeting with the department chair, or a person named by the chair, to attempt a department-level resolution of the appeal. If these informal attempts to resolve the issue fail, the student can enter the formal procedure at the college level as follows.

### STEP 1

A student may appeal an academic determination by submitting a written statement (the Statement) that specifies the details of the action or judgment. This Statement should include when the problem occurred, who was involved, the basis of the appeal, and the resolution sought by the student. For students in the College of Professional Studies (CPS), the Statement is submitted to the school official designated by the Vice President for Professional and Continuing Studies. Graduate students (other than CPS) should submit the Statement to the graduate coordinator in the department (where one exists). If there is no department-level

coordinator, the appeal should proceed to Step 2. All appeals of grades should be initiated and resolved before the student graduates. If a student wishes to dispute a grade in his or her final term, this must be done within forty-five calendar days of graduation. If the appeal concerns a cooperative education determination, it is submitted to the dean of the college in which the student is enrolled. The Statement must specify the details of the action or judgment and the basis for the appeal. All parties shall cooperate and act expeditiously in processing the appeal to completion.

Though students are always entitled to seek the advice of legal counsel, students may not be represented by a lawyer in the informal or formal academic appeal procedures. A student may consult with the Vice Provost for Graduate Education, Vice President for Professional and Continuing Studies (in the case of CPS students), or their designees at any point in this procedure for advice or assistance. The dean, vice president, or provost may take whatever steps they deem reasonably appropriate to achieve voluntary resolution of the problem at any stage of these procedures.

The Statement should be submitted within twenty-eight working days (or twenty working days [four calendar weeks] for CPS students) of the day when the student learns of the academic determination in question. For course grade appeal in the CPS, the Statement must be submitted within twenty days after grades are posted to the student academic record. Grades are typically available the Tuesday after the term ends and are viewable through the student's myNEU account.

If a student feels that he or she has been the victim of harassment or of discrimination prohibited by law or by university policy, he or she should consult with the Office of Institutional Diversity and Equity as soon as he or she becomes aware of alleged prohibited harassment or discrimination and is not required to wait until a term grade or determination is received before seeking advice or redress. If the Office of Institutional Diversity and Equity is advised of such alleged prohibited conduct as part of an academic appeal (see below), the appeal shall be pursued and investigated first through the Office of Institutional Diversity and Equity. In such cases, the student should submit the appeal to the appropriate dean(s) described in this step, with a copy also given to the Office of Institutional Diversity and Equity. Following a resolution of the sexual harassment/discrimination issues, any remaining academic issues will be addressed, at the request of the student, according to the academic appeals procedures.

### STEP 2

The dean or CPS vice president shall respond to the student in writing, including specific instructions for the student to seek an informal resolution to the matter, unless such course of action, as outlined by the student in his or her Statement, is demonstrably futile. These directions shall include discussing the matter with the person whom the student identifies as involved in the matter. If the student is not satisfied with the informal resolution, the dean or CPS vice president shall discuss the matter with the department

chair (where one exists), graduate coordinator, consultant, program director, or associate dean (as appropriate) or equivalent supervisor and the dean of the college in which the faculty member involved in the matter serves, who shall attempt to effect an informal resolution. The student shall also have the right to discuss the matter with the chair (where one exists) or equivalent supervisor in which department the faculty member involved in the matter serves.

If the appeal involves allegations of prohibited harassment or discrimination, the dean shall consult with the Office of Institutional Diversity and Equity before making this response and shall, as part of this response, explain the role that the Office of Institutional Diversity and Equity will play in steps 2 and 3 of this procedure.

A copy of this response shall be sent to the department chair or equivalent supervisor of the appropriate unit.

## STEP 3

If the appeal cannot be resolved informally within thirty calendar days of the student's original submission of his or her Statement to the dean or CPS vice president, or if he or she is not satisfied with the disposition of the matter at Step 2, the student may proceed with the appeal through his or her college's or school's established academic appeals procedure. The dean or the academic standing committee, as applicable, must provide the student and the involved faculty member with a written report of the finding(s) and decision.

This step involves a review by an academic standing committee making the recommendation to the dean or CPS vice president. The student may obtain a copy of the operating rules of the academic standing committee from the dean of the college involved.

In appeals involving allegations of prohibited harassment or discrimination, the dean or academic standing committee shall receive a report of the findings of the investigation of the Office of Institutional Diversity and Equity for incorporation into its own report on matters left unresolved by that finding that were referred to it. The dean/CPS vice president or committee shall be without authority to reverse or modify the Office of Institutional Diversity and Equity finding(s) or resolution.

## STEP 4

If the student or the involved faculty member is not satisfied with the dean's or CPS vice president's disposition of the matter or if the appeal is not resolved within thirty calendar days after originally submitted to the dean or CPS vice president pursuant to Step 1, he or she may further pursue the matter by requesting in writing within fourteen calendar days that the university convene an academic appeals resolution committee to review the issue. Students may obtain information on this process in either the Office of the Vice President for Student Affairs (104 Ell) or the Office of the Provost (110 CH). This committee has been designated as the final authority on these matters. This request must be made within fourteen calendar days of the finding of the academic standing committee in Step 3.

### 1. Academic Appeals Resolution Committee
The academic appeals resolution committee includes:

- The Vice Provost for Graduate Education or a designee.
- The student's faculty advisor will be appointed by the appropriate vice provost except in cases where no specific advisor exists, or where the faculty advisor is involved in the dispute. In those cases, a faculty member from the student's major college, department, or area of specialization will be appointed.
- Two faculty members appointed by the Faculty Senate Agenda Committee (if the appeal is based on a Cooperative Education determination, one of the faculty members shall be a member of the Cooperative Education faculty, but not from the student's area of study) and a representative of the Office of Institutional Diversity and Equity (if the appeal had at any point involved a matter of sexual harassment/discrimination).
- The chair shall be elected from among the committee's three faculty members but cannot be the student's faculty advisor.

### 2. Preliminary Matters
If the academic appeals resolution committee determines, by a majority vote, that the appeal is patently without substance or merit, it may dismiss the appeal.

### 3. Investigation
The academic appeals resolution committee shall investigate the matter under appeal as quickly as possible by studying the relevant documents, interviewing the parties (especially the student and the involved faculty member), and taking any other action it deems appropriate. At no time shall the committee be bound by rules of evidence but shall at all times conduct itself in a matter that is not arbitrary or capricious. The academic appeals resolution committee may, but is not required to, hold a hearing prior to resolving the issues. However, in all instances, the student and the involved faculty member shall have the right to appear and testify separately and privately before the academic appeals resolution committee. The student shall have the right to have an advocate from the university community present during his or her testimony to the academic appeals resolutions committee.

### 4. Authority to Act
The academic appeals resolution committee has been designated as the final authority on these matters. At the conclusion of its investigation, the academic appeals resolution committee shall resolve, by majority vote, the issue by either upholding the finding of the academic standing committee or dean/CPS vice president, in which case no further appeal is available, or granting such relief to the student as the appeals resolution committee deems appropriate.

a. The academic appeals resolution committee may not determine a resolution that contradicts the prior findings or actions of the Office of Institutional Diversity and Equity with respect to elements of this appeal.
b. In the event of a tie vote, the action of the academic standing committee or dean/CPS vice president shall be considered upheld.

### 5. Resolution

All direct parties to the appeal, including but not limited to the student, the CPS vice president or provost, the dean, the department chair or equivalent supervisors, graduate coordinator or equivalent supervisor, and the faculty member shall be promptly informed in writing of the decisions and actions taken (i.e., the Report) during this academic appeals procedure.

### 6. Report

A written Report of the appeal and its resolution shall be submitted by the chair of the academic appeals resolution committee to the student, the involved faculty member, the Faculty Senate Agenda Committee, the vice president for student affairs, the appropriate vice provost, the registrar, and the dean or CPS vice president, as appropriate.

### 7. Action

The dean(s) or CPS vice president or his or her designee in the involved college(s) shall take whatever action is necessary to implement fully the resolution of the academic appeals resolution committee. This includes reporting the change of grade to the registrar.

### 8. Appeal

No further appeal can be instituted by the student or the involved faculty member with respect to the issue(s) raised at any level of the formal appeals resolutions procedures once adjudicated.

## GENERAL REGULATIONS

Please review the general regulations that follow as well as all other regulations or limitations included throughout this catalog. Your success at Northeastern depends, in part, on understanding your rights and fulfilling your responsibilities.

## Legal Rights and Responsibilities

### GRIEVANCE PROCEDURE FOR DISABLED STUDENTS

It is the policy of Northeastern University to comply with all laws governing access by and discrimination against disabled students. Accordingly, any student who believes that there has been a violation of these laws is encouraged to discuss the matter with the director of the Disability Resource Center and other persons identified by the director, or with the director of the Office of Institutional Diversity and Equality, to resolve the matter in a prompt and equitable manner. If such discussions do not resolve the matter, the student may then initiate a grievance by taking the steps outlined below.

1. All grievances made by students on the basis of being disabled are considered as being made to the president of the university.
2. In the case of a grievance, the student should discuss the objection with the individual responsible for the office or department where the objection was initially raised.
3. If not satisfied, the student should discuss the objection with the dean of the college or director under which the department falls.
4. If the grievance is not satisfactorily resolved, the student should complete a grievance form and file a written request for a formal hearing with the Grievance Committee for Disabled Students. The request should be filed with the vice president for student affairs. Upon receipt of a written request for a formal hearing, the grievance committee (including one faculty member from the student's college, one faculty member not from the student's college, one representative from the Disability Resource Center, a representative from the Office of Institutional Diversity and Equality, the vice president for student affairs or a designee, and another administrator not from student affairs) must hold a hearing within three calendar weeks. The grievance committee must allow a full and fair opportunity for the presentation of evidence relevant to the reason(s) for the hearing request and must render a decision in writing to the requesting student within one week of the conclusion of the hearing. The director of the Office of Institutional Diversity and Equality is compliance officer for Section 504 of the Rehabilitation Act of 1973.

### GRIEVANCE PROCEDURE—SEXUAL HARASSMENT

No employee, agent, supervisory personnel, or faculty member shall exercise his or her responsibilities or authority in such manner as to make submission to "sexual advances, requests for sexual favors, or other verbal or physical conduct of a sexual nature" as an explicit or implicit term or condition of evaluation, employment, admission, advancement, or reward within the university. Neither shall any employee, agent, supervisory personnel, or faculty member make submission to or rejection of such conduct the basis for employment or academic decisions affecting any employee or student. Neither shall any employee, agent, supervisory personnel, or faculty member conduct himself or herself with respect to verbal or physical behavior of a sexual nature where such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive work or classroom environment.

Though sexual harassment will not be tolerated, the university recognizes that it is difficult to regulate emotional relationships between consenting adults. However, a consensual relationship may be suspect in instances in which one of the individuals has authority over the other. Therefore, no faculty or employee involved romantically or sexually with a student may teach or supervise that person either individually or as part of a group in any activity connected to the university.

Any student, teaching assistant, employee, or faculty member who feels that he or she has been the victim of sexual harassment may bring the matter to the attention of the director of the Office of Institutional Diversity and Equality. Copies of the sexual harassment grievance procedure can be obtained from the Office of Institutional Diversity and Equality, 424 Columbus Place.

## HAZING—CHAPTER 269 OF THE MASSACHUSETTS GENERAL LAWS

Section 17. Whoever is a principal organizer or participant in the crime of hazing, as defined herein, shall be punished by a fine of not more than three thousand dollars or by imprisonment in a house of correction for not more than one year, or both such fine and imprisonment. The term hazing as used in this section and in sections eighteen and nineteen, shall mean any conduct or method of initiation into any student organization, whether on public or private property, which willfully or recklessly endangers the physical or mental health of any student or other person. Such conduct shall include whipping; beating; branding; forced calisthenics; exposure to weather; forced consumption of any food, liquor, beverage, drug, or other substance; or any other brutal treatment or forced physical activity which is likely to adversely affect the physical health or safety of any such student or other person, or which subjects such student or other person to extreme mental stress, including extended deprivation of sleep or rest or extended isolation. Notwithstanding any other provisions of this section to the contrary, consent shall not be available as a defense to any prosecution under this action.

Section 18. Whoever knows that another person is the victim of hazing as defined in section seventeen and is at the scene of such crime shall, to the extent that such person can do so without danger or peril to himself or others, report such crime to an appropriate law enforcement official as soon as reasonably practicable. Whoever fails to report such crime shall be punished by a fine of not more than one thousand dollars.

Section 19. Each institution of secondary education and each public and private institution of postsecondary education shall issue to every student group, student team, or student organization that is part of such institution or is recognized by the institution or permitted by the institution to use its name and facilities or is known by the institution to exist as an unaffiliated student group, student team, or student organization, a copy of this section and sections seventeen and eighteen; provided, however, that an institution's compliance with the section's requirements that an institution issue copies of this section and sections seventeen and eighteen to unaffiliated student groups, teams, or organizations shall not constitute evidence of the institution's recognition or endorsement of said unaffiliated student groups, teams, or organizations.

Each such group, team, or organization shall distribute a copy of this section and sections seventeen and eighteen to each of its members, plebes, pledges, or applicants for membership. It shall be the duty of each such group, team, or organization, acting through its designated officer, to deliver annually to the institution an attested acknowledgement stating that such group, team, or organization has received a copy of this section and said sections seventeen and eighteen, that each of its members, plebes, pledges, or applicants has received a copy of sections seventeen and eighteen, and that such group, team, or organization understands and agrees to comply with the provisions of this section and sections seventeen and eighteen. Each institution of secondary education and each public or private institution of postsecondary education shall, at least annually, before or at the start of enrollment, deliver to each person who enrolls as a full-time student in such institution a copy of this section and sections seventeen and eighteen.

Each institution of secondary education and each public or private institution of postsecondary education shall file, at least annually, a report with the regents of higher education and, in the case of secondary institutions, the board of education, certifying that such institution has complied with its responsibility to inform student groups, teams, or organizations and to notify each full-time student enrolled by it of the provisions of this section and sections seventeen and eighteen and also certifying that said institution has adopted a disciplinary policy with regard to the organizers and participants of hazing and that such policy has been set forth with appropriate emphasis in the student handbook or similar means of communicating the institution's policies to its students. The board of regents and, in the case of secondary institutions, the board of education shall promulgate regulations governing the content and frequency of such reports and shall forthwith report to the attorney general any such institution that fails to make such report.

## STUDENT RIGHT-TO-KNOW AND CAMPUS SECURITY ACT

In compliance with the Student Right-to-Know and Campus Security Act, information regarding graduation rates may be obtained in the Office of the Registrar, 120 Hayden Hall, and in the Department of Athletics, 219 Cabot Physical Education Center; information regarding safety and security may be obtained in the Office of Admissions and the Public Safety Division, 100 Columbus Place. It is Northeastern University's policy to disclose to an alleged victim of any crime of violence the results of any disciplinary proceeding against the alleged perpetrator of such crime. Further information is available in the Office of Student Conduct and Conflict Resolution, 202 Ell Hall.

## USE OF ALCOHOL AND DRUGS

The unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in or on any Northeastern property. Any university employee or student determined to have violated this policy may be subject to disciplinary action up to and including dismissal. The use of alcohol while on Northeastern property is prohibited except where specifically authorized by the university. No employee may report to work while under the influence of alcohol or illegal drugs. Violation of these regulations may be reason to require

evaluation/treatment for substance abuse in coordination with the University Center for Counseling and Student Development and/or for disciplinary action up to and including dismissal. Northeastern University works to provide a drug-free workplace for all university employees and students. The Center for Counseling and Student Development provides resources for treatment and referral for students and employees with substance abuse problems. Educational programs for students, employees, and managers are presented through Human Resources Management, the Office of Residential Life, and the Center for Counseling and Student Development and cover the dangers of alcohol and drug abuse, the availability of assistance for counseling and rehabilitation, and penalties for violating university policies. To comply with federal law, the university requires that employees directly engaged in performance of a grant or contract must notify their employers of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after the conviction. The university must notify any federal contracting agency within ten days of having received notice that an employee engaged in the performance of such contract has had a criminal drug statute conviction for a violation occurring in the workplace. The university will take appropriate action up to and including dismissal and/or require participation in an approved abuse assistance or rehabilitation program.

## USE OF WEAPONS

The use or possession on campus of firearms, explosive agents of any kind, as well as chemicals, mace, and tear gas, is specifically forbidden by the Code of Student Conduct. Violation of this university policy is cause for disciplinary action up to and including expulsion. In addition, it is worth noting that Massachusetts law states: "Whoever, not being a law enforcement officer and notwithstanding any license obtained by him under the provisions of chapter one hundred and forty, carries on his person a firearm as hereinafter defined, loaded or unloaded, in any building or on the grounds of any college or university without the written authorization of the board or officer in charge of said college or university shall be punished by a fine of not more than one thousand dollars or by imprisonment for not more than one year or both. For the purpose of this paragraph, 'firearm' shall mean any pistol, revolver, rifle, or smoothbore arm from which a shot, bullet, or pellet can be discharged by whatever means."

Massachusetts general law prohibits the possession of nunchaku or karate sticks; switchblades; knives; starter's pistols; ammunition; leather armbands or other clothing that has metallic spikes, points, or studs; or other dangerous weapons or articles. A student who possesses any articles for sporting purposes (for example, bow and arrows) should check with the University Police Department or the Department of Residential Life to determine whether such articles are among those prohibited by statute or university regulation. Northeastern University also prohibits the possession of knives other than food utensils.

## Policies and Procedures

### ACADEMIC INTEGRITY POLICY

Essential to the mission of Northeastern University is the commitment to the principles of intellectual honesty and integrity. Academic integrity is important for two reasons. First, independent and original scholarship ensures that students derive the most from their educational experience and the pursuit of knowledge. Second, academic dishonesty violates the most fundamental values of an intellectual community and depreciates the achievements of the entire university community.

Accordingly, Northeastern University views academic dishonesty as one of the most serious offenses that a student can commit while in college. The following is a broad overview of what constitutes academic dishonesty but is not meant to be an all-encompassing definition.

#### *Cheating*

Defined as intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise. Examples:

- Unauthorized use of notes, text, or other aids during an examination
- Copying from another student's examination, research paper, case write-up, lab report, homework, computer disc, and so on
- Talking during an examination
- Handing in the same paper for more than one course without the explicit permission of the instructor
- Perusing a test before it is given
- Hiding notes in a calculator for use during an examination

#### *Fabrication*

Defined as intentional and unauthorized falsification, misrepresentation, or invention of any information, data, or citation in an academic exercise. Examples:

- Making up the data for a research paper
- Altering the results of a lab experiment or survey
- Listing a citation for a source not used
- Stating an opinion as a scientifically proven fact

#### *Plagiarism*

Defined as intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise without providing proper documentation of source by way of a footnote, endnote, or intertextual note. The following sources demand notation:

- Word-for-word quotation from a source, including another student's work
- Paraphrase: using the ideas of others in your own words
- Unusual or controversial facts—facts not apt to be found in many places
- Interviews, radio and television programs, and telephone conversations

*Unauthorized collaboration*

This refers to instances when students, each claiming sole authorship, submit separate reports that are substantially similar to one another. While several students may have the same source material (as in case write-ups), the analysis, interpretation, and reporting of the data must be each individual's.

*Participation in academically dishonest activities*

Examples:

- Stealing an examination
- Purchasing a prewritten paper through a mail-order or other service, including via the Internet
- Selling, loaning, or otherwise distributing materials for the purpose of cheating, plagiarism, or other academically dishonest acts
- Alteration, theft, forgery, or destruction of the academic work of other students, library materials, laboratory materials, or academic records including transcripts, course registration cards, course syllabi, and examination/course grades
- Intentionally missing an examination or assignment deadline to gain an unfair advantage

*Facilitating academic dishonesty*

Defined as intentionally or knowingly helping or attempting to violate any provision of this policy. Examples:

- Inaccurately listing someone as coauthor of a paper, case write-up, or project who did not contribute
- Sharing with another student a take-home examination, homework assignment, case write-up, lab report, and so on, without expressed permission from the instructor
- Taking an examination or writing a paper for another student

All members of the Northeastern University community—students, faculty, and staff—share the responsibility to bring forward known acts of apparent academic dishonesty. Any member of the academic community who witnesses an act of academic dishonesty should report it to the appropriate faculty member or to the director of the Office of Student Conduct and Conflict Resolution. The charge will be investigated and if sufficient evidence is presented, the case will be referred to the Northeastern University Student Judicial Hearing Board. If found responsible for an academic dishonesty violation, a minimum sanction of deferred suspension will follow. If found responsible for a second violation, the student will be expelled from the university.

## APPROPRIATE USE OF COMPUTER AND NETWORK RESOURCES POLICY

The information systems of Northeastern University are intended for the use of authorized members of the Northeastern community in the conduct of their academic and administrative work. To protect the integrity of computer resources against unauthorized or improper use, and to protect authorized users from the effects of unauthorized or improper usage, the university reserves the right, with or without notice, to monitor, record, limit, or restrict any account holder's usage. The university may also monitor, record, inspect, copy, remove, or otherwise alter any data, file, or system resources. The university reserves the right to periodically check these systems and to take any other action necessary to protect the computer and network facilities. The university also retains access rights to all files and electronic mail on its computing and network facilities. Anyone using these systems or networks expressly consents to such monitoring.

Any unauthorized, inappropriate, illegal, or illegitimate use of the university's computing resources, or failure to comply with these guidelines, shall constitute a violation of university policy and will subject the violator to disciplinary action by the university and may result in legal action. When a violation is identified, the appropriate system manager or unit head will undertake a review and initiate action in accordance with university policy. In addition, the university may require restitution for any use of computer or network services that violate these guidelines. The university may also provide evidence of possible illegal or criminal activity to law enforcement authorities.

Notwithstanding any other provision of this policy, authorization to access the information systems of Northeastern University ends at the termination of employment, the end of a recognized role or relationship, or the loss of sponsorship. Students may continue to use their Northeastern electronic mail account for up to six months after graduation. Any questions about this policy or the applicability of this policy to a particular situation should be referred to the information technology security manager or the director of internal audit. The university's information systems consist of all networking wiring, equipment, networks, security devices, servers, computer systems, computers, computer laboratory equipment, workstations, Internet connections, and all other intermediary equipment, services, and facilities. These assets are the property of Northeastern University.

1. Access to and use of Northeastern information systems is a privilege granted by the university to its faculty, staff, and students. Access for up to one academic year for others, including "sponsored" individuals whose relationship with Northeastern is a result of a university-recognized affiliation or relationship, must be approved by the authorizing unit's dean or vice president. Such access may not be renewed without the written approval of the senior vice president for administration and finance.
   The university retains sole discretion over the extent to which access privileges are granted.
2. Users may only use those computer accounts that have been authorized by the university for their use. Use of another person's account, security devices, and/or the presentation of false or misleading information or credentials for the purpose of obtaining access to information systems is prohibited.
3. Users are responsible for all use of information systems conducted under their user ID(s) and are expected to take all precautions including password security and file protection measures to prevent use of their accounts and files by unauthorized persons. Sharing of passwords is prohibited.

4. Users may not offer, provide, lend, rent, or sell access to university information systems. Users may not provide access to individuals outside the university community.

5. Use of university information systems for hosting non-university activities must have the explicit written authorization of the senior vice president for administration and finance prior to the use.

6. While the university attempts to protect electronic communication and files from unauthorized access, this cannot be guaranteed. Users may not access, copy, or move files including, but not limited to, programs, data, and electronic mail that belong to another account without prior authorization from the account holder. Files may not be moved to other computer sites without permission from the holder of the account under which the files reside.

7. Users may not use remote resources such as printer and file systems, regardless of location on or off the Northeastern network, unless the administrator of the remote resource has first granted permission.

8. Northeastern information systems may be used for lawful purposes only. Users must not use their accounts or Northeastern information systems for unlawful purposes including, but not limited to, the installation of fraudulently or illegally obtained software; illegal dissemination of licensed software; sharing of content where the disseminator does not hold lawful intellectual property rights; propagating chain letters, pyramid, Ponzi, other unlawful or deceptive schemes; or for any purpose contrary to local, state, and/or federal law.

9. Use of university information systems must comply with the provisions of copyright law and fair use. Copyright law limits the right of a user to copy, edit, or transmit electronically another's intellectual property, including written materials, images, sounds, music, and performances, even in an educational context, without permission, except in compliance with the fair use doctrine exception.

10. Users are responsible for the timeliness, accuracy, and content/consequences of their Web pages. Posting of personal, family, or other identifying information is at the sole discretion of the user. Users are advised to exercise discretion when posting personal information to minimize the risk to personal privacy and safety.

11. University information systems may not be used for commercial purposes, except only as permitted with explicit prior written approval of university counsel and the senior vice president for administration and finance.

12. Internet use must comply with the terms of service stipulated by our Internet service provider(s). These policies are incorporated by reference. In addition, the acceptable use, terms of service, and/or other policies of the system(s) also bind users of the Internet connection and resources to which they connect. At the time of writing, the Internet service provider for Northeastern University is Genuity (www.genuity.com).

13. Users may not use information systems irresponsibly, wastefully, or in a manner that adversely affects the work or equipment of others at Northeastern or on the Internet.

14. The university strives to maintain the security and privacy of all electronic communications and content passed on the Northeastern network and, therefore, will not arbitrarily or frivolously review or inspect user files or electronic mail. However, all electronic communications and content presented to and/or passed on the Northeastern network, including that presented to and/or passed to and from the Internet connection(s), may be monitored, examined, saved, read, transcribed, stored, or retransmitted in the course of daily operations by any duly authorized employee or agent of Northeastern University in the exercise of their duties or by law enforcement authorities who are called upon to assist the university in investigating possible wrongdoing. Electronic communications and content may be examined by automated means. Further, Northeastern reserves the right to reject from the network electronic communications and content deemed not in compliance with policies governing the use of information systems at the university. By accessing Northeastern information systems, users give Northeastern permission to conduct each of the operations described above.

15. The confidentiality of any message or material should not be assumed. Even when a message or material is deleted, it may still be possible to retrieve and read that message or material. Further, the use of passwords for security does not guarantee confidentiality. Messages read in HTML may identify the reader to the sender. Aside from the right of the university to retrieve and read any electronic communications or content, such messages or materials should be treated as confidential by other students or employees and accessed only by the intended recipient. Without prior authorization, students and employees are not permitted to retrieve or read electronic mail messages that are not sent to them.

16. All users are required to honor and observe the rules of confidentiality and protection of privacy when accessing and using any information that resides on Northeastern information systems and/or any information that pertains to university programs, students, faculty, and staff. All disclosures of student information must comply with the provisions of the Family Educational Rights and Privacy Act (FERPA) of 1974 (see page 24).

17. Northeastern reserves the right at any time, without prior notice or permission from the user or users of a computer or other Northeastern-owned computing device, to copy or have copied, any and all information from the data-storage mechanisms of such devices, as may be required at the sole discretion of the university, in connection with investigations of possible wrongdoing.

18. The Appropriate Use of Computer and Network Resources Policy specifically prohibits the use of Northeastern University's information systems to:

- Harass, threaten, defame, slander, or intimidate any individual or group.
- Generate and/or spread intolerant or hateful material, which in the sole judgment of the university is directed against any individual or group, based on race, religion, national origin, ethnicity, age, gender, marital status, sexual orientation, veteran status, or disability.
- Transmit or make accessible material, which in the sole judgment of the university is offensive, violent, pornographic, annoying, or harassing, including use of Northeastern information systems to access and/or distribute obscene or sexually explicit material unrelated to university-sanctioned work or bona fide scholarship.
- Generate unsolicited electronic mail such as chain letters, unsolicited job applications, or commercial announcements.
- Generate falsely identified messages or message content, including use of forged content of any description.
- Transmit or make accessible password information.
- Attempt to access and/or access information systems and/or resources for which authority has not been granted by the system owner(s).
- Capture, decipher, or record user IDs and/or passwords.
- Intercept electronic communications not intended for the recipient.
- Probe by any means, the security mechanisms of any resource on the Northeastern network, or on any other network through a connection to the Northeastern network.
- Disclose or publish, by any means, the security vulnerabilities of or the means to defeat or disable the security mechanisms of any resource connected to or part of the Northeastern University network.
- Alter, degrade, damage, or destroy data.
- Transmit computer viruses or malicious/destructive code of any description.
- Conduct illegal, deceptive, or fraudulent activity.
- Obtain, use, or retransmit copyrighted information without permission of the copyright holder.
- Place bets, wagers, or operate games of chance.
- Tax, overload, impede, interfere with, damage, or degrade the normal functionality, performance, or integrity of any device, service, or function of Northeastern information systems, content, components, or the resources of any other electronic system, network, service, or property of another party, corporation, institution, or organization.

The above enumeration is not all-inclusive. If there is a question as to whether a specific use is appropriate or acceptable under this policy, the university's sole determination shall prevail.

19. Use of Northeastern University information systems must comply with all applicable local, state, and federal laws, including, but not limited to, the following, which are incorporated by reference:

- Massachusetts General Laws Chapter 266, Subsections 33(a) and 120(f), which impose sanctions for, among other acts, destroying electronically processed and stored data or gaining unauthorized access to a database or computer system.
- United States Code, Title 18, Computer Fraud and Abuse Act, which imposes sanctions for, among other acts, knowingly accessing a computer without authorization or in excess of authorized access, knowingly causing damage to protected computers, or trafficking in password information.
- United States Code, Title 18, Electronic Communications Privacy Act, which imposes sanctions for, among other acts, interception of wire, oral, or electronic communications.

## BEHAVIOR ON CO-OP, ON EXTERNSHIPS, AND IN THE NEIGHBORHOOD

As an urban institution, Northeastern University is a part of the vibrant community and business life of the surrounding neighborhoods. Maintaining amicable and considerate relations between the university and local residents and businesses is essential to the continued cooperation of the university and its neighbors in civic projects and issues and to the furtherance of the university's broader mission to contribute to the general good of society. The university endeavors to foster conditions under which such beneficial relations exist. Consequently, the university must consider conduct on the part of members of the university community, whether on or off campus and whether isolated or continuing in nature, that is disruptive of these relations; that impairs, interferes with, or obstructs the lawful missions, processes, and functions of the university; or that is found by the university to be abhorrent or offensive to generally accepted standards of social behavior, as inimical to the university's interests.

The university's Code of Student Conduct governs student behavior on co-op, externships, and in the community surrounding the university. In addition, misbehavior in these settings may violate the law, policies of the co-op employer, or rules of the externship sponsor.

## BICYCLES

Wherever possible, students should use the bike racks available at various locations on campus. Bicycles should not be chained to fences, doors, trees, or other objects, and under no circumstances may bicycles be brought into any university building. The fire code dictates that all entrances, exits, corridors, and stairwells must be free and clear at all times. Bicycles found in violation of this code will be removed from the area.

## CARD PLAYING AND GAMBLING

The university does not permit card playing of any kind in classrooms unless it is a regularly scheduled activity of an organization recognized officially by the Office of Student Activities. Social card games are permitted in the residence halls and in the Curry Student Center. Students may not gamble, play

pyramid games, or sell lottery tickets. Casino or other game events are permitted in designated areas that are approved by city and state laws, as part of properly scheduled events, and in strict accordance with regulations issued by the Office of the Vice President for Student Affairs.

## COPYRIGHTABLE MATERIALS

It is the general policy of the university that student papers or projects submitted in partial fulfillment of course requirements remain the property of the student authors.

This policy does not apply to (1) "work for hire" as defined by intellectual property laws; (2) work derived wholly or in part from other patented or copyrighted material; (3) work done as part of external grants or contracts in which the contracting documents or regulations define ownership; (4) work in which the university or its agents or employees contribute substantial time or resources; or (5) work considered a thesis or dissertation. The university owns the copyright to any work created or developed by one or more students with the significant use of funds, space, facilities, equipment, materials, or other university resources. The university will not normally construe the payment of salary from unrestricted funds or the provision of office and library facilities as constituting significant use of funds, space, facilities, equipment, materials, or other resources of or administered by the university. Use of laboratory and/or computer facilities or assistance from one or more faculty or staff members to a student author specifically pertaining to the work constitutes significant use of university resources. In all cases, the provost or his or her designee shall make a good-faith determination concerning significant use, which shall be final and binding on all parties.

In the case of a thesis generated by research performed in whole or in part by a student in the course of or pursuant to an agreement for sponsored research or other written agreement, including an agreement between the author(s) and the university, or utilizing equipment or facilities provided to the university under conditions that impose copyright restrictions, ownership or control shall be determined in accordance with such agreement or restrictions. In the absence of such agreement or restrictions, copyright ownership in such a thesis shall reside in the student. However, the student, as a condition of a degree award, must grant the university the royalty-free right to reproduce and publicly distribute copies of the thesis for limited and noncommercial purposes.

Where necessary to secure to the university an ownership of copyright, students shall assign such rights of copyright, or grant the specified rights of reproduction and distribution, to the university. The university reserves the right to employ, at its discretion, the materials or portions of any work created or developed in the course of an author's relationship with the university, or otherwise covered by the University Patent and Copyright Policy, for promotional, professional, or noncommercial purposes on a royalty-free basis. Certain courses taught at Northeastern University involve students in individual or group assignments or projects involving the creation of materials, objects, or techniques that may be patentable or copyrightable. These courses generally require extraordinary levels of faculty organization and participation and/or substantial university resources.

1. Individual teachers or academic units may require that originals or copies of such papers or projects be retained either temporarily or permanently by the individual teacher or by the unit.
2. A thesis is a student work representing significant original or independent research and for which the student receives a substantial amount of credit toward a degree or certificate. Where there is a question concerning whether or not a student's work is a thesis, the provost or his or her designee shall make a good-faith determination concerning same, which shall be final and binding on all parties.
3. Copies of the university patent and copyright policies are available from the Division of Research Development, 405 Lake Hall, 617.373.4587.

In accordance with university patent and copyright policies, in such courses the university is the owner of all rights in technology, computer programs, or other creative work that may be developed by the undergraduate or graduate student as part of the student's work in those courses. It is the university's intention, where applicable, to disclose and authorize the use of such technology, programs, or work to nonprofit organizations and to government agencies without a fee. The university may also have the opportunity to license such materials to a commercial enterprise, and in this event, it is the university's intention to share any revenue from such a license with student contributors in an amount determined in accordance with the then-existing university policy or plan. Students are informed early in the semester if the course in which they are enrolled falls within this category and will be asked to sign a letter of agreement. Should the student decline to sign an agreement, he or she will be assigned to another course section—one in which such agreement is not required—or will be given alternative activities not involving such assignments or projects.

## COPYRIGHTS AND PATENTS

Any student who makes, as sole or joint inventor, an invention that involved significant use of university resources, including funds, space, facilities, equipment, or materials, or that is subject to terms of a sponsored research or other agreement between the university and another party, shall assign this invention and all associated applications and patents to the university or its designee unless the invention has been released to the inventor in accordance with the applicable provisions of the university patent policy. Any student, whether before or after terminating his or her association with the university, shall do whatever is necessary to enable the university or its designee to take out patents in any and all countries on such invention. The cost and expense of making such assignments and procuring such patents shall be borne by the university or its designee. When an invention is made by a student not involving significant use of funds, space, facilities, equipment, materials, or other resources of or administered by the university,

the university will waive its rights, and the invention will be the exclusive property of the student, provided the student's rights in the invention are not altered by the terms of any financial aid received, including external sponsorship, scholarships, fellowships, traineeships, thesis expenses, or other assistance, whether or not administered by the university and provided the invention is not subject to third-party rights.

## DEMONSTRATIONS

The university supports as fundamental to the democratic process the rights of all members of the university community to express their views and to protest actions or opinions with which there is disagreement. A university is where individuals express diverse ideas and viewpoints in an atmosphere free of any physical force. The university insists that all demonstrations be peaceful and orderly and abide by university regulations.

- Demonstrators must not block corridors or entrances or use loud noise to disrupt a conference, meeting, or assembly.
- Demonstrations may not be conducted in faculty or administrative offices, classrooms, libraries, or study areas.
- Moving picket lines in university corridors are prohibited. (Protests may be registered by individuals or groups standing in a single line against a corridor wall, but corridors must be kept open at all times for the free passage of other members of the community.)

Students, faculty, or other members of the university community who violate these regulations will be subject to disciplinary action; violators also jeopardize their right to remain in the university community.

## DEPARTMENTAL JURISDICTION

Certain departments of the university shall have the power to set down rules and regulations governing the operation of the departments' respective areas of responsibility. Such rules and regulations shall be in accord with the "General Statement of Student Rights and Responsibilities" as well as with the policies pertaining to student conduct as defined in this document.

## DISMISSAL FROM CLASS

Students dismissed from classes for insubordination or other disciplinary reasons may not return without the approval of the college and the vice president for student affairs.

## IDENTIFICATION CARDS

All students must have in their possession at all times the officially approved and properly validated photo identification card. It will be necessary to show this card as a means of identification when using the library and campus recreational facilities, at athletic contests, at student elections, at University Health and Counseling Services, at Student Accounts, at the Office of the Registrar, to campus police, and elsewhere around the university. All members of the community should be prepared and willing to identify themselves and their guests upon request by authorized personnel. An official photo identification card will be issued to new students during their initial orientation and

registration periods. Replacements for lost cards can be obtained at the Office of the Registrar, 120 Hayden Hall.

## JURY DUTY

Northeastern expects students to fulfill their civic duties; the university cannot interfere in this process. Students who miss classes because of this obligation must notify their professors in writing, explaining which classes will be missed on which days. The professors will work with students to make up missed assignments or exams. Upon completion of their jury duty, students must bring a copy of the documentation of their service to the appropriate professors. Students on co-op are expected to inform their supervisors if called to jury duty.

## MEDIA AND PUBLIC APPEARANCES

In all personal communications to newspapers or other media, as well as personal public appearances in which students identify themselves as members of the Northeastern University community, it should be made clear that the opinions presented are a student's own and not necessarily those of the university. Students who appear on public programs as representatives of Northeastern University must be particularly careful to avoid language or presentations that could be considered in bad taste or offensive.

## PETS

Pets are prohibited in all university buildings out of consideration for the general community and to maintain a clean and healthy environment. Exceptions are made for guide dogs and other guide animals.

## PUBLIC ACCESS

Access by the general public to attend special programs or functions is limited to those events approved for such attendance. The facilities of the university were designed for the use of members of this academic community. When appropriate, access may be permitted for events and programs when it is apparent that the students, faculty, staff, and alumni of the university and their guests will not fill the facility reserved for such use. In such cases, special provisions must be made to ensure that members of this academic community have priority to attend and are not precluded from attendance by the general public. Certain facilities, such as residence halls, classrooms, and laboratories, are designed for and are to be used by residence hall residents only, or in the case of classrooms and laboratories, by members of this academic community. In all cases, the essential educational purpose of the university cannot be interrupted or disturbed by the access of the general public. Officials of the university may restrict or prevent access by the public if such access disturbs or has the potential to disturb classes or other functions of Northeastern University. Occasionally, access to an area such as the Krentzman Quad will be granted to distribute free literature or provide a public forum for speakers. Such use requires the prior approval of the director of student activities and will be granted only during the Wednesday and Thursday activity periods. The use of facilities

such as residence halls or cafeterias for distribution of literature or for speakers is prohibited.

### SAFETY GLASSES

Safety glasses must be worn in all chemistry laboratories and other facilities as required.

### SALES AND SOLICITATIONS

Northeastern University is not a marketplace. Sales of material or solicitations, such as newspapers and other printed matter, insurance, foodstuffs, and all other articles are prohibited without the express written permission of designated officials of the university. Solicitations of any kind are also prohibited without the express written permission of designated officials. Exceptions to this policy are made for recognized student organizations and residence hall residents. Residence hall residents should request permission to sell within their housing unit from the director of residential life; recognized student organizations should request permission for sales from the director of student activities; all others should apply to the business manager of the university. Such permission, when granted, is for designated areas within the university and is subject to the restrictions imposed by the approving officials. General solicitation, especially in such areas as classrooms, lounges, and cafeterias, is not permitted.

### SMOKING

All university administrative and classroom buildings are smoke free and tobacco free. The policy relates to all campuses. The only university facilities not covered by this policy are residence halls and apartment buildings. The sale of cigarettes and other tobacco products is prohibited on campus. Smoking cessation information and programs are available. For further information, contact the Office of Human Resources Management or University Health and Counseling Services.

### TAPE RECORDERS

Students may not use tape recorders in the classroom without the instructor's consent. Students with disabilities who need a tape recorder in the classroom may make arrangements through the Disability Resource Center, 20 Dodge Hall.

### TEXTBOOKS

Students should purchase or have in their possession the assigned textbooks, problem books, manuals, and other supplies that may be necessary in a classroom or laboratory.

## STUDENTS' BILL OF ACADEMIC RIGHTS AND RESPONSIBILITIES

This bill was drafted by the Student Senate, the vice president for student affairs, and members of the Faculty Senate. It was passed in the spring of 1992.

## Academic Rights

We, the students of Northeastern University, believe that a quality education is the paramount goal of all students. In order to fulfill this goal, the university must recognize certain rights, which are set down in this document. (The student rights, through their representatives in the Student Government Association [SGA], described in these sections arise from faculty and staff employment responsibilities and obligations to the university. Northeastern University students recognize and accept that it is the sole prerogative of the university to enforce these obligations and responsibilities and to determine whether and to what extent they are being carried out or violated in specific instances. Northeastern University students recognize and accept that their ability to effect redress of complaints arising from these rights is limited to the procedures specified in "Appeals Policies and Procedures" on page 25.)

### Course-Related Rights

**Article 1** Students have the right to instructors who attend scheduled classes on time.

**Article 2** Students have the right to view work they submit to satisfy course requirements after it is graded.

**Article 3** Students have the right to adequate access to instructors.

**Article 4** Students have the right to receive a course outline, which includes a fair and explicit grading policy, at the beginning of each course.

**Article 5** Students have the right to instructors who communicate the material pertaining to the course effectively in the English language, except in the case of foreign language instruction.

**Article 6** Students have the right to participate in and have access to Student Government Association student teacher course evaluations.

### Rights to University Academic Services

**Article 7** Students have the right to adequate access to effective academic services, as described in the student handbook and other university publications, provided by the university.

**Article 8** Students have the right to an environment conducive to learning. (Because the university operates on a twelve-month calendar in an urban environment, many construction, remodeling, renovation, and repair projects must take place while the university is in session and while other potential distractions from the learning process arise from the surrounding urban environment on which it is dependent but over which it exerts little or no control. Thus, though the university is committed to maintaining an appropriate learning environment for its students, Northeastern

University students recognize and accept, as part of their relationship with the university, that the conditions described above may cause occasional disturbances to that environment. The articles shall be interpreted by the Office of the Provost in conjunction with the Office of the Vice President for Student Affairs, and shall be monitored by the Student Government Association. Further, should any student discover that he or she has been subject to any violation of the principles stated herein, the student should follow the appropriate complaint resolution procedure in "Appeals Policies and Procedures" on page 25. The Student Government Association, if requested by the student, will monitor the progress of any student academic grievances.)

**Article 9** Disabled students have the right to be treated in a nondiscriminatory fashion in accordance with the policies described in university publications and consonant state and federal laws.

*Scheduling Rights*
**Article 10** Students have the right to nonconflicting final exam schedules.

**Article 11** Students have the right to final exam schedules in accordance with established university policy.

**Article 12** Students have the right to be excused from academic commitments for a religious observance.

*General Academic Rights*
**Article 13** Students have the right to be informed, in a timely fashion, of proposed or actual university action to be taken against them.

**Article 14** Students have the right of access to their academic and financial aid records and maintenance of the privacy of these records, as provided by the Federal Educational Rights and Privacy Act.

**Article 15** Students have the right to be free from harassment by other members of the university community.

**Article 16** Students have the right to the redress of academic grievances.

## Student Responsibilities

It is each student's responsibility to:

1. Contribute to a climate of open inquiry and honesty in all aspects of the university's academic life.
2. Commit sufficient time and effort for study and the use of library, studio, and computational facilities in connection with each course.
3. Contribute to the classroom/laboratory/studio learning environment through discussion and active participation.
4. Acquire the necessary prerequisites for full participation in each academic course.
5. Attend scheduled classes regularly and on time.
6. Obtain help with problems encountered in a given course by seeking out faculty and teaching assistants outside class time.

7. Respect the concept of academic freedom of each faculty member.
8. Assist the university in its self-evaluation by responding honestly and conscientiously.

# *Curriculum and Graduation Requirements by Program*

# College of Arts, Media and Design

**www.northeastern.edu/camd**

**BRUCE E. RONKIN, DMA,** *Interim Dean*

**Alan J. Zaremba, PhD,** *Associate Dean*
*for Undergraduate Programs*
**Jane Amidon, MLA,** *Associate Dean*
*for Graduate Programs and Research*
**Peter H. Wiederspahn, MArch,** *Associate Dean*
*for Academic and Faculty Affairs*
**Thomas Michael, MBA,** *Associate Dean*
*for Administration and Finance*

*Graduate Student Services Office*
122 Meserve Hall
617.373.5329
gscamd@neu.edu

The College of Arts, Media and Design explores the spaces between our disciplines. Building on existing knowledge, we frame, research, and answer transformative questions. Our work together challenges, engages, and shapes global cultures and marketplaces.

## Our Mission

We create a distinctive experiential education by leveraging emergent practices and scholarship in the arts, media, and design. Our unique combination of disciplines empowers innovative thinking and making. Our students become informed citizens and creative leaders with an enlightened entrepreneurial spirit.

## Graduate Studies in the College of Arts, Media and Design

Welcome to graduate studies at Northeastern University's College of Arts, Media and Design (CAMD). This is an exciting time to pursue advanced education and scholarship in creative fields. Never have the arts and culture been so clearly essential to our social, economic, and environmental future. From artist outreach in underserved communities to "serious" game design for health and security; from green building innovation to sustainable urban design; from international entertainment and media to provocative performances in "found spaces"; from incisive data visualization that changes how we view the world to cutting-edge journalism—our faculty and students are involved in a wealth of academic experiences, creative enterprises, and professional endeavors.

At CAMD, we take our mission and vision very seriously. We deliver an outstanding graduate education in traditional areas while exploring new approaches to this generation's transformative questions. The "space between our disciplines"   is intellectually rich, educationally vibrant, and professionally productive. Our interdisciplinary degree options provide a strong foundation of use-inspired, experientially informed course work and research opportunities. Our programs produce graduates equipped to engage the international marketplace and shape global culture.

Take a moment to introduce yourself to the faculty and graduate coordinators in your field of interest. Become familiar with the many events offered across CAMD and   the campus. Stop by CAMD's graduate programs website often (www.northeastern. edu/camd/academics/graduate), where you'll find current news and links to services such as the registrar's office. Familiarize yourself with the university's graduate school website (www.northeastern.edu/graduate) to explore numerous links to graduate resources, policies, and student organizations.

We look forward to getting to know you and to incorporating your individual education and career interests into the graduate community of CAMD.

## General Information

Five units in the College of Arts, Media and Design offer programs at the graduate level: architecture, Art + Design, game design, journalism, and music.

The degrees include:

- Master of Architecture
- Master of Arts in Journalism
- Master of Design for Sustainable Urban Environments
- Master of Fine Arts—Information Design and Visualization
- Master of Fine Arts—Studio Art and Inter-Arts
- Master of Science in Game Science and Design
- Master of Science in Music Industry Leadership

## Master's Degree Policies

CAMD graduate studies sets minimum standards for all students to fulfill. Departments and programs may have additional requirements that exceed those of the college (departmental handbooks can be found at www.northeastern.edu/camd/academics/graduate/current-students).

A candidate for the master's degree must complete a minimum of 30 semester hours of graduate-level course work and such other study as may be required by the department in which the student is registered. To qualify for the degree, a minimum cumulative grade-point average (GPA) of 3.000, equivalent to a grade of B, must be obtained. This average will be calculated each semester. A student who does not make satisfactory progress

toward degree requirements, as specified by the individual department, may be terminated from the program.

To maintain current student status within CAMD, graduate students must make satisfactory progress in their degree, including working toward the graduation requirement of a GPA of 3.000 and the timely completion of course work. See the university's policy on academic standing on page 23 ("Minimum Cumulative Grade-Point Average").

All students must be registered in the last semester of their program. Any student who does not attend Northeastern University for a period of one year will be required to apply for readmission.

## Student Aid Awards

Only those students who are registered    in degree programs are eligible for awards. Award recipients will receive an official award letter from CAMD graduate studies. Please pay attention to this letter as it is an official contract that should be read carefully. Graduate Student Scholarships (GSS) are contingent on satisfactory academic progress toward the degree and meeting department-specific guidelines. Recipients must be in full-time status and be registered for a minimum of 8 semester hours. Receipt of financial support administered by CAMD graduate studies requires that all students receiving awards will generally have a 3.000 GPA. Students whose cumulative GPA is below 3.000 will be reviewed by their departments and by CAMD graduate studies and may have their funding terminated on recommendation of their department or by decision of CAMD graduate studies in consultation with their department. Renewals of awards depend on the student making satisfactory academic progress toward the degree and satisfactory performance of any duties required by the award.

## Leave of Absence

Full-time students who are not involved in any academic endeavor for a period of time are required to petition the Coordinator of Student Services, through their department, for a leave of absence by completing the Request for Leave of Absence form. CAMD graduate studies will not accept retroactive leave requests. Please note that if a student is requesting a leave for medical reasons, information on medical leaves appears on page 20. Students should contact University Health and Counseling Services at 617.373.2772 (www. northeastern.edu/ uhcs/forms). Leaves of absence generally are not approved for more than one calendar year at a time. International students should consult with an advisor at the International Student and Scholar Institute for proper guidance. Leaves of absence are not appropriate for master's degree students who are working on a thesis but are away from the Northeastern campus. Except in the case of medical leaves, being on an approved leave of absence does not extend the amount of time allowed for (1) degree completion or (2) the makeup of incomplete grades.

## Time Limitation

For the master's degree, course credits earned in the program of graduate study are valid for a maximum of seven years.

If students wish to apply for an extension of the time limit, they must submit a petition to their department of study.    The petition must include a detailed plan for completion of all remaining degree requirements. In the case of time limit extension requests for master's degree course work, the department must certify that the content of each of the courses has not changed since the time the student completed the course. If deemed appropriate, the department will recommend approval of the extension to CAMD graduate studies.

## Changes in Requirements

The continuing development of CAMD graduate studies forces regular revision of curricula. When no hardship is imposed on the student because of changes and the facilities of the school permit, the student is expected to meet the most recent requirements. However, if it can be that doing so imposes a substantial hardship, the requirements of the year in which the student matriculated will be applicable.

## Thesis

Theses are required in some programs and should demonstrate the individual's capacity to execute independent work based on original material. Registration for the thesis is required. Theses must be approved by the departmental graduate committee and must receive a grade of B (3.000) or better to be accepted. Students who have not completed their thesis after having registered for the specified number of thesis credits must register and pay for Master's Continuation.

## Graduate Student Classification

### REGULAR STUDENT

Those students who are admitted to a degree program.

### CONDITIONAL STUDENT

Students whose admissions files are missing documentation. Conditional students must submit the requested documentation, to the satisfaction of CAMD graduate studies, no later than the completion of their first month of study. Once the documentation has been submitted, the student's status will be reevaluated.

### PROVISIONAL STUDENT

Students whose academic records do not qualify them for acceptance as regular students. Provisional students must obtain a B (3.000) average in the first 9 semester hours of study or meet specifically delineated departmental requirements to qualify for full acceptance to a degree program. Provisional students are not eligible for awards or financial aid.

### SPECIAL STUDENT

Special students are enrolled on a part-time basis (no more than 6 semester hours per semester). Credit can be earned for a

maximum of 9 semester hours over time. Students interested in taking more than 9 semester hours must make a formal application to the degree program. Please use the Internal Admission Application Notification form available through www.northeastern.edu/camd/graduate. Special students who do not register for four consecutive semesters (excluding summer semester) will be subject to review and possible withdrawal by CAMD graduate studies).

**www.northeastern.edu/camd/architecture/academics/ graduate**

GEORGE THRUSH, MARCH
*Professor and Director, School of Architecture*

151 Ryder Hall
617.373.4637
617.373.7080 (fax)
architecture@neu.edu

Northeastern offers a Master of Architecture degree accredited by the National Architectural Accreditation Board. The director of the program is Professor Tim Love.

The program leverages the school's outstanding faculty and pragmatically grounded curriculum. The physical and cultural context of Boston serves as a laboratory for the program's design studios and is design focused but with a different approach than many schools. We find opportunities for innovation within the real estate and construction industries and current policy debates—rather than outside them. This is how we intend to move architects to the center of the discussion about the future of our cities.

Students take courses in urban housing, practice-integrated design, and do original research on market-driven building types. The final degree project in the design studio offers an opportunity to leverage this research with real innovations in hybrid types, strategic alterations to existing ones, and to take on the challenge of finding prototypical solutions for systemic problems.

In addition to studio courses, graduate students take seminars in architectural theory and design strategy; and electives are available in real estate development, sustainable building techniques, urban landscape, and other topics. There is also a unique course that looks at case studies of architecture firms in practice, problem solving, and innovation. We seek to have students leave our program with a unique balance of technical, theoretical, and strategic tools to make a real difference in the profession.

There are multiple ways that this degree can be completed:

## One-Year Program

A Master of Architecture degree is offered as a one-year completion to the five-year Northeastern Bachelor of Science (BS) degree (with a major in architecture). Students who complete the five-year degree at Northeastern with a 2.500 minimum overall grade-point average (GPA) apply for admission to this one-year, 32-semester-hour program. Northeastern students may also avail themselves of the financial benefit of the Double Husky Scholarship. Students with an accredited BArch from a five-year program are also eligible to apply.

## Two-Year Program

Students who have earned a BS in Architecture (or equivalent) from another institution may apply for entry to the two-year MArch program, which is 68 semester hours. A portfolio is required for applicants to this program.

## Three-Year Program

Students with an undergraduate degree in a discipline other than architecture may apply to the 3¼-year MArch 1 program. The program requires three years and a summer to complete. Students spend an optional semester at the school's Berlin program and are enrolled in two four-month internships, with placement assistance by the co-op office. After completing an accelerated introductory curriculum, graduate students in the three-year program merge into the existing curriculum for the MArch program. A portfolio is preferred but not required for applicants to this program.

## MArch in Architecture—One-Year Program

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| ARCH 6330 Seminar in Modern Architecture | 4 SH |
| ARCH 6430 Case Studies 1 | 4 SH |
| ARCH 7130 Master's Research Studio | 6 SH |
| Graduate elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| ARCH 6340 Topics in Architecture | 4 SH |
| ARCH 6440 Case Studies 2 | 4 SH |
| ARCH 7140 Master's Degree Project | 6 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MArch in Architecture—Two-Year Program

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| ARCH 5110 Housing and Aggregation | 6 SH |
| ARCH 5210 Environmental Systems | 4 SH |
| *Coreq.* ARCH 5211 | |
| ARCH 5310 Design Tactics and Operations | 4 SH |
| Graduate elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| ARCH 5120 Comprehensive Design Studio | 6 SH |
| ARCH 5220 Integrated Building Systems | 4 SH |
| Two graduate electives | 8 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| ARCH 6330 Seminar in Modern Architecture | 4 SH |
| ARCH 6430 Case Studies 1 | 4 SH |
| ARCH 7130 Master's Research Studio | 6 SH |
| Graduate elective | 4 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| ARCH 6340 Topics in Architecture | 4 SH |
| ARCH 6440 Case Studies 2 | 4 SH |
| ARCH 7140 Master's Degree Project | 6 SH |
| **PROGRAM TOTAL CREDITS** | **68.0 SH** |

## MArch in Architecture—Berlin Option—Three-Year Program

Actual curriculum sequence depends on year 1 entry term.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| ARCH 2230 Structural Systems | 4 SH |
| *Coreq.* ARCH 2231 | |
| ARCH 2330 Architecture, Modernity, and the City, 1800 to 1910 | 4 SH |
| *Coreq.* ARCH 2331 | |
| ARCH 6200 Graduate Studio 1: Architectural Design | 6 SH |
| Graduate elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| ARCH 3155 Studio Abroad | 6 SH |
| ARCH 3361 Architecture and Urbanism Abroad | 4 SH |
| ARCH 3362 Seminar Abroad | 4 SH |
| German language | 4 SH |

### YEAR 1, SUMMER 2 SEMESTER

| | |
|---|---|
| ARCH 2240 Architectonic Systems | 4 SH |
| ARCH 6100 Graduate Skills Studio | 4 SH |
| ARCH 6110 Graduate Architectural History Case Studies | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| ARCH 5110 Housing and Aggregation | 6 SH |
| ARCH 5210 Environmental Systems | 4 SH |
| *Coreq.* ARCH 5211 | |
| ARCH 5310 Design Tactics and Operations | 4 SH |
| Graduate elective | 4 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| ARCH 3450 Advanced Architectural Communication | 4 SH |
| ARCH 5120 Comprehensive Design Studio | 6 SH |
| ARCH 5220 Integrated Building Systems | 4 SH |
| ARCH 6340 Topics in Architecture | 4 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| ARCH 6330 Seminar in Modern Architecture | 4 SH |
| ARCH 6430 Case Studies 1 | 4 SH |
| ARCH 7130 Master's Research Studio | 6 SH |
| Graduate elective | 4 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| ARCH 6340 Topics in Architecture | 4 SH |
| ARCH 6440 Case Studies 2 | 4 SH |
| ARCH 7140 Master's Degree Project | 6 SH |
| **PROGRAM TOTAL CREDITS** | **116.0 SH** |

## MArch in Architecture—Boston Option—Three-Year Program

Actual curriculum sequence depends on year 1 entry term.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| ARCH 2230 Structural Systems | 4 SH |
| *Coreq.* ARCH 2231 | |
| ARCH 2330 Architecture, Modernity, and the City, 1800 to 1910 | 4 SH |
| *Coreq.* ARCH 2331 | |
| ARCH 6200 Graduate Studio 1: Architectural Design | 6 SH |
| Graduate elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| ARCH 2140 Urban Institutions | 6 SH |
| ARCH 2240 Architectonic Systems | 4 SH |
| ARCH 2340 Architecture, Modernity, and the City, 1910 to 1980 | 4 SH |
| *Coreq.* ARCH 2341 | |
| Graduate elective | 4 SH |

### YEAR 1, SUMMER 2 SEMESTER

| | |
|---|---|
| ARCH 6100 Graduate Skills Studio | 4 SH |
| ARCH 6110 Graduate Architectural History Case Studies | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| ARCH 5110 Housing and Aggregation | 6 SH |
| ARCH 5210 Environmental Systems | 4 SH |
| *Coreq.* ARCH 5211 | |
| ARCH 5310 Design Tactics and Operations | 4 SH |
| Graduate elective | 4 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| ARCH 3450 Advanced Architectural Communication | 4 SH |
| ARCH 5120 Comprehensive Design Studio | 6 SH |
| ARCH 5220 Integrated Building Systems | 4 SH |
| ARCH 6340 Topics in Architecture | 4 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| ARCH 6330 Seminar in Modern Architecture | 4 SH |
| ARCH 6430 Case Studies 1 | 4 SH |
| ARCH 7130 Master's Research Studio | 6 SH |
| Graduate elective | 4 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| ARCH 6340 Topics in Architecture | 4 SH |
| ARCH 6440 Case Studies 2 | 4 SH |
| ARCH 7140 Master's Degree Project | 6 SH |

### PROGRAM TOTAL CREDITS          112.0 SH

## Master of Design for Sustainable Urban Environments

The Master of Design for Sustainable Urban Environments (MDes-SUEN) brings together the allied professional fields of environmental design, landscape architecture, and urban planning to offer advanced study and research opportunities in the design of ecologically and economically productive urban environments. The program seeks to supply graduates for the rapidly growing field of sustainable urbanism through a dynamic curricular mix of design, dialog, and technical courses, enriched by diverse interdisciplinary electives.

The pedagogic and research focus of the MDes is the design, implementation, and management of sustainable urban environments from the scale of individual parcels to regional systems. Key topics include: brownfield and waterfront revitalization; sustainable and secure pedestrian environments; urban habitat design and management; and green and blue infrastructure design and planning with an emphasis handling increased storm water and tidal influx in the urban landscape.

The MDes is a unique program of study in which urban landscape design, planning, and policy dovetail with environmental engineering, environmental science, art, and visualization. Boston's history of innovation in environmental design as well as its legacy of urban redevelopment provide a rich backdrop and laboratory of urban, infrastructural, and ecological prototypes that ideally position the program to creatively and critically explore local issues with global implications.

Contemporary urban theory includes a significant body of writing in the area of "Landscape- " and "Ecological-Urbanism," a critical discourse that looks at the full range of environmental strategies for urban sites with an emphasis on ecological thinking. The paradigm of sustainable environmental design is moving away from form-based planning toward dynamic ecosystem services. This program prepares students to be innovative and entrepreneurial designers able to combine economic, environmental, and social priorities to make next-generation public spaces and systems.

## Master of Design for Sustainable Urban Environments—One-Year Program

The one-year MDes-SUEN is open to students holding an accredited, first-professional degree in landscape architecture, architecture, planning, or urban design. The 36-credit program offers a core sequence of advanced design research studios, pro-seminars, and urban ecology and technology workshops complemented by interdisciplinary electives.

## MDes in Sustainable Urban Environments— One-Year Program

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| SUEN 7130 Master's Research Studio 1: Design and the Resilient City | 6 SH |
| Pro-Seminar 1 | 4 SH |
| SUEN 7230 Urban Ecologies and Technologies 1 | 4 SH |
| Graduate elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| SUEN 7140 Master's Research Studio 2: Master's Project | 6 SH |
| SUEN 7240 Urban Ecologies and Technologies 2 | 4 SH |
| SUEN 7320 Pro-Seminar: Issues in Designed Urban Environments | 4 SH |
| Graduate elective | 4 SH |

**PROGRAM TOTAL CREDITS**      **36.0 SH**

## Master of Design for Sustainable Urban Environments—Two-Year Program

The two-year MDes-SUEN is open to students entering with a bachelor's degree in any field. The 64-credit program provides a full year of core skill sets including design; site analysis, implementation, and visualization; history/theory; and policy. This includes introduction to basic earthworks, water, and plants systems as well as the principles of landscape and urban ecology.

## MDes in Sustainable Urban Environments— Two-Year Program

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| SUEN 6110 Graduate Studio 1: Sustainable Urban Sites | 6 SH |
| SUEN 6210 Implementation and Visualization for Urban Environments 1 | 4 SH |
| SUEN 6310 Cities, Nature, and Design in Contemporary History and Theory | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| LPSC 7312 Cities, Sustainability, and Climate Change | 3 SH |
| LPSC 8400 Planning Module in Urban Law and Policy | 1 SH |
| SUEN 6120 Graduate Studio 2: Sustainable Urban Systems | 6 SH |
| SUEN 6220 Implementation and Visualization for Urban Environments 2 | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| SUEN 7130 Master's Research Studio 1: Design and the Resilient City | 6 SH |
| SUEN 7230 Urban Ecologies and Technologies 1 | 4 SH |
| SUEN 7320 Pro-Seminar: Issues in Designed Urban Environments | 4 SH |
| Graduate elective | 4 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| SUEN 7140 Master's Research Studio 2: Master's Project | 6 SH |
| SUEN 7240 Urban Ecologies and Technologies 2 | 4 SH |
| SUEN 7320 or SUEN 6340 | 4 SH |
| Graduate elective | 4 SH |

**PROGRAM TOTAL CREDITS**      **64.0 SH**

**www.northeastern.edu/camd/artdesign/academics/graduate**

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Northeastern University offers a Master of Fine Arts (MFA) in Studio Art in conjunction with the School of the Museum of Fine Arts, Boston (SMFA), one of the most distinguished art schools in the United States. Rigorous and highly selective, the two-year MFA degree program seeks to prepare you for a career as a working artist or a teacher at the college level. The curriculum integrates practical and critical skills across diverse media and disciplines. You will have an opportunity to hone your practice through individual innovation, creative collaborations, informal mentorship, and academic discourse. MFA students are enrolled at both Northeastern University and the SMFA and graduate in two years with an MFA degree from Northeastern.

The MFA in Studio Art is a professional program that is both rigorous and highly selective. It seeks to prepare students for careers as working artists or as university professors (the MFA is considered a terminal degree in its field). The curriculum integrates practical and critical skills across diverse media and disciplines; students hone their practice through individual innovation, creative collaborations, informal mentorships, and academic discourse.

In this degree program you will complete 44 semester hours of studio work and graduate seminars at SMFA and 16 hours of art history and academic electives (typically four courses) at Northeastern. You will have your own semiprivate studio space and access to SMFA faculty and equipment. A final thesis exhibition is required. The SMFA is part of the Museum of Fine Arts, Boston, one of the most comprehensive art museums in the world with a collection of nearly 450,000 works of fine art.

The department also offers a Master of Fine Arts (MFA) in Information Design and Visualization, a two-year interdisciplinary program that focuses on the analytical and visual communication of information. Graduates will be professionals in visualization who can collaborate as equals with communicators in other fields—people who are able not only to think visually but also to produce effective, meaningful visual information.

Students gain an understanding of the principles of translating data and information into visual, physical, and virtual forms. They learn to integrate theoretical, visual, and technical aspects of structuring and representing data to offer diverse audiences increased access to socially relevant issues. The curriculum is built upon an established undergraduate program in graphic, information, and interaction design. Participants have the unique advantage of study at a major research university known for interdisciplinary collaboration that is situated in Boston, a global center for biotech, financial, public policy, education, technological, scientific, and social science applications of information design and data visualization.

The program seeks applicants from diverse fields of study—not just visual communications—who are interested in information visualization and communication of information through visual and analytical means. Practicing professionals and recent undergraduates in a variety of fields (architecture, graphic design, journalism, communications, business, the humanities, and sciences) who desire a fluency in information design should apply.

Graduates will be professional information designers able to collaborate effectively in this dynamic and burgeoning field of practice and research. They will be prepared to work in design firms, research firms, corporations, and institutions and government and urban agencies. The program intends to produce professionals skilled in design principles and practices needed to assume leadership roles in an evolving interdisciplinary field. Students will also be well positioned to pursue PhDs and academic careers.

## MFA in Information Design and Visualization

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| ARTG 5100 Information Design Studio 1—Principles | 4 SH |
| ARTG 5110 Information Design History | 4 SH |
| ARTG 5120 Information Design Research Methodologies | 4 SH |
| Information design elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| ARTG 6100 Information Design Studio 2—Dynamic Mapping and Models | 4 SH |
| ARTG 6110 Information Design Theory and Critical Thinking | 4 SH |
| Two information design electives | 8 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| ARTG 6200 Information Design Studio 3—Synthesis | 4 SH |
| ARTG 7100 Information Design Thesis Seminar | 4 SH |
| Information design elective | 4 SH |
| Open elective | 4 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| ARTG 7990 Thesis | 8 SH |
| Information design elective | 4 SH |
| **PROGRAM TOTAL CREDITS** | **60.0 SH** |

## MFA in Studio Art

### GENERAL REQUIREMENTS

| | |
|---|---|
| NU required courses | 8 SH |
| NU nonstudio electives | 8 SH |
| SMFA studio art courses | 44 SH |

### PROGRAM TOTAL CREDITS         60.0 SH

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## GAME DESIGN

</div>

**www.northeastern.edu/camd/gamedesign**

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*Professor and Director*

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Magy Seif El-Nasr, *Director, Game Design Program*,
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The game design program offers a Master of Science in Game Science and Design. The degree is joint between the College of Arts, Media and Design and the College of Computer and Information Science. This MS degree is focused on the science of game development, specifically on understanding the players and measuring the products' successes through players' behaviors. The degree will weave the design and technology necessary to build a game but focus on the playability and analytics to make the product successful, thus creating a coherent vision enabling students to understand the process of creating successful game products in a player-centric environment.

The degree consists of several areas of game science and design, including:

- Game playability
- Game analytics
- Game technology
- Game design

The first two areas encompass the game science aspects of this program. Game technology denotes the computational aspects of the program. Game design denotes the design aspect of the program.

### ADMISSIONS REQUIREMENTS

Applicants must submit an official application, including the following documents: official transcripts, a statement of purpose projecting their career goals, a description of any experience in the games field and/or a portfolio if available, official GRE General Test, and three letters of recommendation. International students must also submit official scores of the TOEFL examination. Acceptance to the MS in Game Science and Design program is granted upon recommendation from the master's admissions committee after review of the completed application.

Applicants will be expected to have a minimum 3.000 undergraduate GPA. International applicants must have a minimum TOEFL score of 100 (Internet based) or 250 (computer based) or a minimum IELTS of 6.0.

We will consider applications from students who hold a bachelor's degree from any of the following fields or closely related fields:

- Computer science
- Information science
- Informatics
- Engineering
- Human computer interaction
- Psychology
- Social science
- Interaction design
- Game design

All admitted students will be assigned to an advisor who will help them select a pathway with a coherent set of electives depending on their career goals. The advisor will also monitor their progress through the master's degree.

### DEGREE REQUIREMENT
This is a two-year, 34-semester-hour degree consisting of the following requirements:

## MS in Game Science and Design

### GENERAL REQUIREMENTS

| | |
|---|---|
| GSND 5030 or GSND 5040 | 4 SH |
| GSND 5110 (pending approval) | |
| GSND 5120 (pending approval) | |
| GSND 5121 (pending approval) | |
| GSND 5122 (pending approval) | |
| GSND 5130 (pending approval) | |
| Game project/thesis class | 4 SH |
| Course work from the List "Elective Course Requirements," below | 12 SH |

### PROGRAM TOTAL CREDITS        20.0 SH

### ELECTIVE COURSE REQUIREMENTS

| | |
|---|---|
| ARTG 5330 Visualization Technologies | 4 SH |
| CS 5150 Game Artificial Intelligence | 4 SH |
| CS 5310 Computer Graphics | 4 SH |
| CS 5340 Computer/Human Interaction | 4 SH |
| CS 5520 Mobile Application Development | 4 SH |
| CS 5610 Web Development | 4 SH |
| CS 5850 Building Game Engines | 4 SH |
| CS 6220 Data Mining Techniques | 4 SH |
| GSND 5240 (pending approval) | |
| GSND 5250 (pending approval) | |
| GSND 5320 (pending approval) | |
| GSND 5330 (pending approval) | |
| GSND 5340 (pending approval) | |
| GSND 5350 (pending approval) | |

### CREDIT REQUIREMENT        34 SH

**www.northeastern.edu/camd/journalism**

STEPHEN D. BURGARD, MS
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Welcome to the graduate program at Northeastern University's School of Journalism. Our school offers a master of arts in two concentrations—professional and media innovation. Our master's program offers a chance to study in Boston with a small and dedicated faculty of specialists with years of experience and contacts at the highest levels of American journalism.

You can study the newest developments in digital media with Jeff Howe, the Wired magazine writer who coined the term crowdsourcing, and ethics with Stephen Burgard, a former member of the LA Times editorial board and an expert on the intersection of religion, politics, and the press. Those focusing on broadcast and visual journalism can study with Alan Schroeder, a three-time Emmy Award-winning producer. Students are introduced to digital journalism with Dan Kennedy, a well-respected columnist, media critic, author, and creator of the blog Media Nation.

Our concentrations offer students opportunities for hands-on training in all aspects of journalism study in preparation for careers as reporters, editors, or multimedia producers. Our program is also suited for anyone who will work in communication fields where information gathering and writing for general audiences is needed.

Full-time students can complete the program in a year by enrolling in classes during the two summer semesters. Students who participate in Northeastern University's nationally recognized cooperative education program will take longer to graduate. It is also possible to enroll part-time. Students have up to seven years to fulfill the requirements of the program.

## MA in Journalism—Professional Concentration

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| JRNL 6200 Enterprise Reporting 1 | 4 SH |
| JRNL 6340 Fundamentals of Digital Journalism | 4 SH |
| Elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| JRNL 6201 Enterprise Reporting 2 | 4 SH |
| JRNL 6966 Practicum | 4 SH |
| Elective | 4 SH |

**YEAR 1, SUMMER 2 SEMESTER**

| | |
|---|---|
| JRNL 6202 Perspective on Journalism Ethics | 4 SH |
| Two electives | 8 SH |

**PROGRAM TOTAL CREDITS**    **36.0 SH**

## MA in Journalism—Media Innovation Concentration

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| JRNL 6306 Media Innovation Studio 1—Fundamentals | 3 SH |
| JRNL 6340 Fundamentals of Digital Journalism | 4 SH |
| Elective (Art + Design, Computer Science, Business, etc.) | 3 to 4 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| JRNL 6307 Media Innovation Studio 2—Intermediate | 3 SH |
| Elective (Art + Design, Computer Science, Business, etc.) | 3 to 4 SH |

**YEAR 1, SUMMER 1 SEMESTER**

| | |
|---|---|
| JRNL 6202 Perspective on Journalism Ethics | 4 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| JRNL 6308 Media Innovation Studio 3—Advanced | 3 SH |
| Elective (Art + Design, Computer Science, Business, etc.) | 6 to 8 SH |

**CREDIT REQUIREMENT**    **33.0 SH**

**www.northeastern.edu/camd/music**

ANTHONY P. DE RITIS, PhD
*Professor and Chair*

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The Master of Science in Music Industry Leadership (MMIL) program is an intensive one-year leadership program designed for individuals who want to manage the next generation of music companies. The MMIL offers advanced education in the areas of music management, leadership, research, and entrepreneurship with opportunities for immediate and ongoing application to each student's unique professional aspiration.

The Master of Science program focuses on the core scholarly areas of music industry. Students specialize in one of three concentrations: entrepreneurship, professional, and research. Courses seek to provide a solid foundation in music industry theory and analysis while offering students the opportunity to apply the foundational skills to an area of personal interest. Elective courses emphasize the creation and sustainability of music organizations in a rapidly evolving environment. Using an active-learning approach, the program focuses on developing music executives intellectually and ethically, while providing them with a keen appreciation for the complexities of managing in the creative industries. This approach focuses on long-term skill sets that enhance the potential of graduates within a fluid and ever-changing field. The program also emphasizes global leadership qualities that provide a broader vision of the music industry on an international level.

The JD/MS in Music Industry Leadership is a dual-degree program that offers students four opportunities for real-world, experiential learning at the intersection of law and music business. Candidates for the JD/MS program must independently apply and gain admission to the School of Law and the College of Arts, Media and Design. Admission to one school does not ensure admission to the other. Candidates may apply to both schools prior to matriculation at the law school, or students may wait until they are enrolled in the School of Law before seeking admission to the College of Arts, Media and Design. During either the first or second year of law school, students may apply to the MS program during the winter or spring for enrollment the following September. Students enrolled in law school who are interested in pursuing this dual degree should contact the Office of Academic and Student Affairs and Professor Kara Swanson, JD/MS faculty advisor, during the fall or winter of their first or second year for further information.

## Curriculum

The MMIL offers students three curriculum options for degree completion. A minimum of 32 semester hours and nine courses (not including the intensive reporting seminar), with a GPA of 3.000, are required for graduation. Each option is designed to highlight a student's strength and longer-term goals. Consultation with the graduate coordinator prior to degree Commencement is required to establish a student's ideal concentration.

## MS in Music Industry Leadership with Professional Concentration

### GENERAL REQUIREMENTS

| | |
|---|---|
| MUSI 6000 Management of Music Organizations | 3 SH |
| MUSI 6100 Music Industry Research Methodology | 3 SH |
| MUSI 6200 Financial Management in the Music Industry | 3 SH |
| MUSI 6300 Intellectual Property for Music Management | 3 SH |
| MUSI 6400 Marketing Strategies in the Music Industry | 3 SH |
| Business electives | 2 to 12 SH |
| Music electives | 2 to 22 SH |
| **CREDIT REQUIREMENT** | **32.0 SH** |

## MS in Music Industry Leadership with Research Concentration

### GENERAL REQUIREMENTS

| | |
|---|---|
| MUSI 6000 Management of Music Organizations | 3 SH |
| MUSI 6100 Music Industry Research Methodology | 3 SH |
| MUSI 6200 Financial Management in the Music Industry | 3 SH |
| MUSI 6300 Intellectual Property for Music Management | 3 SH |
| MUSI 6400 Marketing Strategies in the Music Industry | 3 SH |
| Music electives | 2 to 12 SH |
| Thesis course | 8 SH |
| **CREDIT REQUIREMENT** | **32.0 SH** |

## MS in Music Industry Leadership with Entrepreneurship Concentration

### GENERAL REQUIREMENTS

| | |
|---|---|
| MUSI 6000 Management of Music Organizations | 3 SH |
| MUSI 6100 Music Industry Research Methodology | 3 SH |
| MUSI 6200 Financial Management in the Music Industry | 3 SH |
| MUSI 6300 Intellectual Property for Music Management | 3 SH |
| MUSI 6400 Marketing Strategies in the Music Industry | 3 SH |
| Business electives | 2 to 12 SH |
| Music electives | 2 to 14 SH |
| Capstone project | 7 SH |
| **CREDIT REQUIREMENT** | **32.0 SH** |

## JD/MS in Music Industry Leadership

Over the course of 45 months, the program enrolls students successively in the School of Law and the College of Arts, Media and Design. JD/MS candidates must complete the first and last years of the program in the School of Law. The year of music industry courses in the College of Arts, Media and Design may be taken during either the second or third year.

## NEC/NU Joint Certificate Programs in Music Performance

The School of Continuing Education at the New England Conservatory (NEC) and the Department of Music at Northeastern University (NU) jointly offer a General Certificate of Merit in Music Performance (24 credits) and a Professional Studies Certificate in Music Performance (48 credits). These programs are geared toward Northeastern undergraduate and graduate students who are interested in improving their abilities to perform on an instrument or voice in the classical or jazz styles.

The certificate in music performance is *in addition to* the student's Northeastern undergraduate or graduate degree—it is an entirely separate and distinct credential. Credits for courses toward the music performance certificate are accumulated and billed separately from credits toward Northeastern undergraduate or graduate degree programs and are not eligible for financial aid.

Courses are offered at NEC (predominantly related to music performance) and at NU (predominantly related to music history and music theory). NEC courses are scheduled during evenings and weekends.

## NEC/NU Joint Certificate Program— General Certificate of Merit in Music Performance

### NORTHEASTERN UNIVERSITY REQUIREMENTS

Complete 11 credits of course work at Northeastern University as indicated below.

#### *Music Theory and Musicianship Placement*
All students must take a theory placement exam. Students who do not place into MUSC 1201 or MUSI 1203 must first take the following course:

| | |
|---|---|
| MUSC 1119 Fundamentals of Western Music Theory | 4 SH |

Credits for MUSC 1119 do not count toward the certificate.

#### *Music Theory and Musicianship*
Complete 5 credits of course work in music theory and musicianship by completing the following two courses. Music theory and musicianship courses should be taken concurrently:

| | |
|---|---|
| MUSC 1201 Music Theory 1 | 4 SH |
| with MUSC 1241 Musicianship 1 | 1 SH |

*Note:* Music majors with a concentration in music industry may substitute the following courses:

| | |
|---|---|
| MUSI 1203 Music Theory for Music Industry 1 | 4 SH |
| with MUSC 1241 Musicianship 1 | 1 SH |

*Music History*

Complete 4 credits in music history by completing one course from the following list:

| | |
|---|---|
| MUSC 1104 Survey of African-American Music | 4 SH |
| MUSC 1105 Music of the USA | 4 SH |
| MUSC 1107 Introduction to Opera | 4 SH |
| MUSC 1111 Rock Music | 4 SH |
| MUSC 1112 Jazz | 4 SH |
| MUSC 1121 Medieval and Renaissance Music | 4 SH |
| MUSC 1122 Music of the Baroque Era | 4 SH |
| MUSC 1123 Music of the Classical Era | 4 SH |
| MUSC 1124 Music of the Romantic Era | 4 SH |
| MUSC 1125 Twentieth-Century Music | 4 SH |

*Note:* Since the following course is repeatable, music majors and combined majors may count the credits for the *second time* they take this course toward the music performance certificate:

| | |
|---|---|
| MUSC 3550    Historical Traditions: Special Topics | 4 SH |

*Ensembles*

Complete 2 credits in music ensembles by completing two courses from the following list:

| | |
|---|---|
| MUSC 1904 Chorus | 1 SH |
| MUSC 1905 Band | 1 SH |
| MUSC 1906 Orchestra | 1 SH |
| MUSC 1907 Wind Ensemble | 1 SH |
| MUSC 1911 Jazz Ensemble | 1 SH |
| MUSC 1912 Rock Ensemble | 1 SH |
| MUSC 1913 Blues/Rock Ensemble | 1 SH |
| MUSC 1914 Create Your Own Music | 1 SH |
| MUSC 1915 Chamber Ensemble | 1 SH |
| MUSC 1916 Electronic Music Ensemble | 1 SH |
| MUSC 1917 Jazz Choir and Combo | 1 SH |
| MUSC 1918 World Music Ensemble | 1 SH |
| MUSC 1919 Fusion Ensemble | 1 SH |
| MUSC 1920 Pep Band | 1 SH |
| MUSC 1921 World Fusion Ensemble | 1 SH |

## NEW ENGLAND CONSERVATORY REQUIREMENTS

Complete 13 credits of course work at New England Conservatory School of Continuing Education as indicated below.

*Private Studio Instruction*

Complete 8 credits of (repeatable) private studio instruction with New England Conservatory School of Continuing Education faculty. These credits may be accumulated in units of 2, 3, or 4 credits per semester. All private lessons require audition by NEC/NU faculty in order to assign private teacher placement. After being placed with a private teacher, and working with their certificate advisor, students must confirm with that teacher the length and number of lessons they will receive.

| | |
|---|---|
| MPNC 1102 Music Instruction | 2 SH |
| MPNC 1103 Music Instruction | 3 SH |
| MPNC 1104 Music Instruction | 4 SH |

*Music Technology*

Complete 1 semester hour in music technology by completing the following course:

| | |
|---|---|
| MPNC 1201 Contemporary Music Production and Technology 1 | 1 SH |

*Electives*

Complete 3 credits of elective course work from the following list:

| | |
|---|---|
| MPNC 1301 Build Your Voice: Art/Skillful Singing | 1 SH |
| MPNC 1401 Jazz Ear Training 1 | 1 SH |
| MPNC 1411 Jazz Theory 1 | 1.5 SH |
| MPNC 1421 Finale Chart Writing | 1 SH |
| MPNC 1451 Jazz History 1 | 1 SH |
| MPNC 1501 Introduction to Music-in-Education | 2 SH |
| MPNC 1612 Group Piano Class | 1 SH |
| MPNC 1621 The Art of Musical Sight-Reading | 2 to 4 SH |
| MPNC 1622 The Art of Practice and Performance | 1 SH |
| MPNC 1623 Developing Perfect Pitch 1 | 1 SH |
| MPNC 1631 The Accidental Music Teacher: From Musical Artist to Creative Educator | 1.5 SH |
| MPNC 1642 Sight-Singing for Singers | 1 SH |
| MPNC 1801 Introduction to Composition 1 | 1 SH |
| MPNC 1802 Contemporary Improvisation: Skill Building | 2 to 4 SH |
| MPNC 1803 Contemporary Improvisation: Music of the World—The African Diaspora | 1.5 SH |
| MPNC 1901 Art and Soul of Cinema: An Appreciation of Film Music | 1.5 SH |
| MPNC 1902 Experiencing American Popular Music | 1.5 SH |
| MPNC 1911 Latin American Classical Traditions 1 | 1 SH |
| MPNC 2401 Jazz Ear Training 2 | 1 SH |
| MPNC 2411 Jazz Theory 2 | 1.5 SH |
| MPNC 2431 Jazz Composition and Analysis | 1.5 SH |
| MPNC 2451 Jazz History 2 | 1 SH |
| MPNC 2511 Music-in-Education Seminar | 2 SH |
| MPNC 2512 Models for Teaching and Learning for Music-in-Education | 2 SH |
| MPNC 2525 Art and Science of Assessing Music Learning | 2 SH |
| MPNC 2526 Music, Brain Development, and Learning | 2 SH |
| MPNC 2547 Cross-Cultural Alternatives for Music-in-Education | 2 SH |
| MPNC 2548 Teaching and Learning with Music Technology | 2 SH |
| MPNC 2556 Improvisation in Music Education | 2 SH |
| MPNC 2561 String Pedagogy | 2 SH |
| MPNC 2571 Performing Artists in Schools | 2 SH |
| MPNC 2601 Music Production for Media | 1 SH |
| MPNC 2612 Piano Pedagogy | 2 SH |
| MPNC 2623 Developing Perfect Pitch 2 | 1 SH |
| MPNC 2624 Advanced Perfect Pitch | 1 SH |
| MPNC 2644 Bach/Handel Arias for Singers | 1.5 SH |
| MPNC 2801 Introduction to Composition 2 | 1 SH |
| MPNC 2911 Latin American Classical Traditions 2 | 1 SH |
| MPNC 3401 Jazz Ear Training 3 | 1 SH |

| | |
|---|---|
| MPNC 3411 Jazz Theory 3 | 1.5 SH |
| MPNC 3431 Jazz Arranging | 1.5 SH |
| MPNC 3611 Piano Interpretation/Performance Seminar | 1 SH |
| MPNC 3631 Eighteenth-Century Tonal Counterpoint | 2 to 4 SH |
| MPNC 3633 Modal Counterpoint | 2 to 4 SH |
| MPNC 3641 Dramatic Coaching of Songs and Arias | 1 SH |
| MPNC 3643 Vocal Repertoire: Coaching and Performance | 1.5 SH |
| MPNC 3801 Composition Seminar 1 | 1.5 SH |
| MPNC 3802 Composition Seminar 2 | 1.5 SH |
| MPNC 4401 Jazz Ear Training 4 | 1 SH |
| MPNC 4411 Jazz Theory 4 | 1.5 SH |
| MPNC 4581 Music-in-Education Guided Internship | 2 SH |
| MPNC 4591 Music-in-Education Portfolio | 0 SH |

*Ensemble*

Complete 1 credit in music ensemble by completing one course from the following list:

| | |
|---|---|
| MPNC 1711 Community Gospel Choir | 1 SH |
| MPNC 1712 Baroque Ensemble | 1 SH |
| MPNC 1713 NEC Voices: A New Choral Experience | 1.5 SH |
| MPNC 1714 Renaissance Ensemble | 1 SH |
| MPNC 1716 Contemporary Improvisation Ensemble: Walking between Worlds | 1.5 SH |
| MPNC 1721 Guitar Ensemble 1 | 1 SH |
| MPNC 1731 Jazz Ensemble | 1.5 SH |
| MPNC 1741 Chamber Music Ensemble | 1 SH |
| MPNC 1742 Chamber Music Duo | 1 SH |
| MPNC 1751 Vocal Chamber Music | 1.5 SH |
| MPNC 1771 Improvisation and Composition Ensemble | 1.5 SH |
| MPNC 1781 Medieval Folk Roots Ensemble | 1.5 SH |
| MPNC 2721 Guitar Ensemble 2 | 1 SH |
| MPNC 3642 Opera Ensemble Skills | 1 SH |

# NEC/NU Joint Certificate Program— Professional Studies Certificate in Music Performance

## NORTHEASTERN UNIVERSITY REQUIREMENTS

Complete 22 credits of course work at Northeastern University as indicated below.

### Music Theory and Musicianship Placement

All students must take a theory placement exam. Students who do not place into MUSC 1201 or MUSI 1203 must first take the following course:

| | |
|---|---|
| MUSC 1119 Fundamentals of Western Music Theory | 4 SH |

Credits for MUSC 1119 do not count toward the certificate.

### Music Theory and Musicianship

Complete 10 credits of course work in music theory and musicianship by completing the four following courses. Music theory and musicianship courses should be taken concurrently:

| | |
|---|---|
| MUSC 1201 Music Theory 1 | 4 SH |
| with MUSC 1241 Musicianship 1 | 1 SH |
| MUSC 1202 Music Theory 2 | 4 SH |
| with MUSC 1242 Musicianship 2 | 1 SH |

*Note:* Music majors with a concentration in music industry may substitute the following courses:

| | |
|---|---|
| MUSI 1203 Music Theory for Music Industry 1 | 4 SH |
| with MUSC 1241 Musicianship 1 | 1 SH |
| MUSI 1204 Music Theory for Music Industry 2 | 4 SH |
| with MUSC 1242 Musicianship 2 | 1 SH |

### Music History

Complete 4 credits in music history by completing one course from the following list:

| | |
|---|---|
| MUSC 1104 Survey of African-American Music | 4 SH |
| MUSC 1105 Music of the USA | 4 SH |
| MUSC 1107 Introduction to Opera | 4 SH |
| MUSC 1111 Rock Music | 4 SH |
| MUSC 1112 Jazz | 4 SH |
| MUSC 1121 Medieval and Renaissance Music | 4 SH |
| MUSC 1122 Music of the Baroque Era | 4 SH |
| MUSC 1123 Music of the Classical Era | 4 SH |
| MUSC 1124 Music of the Romantic Era | 4 SH |
| MUSC 1125 Twentieth-Century Music | 4 SH |

*Note:* Since the following course is repeatable, music majors and combined majors may count the credits for the *second time* they take this course toward the music performance certificate:

| | |
|---|---|
| MUSC 3550 Historical Traditions: Special Topics | 4 SH |

### Ensembles

Complete 6 credits in music ensembles by completing six courses from the following list:

| | |
|---|---|
| MUSC 1904 Chorus | 1 SH |
| MUSC 1905 Band | 1 SH |
| MUSC 1906 Orchestra | 1 SH |
| MUSC 1907 Wind Ensemble | 1 SH |
| MUSC 1911 Jazz Ensemble | 1 SH |
| MUSC 1912 Rock Ensemble | 1 SH |
| MUSC 1913 Blues/Rock Ensemble | 1 SH |
| MUSC 1914 Create Your Own Music | 1 SH |
| MUSC 1915 Chamber Ensemble | 1 SH |
| MUSC 1916 Electronic Music Ensemble | 1 SH |
| MUSC 1917 Jazz Choir and Combo | 1 SH |
| MUSC 1918 World Music Ensemble | 1 SH |
| MUSC 1919 Fusion Ensemble | 1 SH |
| MUSC 1920 Pep Band | 1 SH |
| MUSC 1921 World Fusion Ensemble | 1 SH |

### Recital Preparation and Performance

Complete 2 credits in recital preparation and performance by completing the following two courses:

| | |
|---|---|
| MUSC 3410 Recital 1 | 1 SH |
| MUSC 4622 Recital 2 | 1 SH |

## NEW ENGLAND CONSERVATORY REQUIREMENTS

Complete 26 credits of course work at New England Conservatory School of Continuing Education as indicated below.

### Private Studio Instruction

Complete 16 credits of (repeatable) private studio instruction with New England Conservatory School of Continuing Education faculty. These credits may be accumulated in units of 2, 3,

or 4 credits per semester. All private lessons require audition by NEC/NU faculty in order to assign private teacher placement. After being placed with a private teacher, and working with their certificate advisor, students must confirm with that teacher the length and number of lessons they will receive.

| | |
|---|---|
| MPNC 1102 Music Instruction | 2 SH |
| MPNC 1103 Music Instruction | 3 SH |
| MPNC 1104 Music Instruction | 4 SH |

*Music Technology*

Complete 1 semester hour in music technology by completing the following course:

| | |
|---|---|
| MPNC 1201 Contemporary Music Production and Technology 1 | 1 SH |

*Electives*

Complete 7 credits of elective course work from the following list:

| | |
|---|---|
| MPNC 1301 Build Your Voice: Art/Skillful Singing | 1 SH |
| MPNC 1401 Jazz Ear Training 1 | 1 SH |
| MPNC 1411 Jazz Theory 1 | 1.5 SH |
| MPNC 1421 Finale Chart Writing | 1 SH |
| MPNC 1451 Jazz History 1 | 1 SH |
| MPNC 1501 Introduction to Music-in-Education | 2 SH |
| MPNC 1612 Group Piano Class | 1 SH |
| MPNC 1621 The Art of Musical Sight-Reading | 2 to 4 SH |
| MPNC 1622 The Art of Practice and Performance | 1 SH |
| MPNC 1623 Developing Perfect Pitch 1 | 1 SH |
| MPNC 1631 The Accidental Music Teacher: From Musical Artist to Creative Educator | 1.5 SH |
| MPNC 1642 Sight-Singing for Singers | 1 SH |
| MPNC 1801 Introduction to Composition 1 | 1 SH |
| MPNC 1802 Contemporary Improvisation: Skill Building | 2 to 4 SH |
| MPNC 1803 Contemporary Improvisation: Music of the World—The African Diaspora | 1.5 SH |
| MPNC 1901 Art and Soul of Cinema: An Appreciation of Film Music | 1.5 SH |
| MPNC 1902 Experiencing American Popular Music | 1.5 SH |
| MPNC 1911 Latin American Classical Traditions 1 | 1 SH |
| MPNC 2401 Jazz Ear Training 2 | 1 SH |
| MPNC 2411 Jazz Theory 2 | 1.5 SH |
| MPNC 2431 Jazz Composition and Analysis | 1.5 SH |
| MPNC 2451 Jazz History 2 | 1 SH |
| MPNC 2511 Music-in-Education Seminar | 2 SH |
| MPNC 2512 Models for Teaching and Learning for Music-in-Education | 2 SH |
| MPNC 2525 Art and Science of Assessing Music Learning | 2 SH |
| MPNC 2526 Music, Brain Development, and Learning | 2 SH |
| MPNC 2547 Cross-Cultural Alternatives for Music-in-Education | 2 SH |
| MPNC 2548 Teaching and Learning with Music Technology | 2 SH |
| MPNC 2556 Improvisation in Music Education | 2 SH |
| MPNC 2561 String Pedagogy | 2 SH |
| MPNC 2571 Performing Artists in Schools | 2 SH |

| | |
|---|---|
| MPNC 2601 Music Production for Media | 1 SH |
| MPNC 2612 Piano Pedagogy | 2 SH |
| MPNC 2623 Developing Perfect Pitch 2 | 1 SH |
| MPNC 2624 Advanced Perfect Pitch | 1 SH |
| MPNC 2644 Bach/Handel Arias for Singers | 1.5 SH |
| MPNC 2801 Introduction to Composition 2 | 1 SH |
| MPNC 2911 Latin American Classical Traditions 2 | 1 SH |
| MPNC 3401 Jazz Ear Training 3 | 1 SH |
| MPNC 3411 Jazz Theory 3 | 1.5 SH |
| MPNC 3431 Jazz Arranging | 1.5 SH |
| MPNC 3611 Piano Interpretation/Performance Seminar | 1 SH |
| MPNC 3631 Eighteenth-Century Tonal Counterpoint | 2 to 4 SH |
| MPNC 3633 Modal Counterpoint | 2 to 4 SH |
| MPNC 3641 Dramatic Coaching of Songs and Arias | 1 SH |
| MPNC 3643 Vocal Repertoire: Coaching and Performance | 1.5 SH |
| MPNC 3801 Composition Seminar 1 | 1.5 SH |
| MPNC 3802 Composition Seminar 2 | 1.5 SH |
| MPNC 4401 Jazz Ear Training 4 | 1 SH |
| MPNC 4411 Jazz Theory 4 | 1.5 SH |
| MPNC 4581 Music-in-Education Guided Internship | 2 SH |
| MPNC 4591 Music-in-Education Portfolio | 0 SH |

*Ensembles*

Complete 2 credits in ensembles by completing two courses from the following list:

| | |
|---|---|
| MPNC 1711 Community Gospel Choir | 1 SH |
| MPNC 1712 Baroque Ensemble | 1 SH |
| MPNC 1713 NEC Voices: A New Choral Experience | 1.5 SH |
| MPNC 1714 Renaissance Ensemble | 1 SH |
| MPNC 1716 Contemporary Improvisation Ensemble: Walking between Worlds | 1.5 SH |
| MPNC 1721 Guitar Ensemble 1 | 1 SH |
| MPNC 1731 Jazz Ensemble | 1.5 SH |
| MPNC 1741 Chamber Music Ensemble | 1 SH |
| MPNC 1742 Chamber Music Duo | 1 SH |
| MPNC 1751 Vocal Chamber Music | 1.5 SH |
| MPNC 1771 Improvisation and Composition Ensemble | 1.5 SH |
| MPNC 1781 Medieval Folk Roots Ensemble | 1.5 SH |
| MPNC 2721 Guitar Ensemble 2 | 1 SH |
| MPNC 3642 Opera Ensemble Skills | 1 SH |

# *D'Amore-McKim School of Business*

**www.damore-mckim.northeastern.edu/grad**

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Modern business faces many challenges from unprecedented political change and the effects of foreign policy, high technology, affirmative action regulations, and new economic policies. These challenges have increased the demand for highly trained individuals equipped to analyze and address our economy's complex social and legal problems.

Programs in the D'Amore-McKim School of Business (DMSB) are designed for students who are preparing to take on managerial responsibility. These programs seek to help students develop the ability to recognize and solve business and organizational problems and understand the role of business in the community, the nation, and the world. The college's goals are to help students develop ideals that are ethically sound and socially desirable; cultivate an awareness of the social, political, and economic developments to which businesses must adapt; develop sound judgment and effective communication skills; and develop their individual interests and talents.

## MASTER OF SCIENCE

Master of Science programs offer students the opportunity for in-depth study in a particular functional business area. Depending on a student's prior academic background, certain prerequisite courses of study may apply.

Designed for undergraduate accounting majors, the Master of Science in Accounting seeks to give you the advanced accounting knowledge and skills you need to sit for the CPA exam. No prior work experience is required.

With an MS in Taxation, you have an opportunity to learn to analyze the Internal Revenue Code, expand your professional network, and advance your career in taxation. Courses begin three times per year: in fall, spring, and summer.

Northeastern's MS in Finance program emphasizes the skills that are essential for a successful career in finance. You can pursue study in either corporate finance or investments.

Northeastern's MS in International Business (MSIB) is designed for globally focused individuals who want to begin careers in international business.

The Master of Science in Technological Entrepreneurship is an intensive one-year (September to June) 10-course sequence that seeks to teach you what you need to know to be a successful entrepreneur.

## MS in Business Analytics

This is a two-year master's degree (31 semester hours) that is structured around four interdisciplinary core courses. After completion of the core, the student will be able to select from courses specific to the MS in Business Analytics.

Students may apply directly to the Master of Science in Business Analytics, or they may apply after successful completion of the Data Science Certificate. In both cases, students will complete the required interdisciplinary core courses before continuing study in business analytics.

### THE REQUIRED INTERDISCIPLINARY CORE

The four interdisciplinary core courses in data science/analytics serve as a foundation for the professional master's degree in business analytics.

The goal of the core is to provide foundational knowledge in data science/analytics that is applicable to any discipline. Students who complete the core can apply these principles to data-driven decision making in their own discipline.

The four required core courses (16 SH) were developed by an interdisciplinary committee comprised of active researchers who utilize big data. These faculty, many who have interdisciplinary appointments, are from the College of Computer and Information Science, the College of Social Sciences and the Humanities, the D'Amore McKim School of Business, and the College of Arts, Media and Design. The faculty reviewed content of existing master's programs to design the core. The four courses are:

- Introduction to Computational Statistics (pending approval)
- Collecting, Storing, and Retrieving Data (pending approval)
- Data Mining and Machine Learning (pending approval)
- Information Design and Visual Analytics (pending approval)

Following successful completion of the shared core courses, students in the business analytics program would take the following courses:

- Introduction to Business Analytics (pending approval)
- New Media and Digital Marketing Analytics (pending approval)
- Advanced Enterprise Data Practice (pending approval)
- Business Analytics Strategic Capstone (pending approval)
- Business Analytics Elective (pending approval)

## MSA—Master of Science in Accounting

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6203 Business Entity Taxation | 3 SH |
| ACCT 6204 Financial Reporting for Integrated Multinational Enterprises | 3 SH |
| ACCT 6205 Professional Environment of the Audit and Assurance Industry | 3 SH |
| ACCT 6206 Management Control Systems | 3 SH |
| ACCT 6207 Contemporary and Emerging Issues in Financial Reporting | 3 SH |
| ACCT 6216 Financial Reporting for Governments and Nonprofit Entities | 2 SH |
| ACCT 6217 Corporate Governance, Ethics, and Financial Reporting | 3 SH |
| ACCT 6229 Accounting for Foreign Currency Transactions | 1 SH |
| MGMT 6212 Managerial Communication | 3 SH |
| Two graduate business electives | 6 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MST—Master of Science in Taxation

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6230 Federal Tax Issues and Analysis | 3 SH |
| ACCT 6231 Corporations and Shareholders | 3 SH |
| ACCT 6232 Estate and Gift Taxation | 3 SH |
| ACCT 6233 Tax Research Methodology | 1.5 SH |
| ACCT 6234 Tax Practice, Procedure, and Ethics | 1.5 SH |
| ACCT 6235 Partners and Partnerships | 3 SH |
| Five electives in the range ACCT 6236 through ACCT 6261 | 15 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MST—Online Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6230 Federal Tax Issues and Analysis | 3 SH |
| ACCT 6231 Corporations and Shareholders | 3 SH |
| ACCT 6232 Estate and Gift Taxation | 3 SH |
| ACCT 6235 Partners and Partnerships | 3 SH |
| ACCT 6292 Tax Research, Practice, and Ethics | 3 SH |
| Five courses from the following List "Accounting Elective Courses," below | 15 SH |

**PROGRAM TOTAL CREDITS**        **30.0 SH**

### ACCOUNTING ELECTIVE COURSES

| | |
|---|---|
| ACCT 6239 State and Local Taxation | 3 SH |
| ACCT 6240 International Taxation: Inbound Transactions | 3 SH |
| ACCT 6241 International Taxation: Outbound Transactions | 3 SH |
| ACCT 6243 Advanced Flow-Through Entities | 3 SH |
| ACCT 6246 Retirement Plans | 3 SH |
| ACCT 6248 Income Taxation of Trusts and Estates | 3 SH |
| ACCT 6249 Financial Planning for Investments | 3 SH |
| ACCT 6250 Financial Planning for Insurance | 3 SH |
| ACCT 6264 Planning for Estate Tax Issues | 3 SH |
| ACCT 6265 Tax Accounting for Income Taxes | 3 SH |

## MSF—Master of Science in Finance

### GENERAL REQUIREMENTS

| | |
|---|---|
| FINA 6201 Financial Theory and Policy | 3 SH |
| FINA 6202 Analysis of Financial Institutions and Markets | 3 SH |
| FINA 6203 Investment Analysis | 3 SH |
| FINA 6204 International Finance Management | 3 SH |
| FINA 6205 Financial Strategy | 3 SH |
| FINA 6206 Finance Seminar | 3 SH |
| Three graduate FINA electives | 9 SH |
| Graduate business elective | 3 SH |

**PROGRAM TOTAL CREDITS**        **30.0 SH**

## MSF—Online Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| FINA 6201 Financial Theory and Policy | 3 SH |
| FINA 6202 Analysis of Financial Institutions and Markets | 3 SH |
| FINA 6203 Investment Analysis | 3 SH |
| FINA 6204 International Finance Management | 3 SH |
| FINA 6205 Financial Strategy | 3 SH |
| FINA 6206 Finance Seminar | 3 SH |
| Four electives in the range FINA 6211 through FINA 6219 | 12 SH |

**PROGRAM TOTAL CREDITS**        **30.0 SH**

## Master of Science in Innovation

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6280 Financial Reporting and Decision Making for Firms in Innovation-Intensive Industries | 3 SH |
| BUSN 6280 How Executives Shape and Lead Innovation and Enterprise Growth | 3 SH |
| ENTR 6217 Lean Innovation | 3 SH |
| FINA 6284 Financing Innovation and Growth | 3 SH |
| HRMG 6280 The Human Side of Innovation | 3 SH |
| HRMG 6281 Leading and Implementing Innovation in Organizations | 3 SH |
| MGMT 6280 Innovation for Next-Generation Products and Systems | 3 SH |
| MGSC 6281 Service Innovation and Management | 3 SH |
| MKTG 6280 Market Segmentation and Customer Insight for Next-Generation Products and Services | 3 SH |
| MKTG 6283 Marketing and Selling Innovation | 3 SH |

**PROGRAM TOTAL CREDITS**        **30.0 SH**

## MSIB—Master of Science in International Business

### GENERAL REQUIREMENTS

| | |
|---|---|
| FINA 6204 International Finance Management | 3 SH |
| FINA 6209 Introduction to International Accounting and Finance | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| INTB 6226 Becoming a Global Leader | 3 SH |
| INTB 6230 International Field Study | 3 SH |
| MECN 6203 Global Managerial Economics | 3 SH |
| MKTG 6206 International Marketing | 3 SH |
| SCHM 6213 Global Supply Chain Management | 3 SH |
| Two graduate electives | 6 SH |

**PROGRAM TOTAL CREDITS**        **30.0 SH**

## MS in International Management

In collaboration with the International Partnership of Business Schools (IPBS), the Master of Science in International Management is designed to prepare students for careers in global economy. The MIM offers an opportunity to study in two continents, in two very different countries, with very different educational systems. Students who study for their first or second semesters at Northeastern University take the courses listed below. Students who study at Northeastern University during the fall semester earn the Master of Science in International Management from the partner university where they study during their second semester. Students who study at Northeastern University during the spring semester earn the Northeastern University Master of Science in International Management.

## GENERAL REQUIREMENTS

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| FINA 6209 Introduction to International Accounting and Finance | 3 SH |
| INTB 6201 International Business Management | 3 SH |
| MECN 6203 Global Managerial Economics | 3 SH |
| MGSC 6209 Business Statistics | 3 SH |
| MKTG 6206 International Marketing | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| FINA 6204 International Finance Management | 3 SH |
| INTB 6217 Creating Sustainable Competitive Advantage through Global Innovation | 3 SH |
| INTB 6226 Becoming a Global Leader | 3 SH |
| INTB 6260 Advanced Topics in Global Management and Strategy | 3 SH |
| SCHM 6213 Global Supply Chain Management | 3 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MS in Technological Entrepreneurship

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| ENTR 6212 Business Planning for New Ventures | 3 SH |
| ENTR 6218 Business Model Design and Innovation | 3 SH |
| ENTR 6219 Financing Ventures from Early Stage to Exit | 3 SH |
| TECE 6222 Emerging and Disruptive Technologies | 3 SH |
| TECE 6230 Entrepreneurial Marketing and Selling | 3 SH |
| TECE 6250 Lean Design and Development | 3 SH |
| TECE 6300 Managing a Technology-Based Business | 3 SH |
| TECE 6340 The Technical Entrepreneur as Leader and Innovator | 3 SH |
| Graduate elective | 3 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

Northeastern University's full-time MBA is a 24-month program designed to enable you to increase your knowledge of business, gain real-world experience, and position yourself for career advancement.

Northeastern's evening MBA is a flexible, part-time program that allows you to complete your degree on your own timetable, set your own schedule, and specialize in an area that meets your career goals.

The high-tech MBA emphasizes the *business* of innovation. You can go beyond the status quo, studying how to identify opportunities for growth and drive change to products, systems, and processes within your organization.

The executive MBA is a 16-month, part-time program for seasoned professionals ready to expand their knowledge of global business and hone their leadership skills.

As a student in the online MBA program, you have an opportunity to build on your current career success, expand your managerial skills, and put new learning to use in your place of work. This program is offered completely online.

## MBA—Full-Time Program with Concentration in Finance

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6208 Financial Reporting and Managerial Decision Making | 4 SH |
| BUSN 6200 Career Management | 0 SH |
| BUSN 6207 Developing Critical Skills in Real Time | 2 SH |
| ENTR 6208 Innovation and Enterprise Growth | 3 SH |
| FINA 6203 Investment Analysis | 3 SH |
| FINA 6208 Financial Management for Value Creation | 4 SH |
| HRMG 6208 Effective Organizational and Human Behavior | 3 SH |
| INTB 6208 Global Management | 3 SH |
| INTB 6230 International Field Study | 3 SH |
| MECN 6208 Economics for Managerial Decision Making | 2 SH |
| MGSC 6205 Management of Information Resources | 2 SH |
| MGSC 6207 Data Analysis for Decision Making | 2 SH |
| MGSC 6208 Operations Management | 2 SH |
| MKTG 6208 Marketing and Customer Value | 4 SH |
| SCHM 6208 Managing the Supply Chain | 2 SH |
| STRT 6208 Strategic Decisions for Growth | 3 SH |
| Six graduate DMSB electives | 18 SH |
| **PROGRAM TOTAL CREDITS** | **60.0 SH** |

## MBA—Full-Time Program
## with Concentration in Marketing

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6208 Financial Reporting and Managerial Decision Making | 4 SH |
| BUSN 6200 Career Management | 0 SH |
| BUSN 6207 Developing Critical Skills in Real Time | 2 SH |
| ENTR 6208 Innovation and Enterprise Growth | 3 SH |
| FINA 6208 Financial Management for Value Creation | 4 SH |
| HRMG 6208 Effective Organizational and Human Behavior | 3 SH |
| INTB 6208 Global Management | 3 SH |
| INTB 6230 International Field Study | 3 SH |
| MECN 6208 Economics for Managerial Decision Making | 2 SH |
| MGSC 6205 Management of Information Resources | 2 SH |
| MGSC 6207 Data Analysis for Decision Making | 2 SH |
| MGSC 6208 Operations Management | 2 SH |
| MKTG 6208 Marketing and Customer Value | 4 SH |
| MKTG 6210 Marketing Research | 3 SH |
| SCHM 6208 Managing the Supply Chain | 2 SH |
| STRT 6208 Strategic Decisions for Growth | 3 SH |
| Six graduate DMSB electives | 18 SH |

**PROGRAM TOTAL CREDITS**    **60.0 SH**

## MBA—Full-Time Program with Concentration in Operation and Supply Chain Management

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6208 Financial Reporting and Managerial Decision Making | 4 SH |
| BUSN 6200 Career Management | 0 SH |
| BUSN 6207 Developing Critical Skills in Real Time | 2 SH |
| ENTR 6208 Innovation and Enterprise Growth | 3 SH |
| FINA 6208 Financial Management for Value Creation | 4 SH |
| HRMG 6208 Effective Organizational and Human Behavior | 3 SH |
| INTB 6208 Global Management | 3 SH |
| INTB 6230 International Field Study | 3 SH |
| MECN 6208 Economics for Managerial Decision Making | 2 SH |
| MGSC 6205 Management of Information Resources | 2 SH |
| MGSC 6207 Data Analysis for Decision Making | 2 SH |
| MGSC 6208 Operations Management | 2 SH |
| MKTG 6208 Marketing and Customer Value | 4 SH |
| SCHM 6208 Managing the Supply Chain | 2 SH |
| SCHM 6213 Global Supply Chain Management | 3 SH |
| STRT 6208 Strategic Decisions for Growth | 3 SH |
| Six graduate DMSB electives | 18 SH |

**PROGRAM TOTAL CREDITS**    **60.0 SH**

## MBA—Evening Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| HRMG 6200 Managing People and Organizations | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| MECN 6200 Global Competition and Market Dominance | 3 SH |
| MGSC 6200 Information Analysis | 3 SH |
| MGSC 6204 Managing Information Resources | 1.5 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| STRT 6200 Strategic Decision Making in a Changing Environment | 3 SH |
| Nine graduate DMSB electives | 27 SH |

**PROGRAM TOTAL CREDITS**    **60.0 SH**

## MBA—High-Technology MBA Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6280 Financial Reporting and Decision Making for Firms in Innovation-Intensive Industries | 3 SH |
| ACCT 6281 Measuring and Managing the Costs of Production and Growth | 3 SH |
| BUSN 6280 How Executives Shape and Lead Innovation and Enterprise Growth | 3 SH |
| BUSN 6281 Venturing with Northeastern Entrepreneurs, Investors, and Corporate Executives | 3 SH |
| ENTR 6215 New Venture Creation for Entrepreneurs and Corporate Innovators | 3 SH |
| ENTR 6217 Lean Innovation | 3 SH |
| FINA 6280 Corporate Finance for Dynamic Industries | 6 SH |
| FINA 6281 Mergers and Acquisitions for Enterprise Growth, Strategy, and Mechanics | 3 SH |
| FINA 6283 Economics of Growth and Innovation | 3 SH |
| HRMG 6280 The Human Side of Innovation | 3 SH |
| HRMG 6281 Leading and Implementing Innovation in Organizations | 3 SH |
| INTB 6280 Managing Innovation and Marketing in the Global Enterprise | 3 SH |
| MGMT 6280 Innovation for Next-Generation Products and Systems | 3 SH |
| MGMT 6281 Competitive Strategy for Dynamic Markets, Development, and Execution | 3 SH |
| MGMT 6282 Negotiation and Communication | 3 SH |
| MGMT 6283 Business Law, Corporate Governance, and Intellectual Property Strategies | 3 SH |

MGSC 6281 Service Innovation and Management | 3 SH

MKTG 6280 Market Segmentation and Customer Insight for Next-Generation Products and Services | 3 SH

MKTG 6281 Go-to-Market for New Products and Services | 3 SH

**PROGRAM TOTAL CREDITS** | **60.0 SH**

## MBA—Executive MBA Program

### GENERAL REQUIREMENTS

ACCT 6290 Interpreting and Evaluating Financial Statements | 3 SH

ACCT 6291 Identifying Strategic Implications in Accounting Data | 3 SH

FINA 6290 Financial Tools and Decision Making for Executives | 3 SH

FINA 6291 Creating Value in a Global Business Environment | 3 SH

HRMG 6290 Building High Performance Teams | 2 SH

HRMG 6291 Leveraging Organizational Development, Motivation, and Leadership for Organizational Effectiveness | 2 SH

HRMG 6292 Using Human Resource Management for Competitive Advantage | 2 SH

HRMG 6293 Developing and Applying Personal Leadership Skills | 2 SH

HRMG 6294 Hallmarks of Effective Leadership | 2 SH

INTB 6290 Managing in Diverse Cultures to Execute Global Strategy | 3 SH

INTB 6291 Expanding Globally for New Competitive Advantage | 2 SH

INTB 6292 Global Economic and Political Environments | 2 SH

INTB 6293 International Residency in Mexico City | 3 SH

INTB 6294 International Residency in China and Hong Kong | 3 SH

MECN 6290 How Economics and Politics Affect U.S. Businesses | 3 SH

MGMT 6293 Developing an Executive Understanding of Business Law and Intellectual Property | 3 SH

MGMT 6295 Leadership for High Performance and Organizational Change | 2 SH

MGMT 6296 Managerial Communication and Presentations | 2 SH

MGSC 6291 Creating Value through Process Improvement | 2 SH

MGSC 6292 Delivering Competitive Advantage through IT Strategy | 2 SH

MKTG 6290 Creating and Sustaining Markets | 3 SH

MKTG 6292 Best Practices for New Product and Services Development | 2 SH

MKTG 6293 Leveraging Traditional and Digital Platforms for New Marketing Strategy | 2 SH

SCHM 6290 Sourcing, Making, and Delivering Goods in a Dynamic, Global Business Environment | 2 SH

STRT 6291 Changing the Strategic Viewpoint for Competitive Advantage | 2 SH

**PROGRAM TOTAL CREDITS** | **60.0 SH**

## MBA—Online Program

### GENERAL REQUIREMENTS

ACCT 6272 Financial Statement Preparation and Analysis | 2.25 SH

ACCT 6273 Identifying Strategic Implications in Accounting Data | 2.25 SH

ENTR 6200 Enterprise Growth and Innovation | 3 SH

FINA 6200 Value Creation through Financial Decision Making | 3 SH

HRMG 6200 Managing People and Organizations | 3 SH

INTB 6200 Managing the Global Enterprise | 3 SH

MECN 6200 Global Competition and Market Dominance | 3 SH

MGMT 6213 Managing Ethics in the Workplace and Marketplace | 2 SH

MGSC 6200 Information Analysis | 3 SH

MGSC 6204 Managing Information Resources | 1.5 SH

MGSC 6206 Management of Service and Manufacturing Operations | 3 SH

MKTG 6200 Creating and Sustaining Customer Markets | 3 SH

STRT 6200 Strategic Decision Making in a Changing Environment | 3 SH

Five graduate DMSB electives | 15 SH

**PROGRAM TOTAL CREDITS** | **50.0 SH**

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### DUAL DEGREES

</div>

With an MSA/MBA from Northeastern, you can earn two degrees—an MS in Accounting and an MBA—in just 15 months. This program is designed for liberal arts, nonaccounting majors.

The MS in Finance/MBA (MSF/MBA) program is open to students admitted to the full-time MBA program, the evening MBA program, the online MBA program, or the MS in Finance program.

Northeastern's School of Nursing and D'Amore-McKim School of Business offer the MS/MBA in Nursing program, linking graduate-level management education with specific clinical and organizational issues relevant to nurse managers. The MS/MBA program seeks to provide students with the knowledge, skills, and attitudes necessary to understand, shape, and respond to the dynamic forces at play in today's healthcare environment.

The JD/MBA is a powerful combination that seeks to equip candidates to operate with equal facility in the increasingly interdependent legal and business spheres. Northeastern University offers an accelerated 45-month program in which students concurrently earn an MBA through the D'Amore-McKim School of Business and a JD through the School of Law. Northeastern's dynamic co-op program gives students hands-on experience in combining the legal and business worlds.

## MSF/MBA—Online Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6272 Financial Statement Preparation and Analysis | 2.25 SH |
| ACCT 6273 Identifying Strategic Implications in Accounting Data | 2.25 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| FINA 6203 Investment Analysis | 3 SH |
| FINA 6204 International Finance Management | 3 SH |
| FINA 6205 Financial Strategy | 3 SH |
| FINA 6206 Finance Seminar | 3 SH |
| HRMG 6200 Managing People and Organizations | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| MECN 6200 Global Competition and Market Dominance | 3 SH |
| MGMT 6213 Managing Ethics in the Workplace and Marketplace | 2 SH |
| MGSC 6200 Information Analysis | 3 SH |
| MGSC 6204 Managing Information Resources | 1.5 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| STRT 6200 Strategic Decision Making in a Changing Environment | 3 SH |
| FINA electives | 9 SH |
| Open elective courses | 6 SH |
| **PROGRAM TOTAL CREDITS** | **62.0 SH** |

## MSA/MBA—Professional Accounting Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6217 Corporate Governance, Ethics, and Financial Reporting | 3 SH |
| ACCT 6220 Corporate Financial Reporting and Decision Making 1 | 3 SH |
| ACCT 6221 Corporate Financial Reporting and Decision Making 2 | 6 SH |
| ACCT 6222 Corporate and Governmental/Nonprofit Financial Reporting and Decision Making | 6 SH |
| ACCT 6223 Audit and Other Assurance Services | 6 SH |
| ACCT 6224 Taxation of Individuals and Business Entities | 6 SH |
| ACCT 6226 Strategic Cost Management | 3 SH |
| ACCT 6227 Accounting for Business Combinations | 3 SH |
| ACCT 6228 Contemporary Issues in Accounting Theory | 3 SH |
| ENTR 6211 Entrepreneurship: Services and Retail Business Creation | 3 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| HRMG 6200 Managing People and Organizations | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| MECN 6200 Global Competition and Market Dominance | 3 SH |
| MGMT 6211 Business Law and Professional Ethics | 3 SH |
| MGSC 6200 Information Analysis | 3 SH |
| MGSC 6201 Information Systems and Technology | 3 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| STRT 6200 Strategic Decision Making in a Changing Environment | 3 SH |
| **PROGRAM TOTAL CREDITS** | **72.0 SH** |

## MSF/MBA—Full-Time Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6208 Financial Reporting and Managerial Decision Making | 4 SH |
| BUSN 6200 Career Management | 0 SH |
| BUSN 6207 Developing Critical Skills in Real Time | 2 SH |
| ENTR 6208 Innovation and Enterprise Growth | 3 SH |
| FINA 6203 Investment Analysis | 3 SH |
| FINA 6204 International Finance Management | 3 SH |
| FINA 6205 Financial Strategy | 3 SH |
| FINA 6206 Finance Seminar | 3 SH |
| FINA 6208 Financial Management for Value Creation | 4 SH |
| HRMG 6208 Effective Organizational and Human Behavior | 3 SH |
| INTB 6208 Global Management | 3 SH |
| INTB 6230 International Field Study | 3 SH |
| MECN 6208 Economics for Managerial Decision Making | 2 SH |

| | |
|---|---|
| MGSC 6205 Management of Information Resources | 2 SH |
| MGSC 6207 Data Analysis for Decision Making | 2 SH |
| MGSC 6208 Operations Management | 2 SH |
| MKTG 6208 Marketing and Customer Value | 4 SH |
| SCHM 6208 Managing the Supply Chain | 2 SH |
| STRT 6208 Strategic Decisions for Growth | 3 SH |
| Graduate FINA electives | 12 SH |
| Graduate BUSN electives | 9 SH |

**PROGRAM TOTAL CREDITS**              **72.0 SH**

## MSF/MBA—Evening Program

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| FINA 6203 Investment Analysis | 3 SH |
| FINA 6204 International Finance Management | 3 SH |
| FINA 6205 Financial Strategy | 3 SH |
| FINA 6206 Finance Seminar | 3 SH |
| HRMG 6200 Managing People and Organizations | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| MECN 6200 Global Competition and Market Dominance | 3 SH |
| MGSC 6200 Information Analysis | 3 SH |
| MGSC 6204 Managing Information Resources | 1.5 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| STRT 6200 Strategic Decision Making in a Changing Environment | 3 SH |
| Graduate FINA electives | 12 SH |
| Graduate BUSN electives | 15 SH |

**PROGRAM TOTAL CREDITS**              **72.0 SH**

## MS/MBA in Nursing

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6272 Financial Statement Preparation and Analysis | 2.25 SH |
| ACCT 6273 Identifying Strategic Implications in Accounting Data | 2.25 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| MECN 6200 Global Competition and Market Dominance | 3 SH |
| MGSC 6200 Information Analysis | 3 SH |

| | |
|---|---|
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6301 Human Resources and Operations | 3 SH |
| NRSG 6302 Health Policy and Law | 3 SH |
| NRSG 6305 Case Management | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| NRSG 6307 Health Informatics 2 | 3 SH |
| NRSG 6500 Nursing Administration Practicum 1 | 4 SH |
| NRSG 6501 Nursing Administration Practicum 2 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| STRT 6200 Strategic Decision Making in a Changing Environment | 3 SH |
| Business specialization 1 | 3 SH |
| Business specialization 2 | 1 SH |

**PROGRAM TOTAL CREDITS**              **66.5 SH**

## JD/MBA

Concurrent degree candidates follow a set schedule, as follows:

### YEAR 1

Nine months of traditional first-year law study, followed by a three-month legal co-op in the summer.

### YEAR 2 AND YEAR 3

Twelve months of courses in the business school, three months of law school courses during the fall and spring quarters, and two law/business co-ops in the winter and summer quarters.

### YEAR 4

Three months of law school courses in the fall, a final law/business co-op in the winter, and three months of law courses in the spring, with Commencement ceremonies for both schools in the spring.

## CERTIFICATE PROGRAMS

Certificate programs allow students the opportunity to earn graduate business-level credit without enrolling in a degree program. To earn a certificate, students must maintain a final GPA of 3.000 within a maximum period of three years (two years for the online certificate).  An individual course may only count toward a single certificate.

Courses completed with a GPA of 3.000 or better may be transferred into a relevant Northeastern master's degree.

## Graduate Certificate in Business Administration

Students will earn their Graduate Certificate in Business Administration after completing 12 credits. They can take any available courses from the evening MBA schedule offered each semester. Students must bear prerequisites in mind should they want to enroll in a class where prerequisites are required. With the advice of administration and faculty, students tailor their own course of study either within a specific discipline or across disciplines.

## Graduate Certificate in Business Administration— Evening MBA Track

This track is for students who are specifically interested in pursuing the evening MBA upon completion of the certificate program. Upon successful completion of this track, students are eligible to waive the GMAT/GRE requirement for admission into the evening MBA and part-time MBA/MS finance programs. To be eligible for the GMAT/GRE waiver, one must complete the prescribed graduate business courses listed below with a B or better in each and earn a minimum cumulative GPA of 3.300.

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| HRMG 6200 Managing People and Organizations | 3 SH |
| MGSC 6200 Information Analysis | 3 SH |
| MGSC 6204 Managing Information Resources | 1.5 SH |
| **PROGRAM TOTAL CREDITS** | **15.0 SH** |

## Graduate Certificate in Business Administration— International Student Track

The Graduate Certificate in Business Administration— International Student Track is an opportunity for international students to study full-time earning graduate credits over two consecutive semesters. Students must take the five courses as they become available for this particular section and must be enrolled full-time in their first semester of study.

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| HRMG 6200 Managing People and Organizations | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| **PROGRAM TOTAL CREDITS** | **15.0 SH** |

## Graduate Certificate in Supply Chain Management

The Graduate Certificate in Supply Chain Management allows students to take four courses in the supply chain discipline over the two semesters to three years. There is a required curriculum for the certificate program. Credits earned in this program can transfer into the MBA as electives or, in some cases, the engineering master's degree (check with advisor).

### GENERAL REQUIREMENTS

| | |
|---|---|
| SCHM 6210 Supply Chain Management | 3 SH |
| SCHM 6212 Executive Roundtable in Supply Chain Management | 3 SH |
| SCHM 6213 Global Supply Chain Management | 3 SH |

### ELECTIVES

Choose an additional SCHM course from below

| | |
|---|---|
| SCHM 6211 The Transportation Industries | 3 SH |
| SCHM 6214 Supply Chain Management--Procurement | 3 SH |
| SCHM 6215 IT Applications in Supply Chain Management | 3 SH |
| SCHM 6221 Sustainability and Supply Chain Management | 3 SH |
| SCHM 6222 Managing Emerging Issues in Supply Chain Management | 3 SH |
| **PROGRAM TOTAL CREDITS** | **12.0 SH** |

## Graduate Certificate in Technological Entrepreneurship

The Graduate Certificate in Technological Entrepreneurship consists of four courses. Credits earned in the certificate program may be applied toward the master's degree in technological entrepreneurship; the evening MBA; or, in some cases, the master's in engineering (check with advisor).

### GENERAL REQUIREMENTS

Select four courses from the following list:

| | |
|---|---|
| TECE 6222 Emerging and Disruptive Technologies | 3 SH |
| TECE 6230 Entrepreneurial Marketing and Selling | 3 SH |
| TECE 6250 Lean Design and Development | 3 SH |
| TECE 6340 The Technical Entrepreneur as Leader and Innovator | 3 SH |
| ENTR 6210 Managing Operations in Early Stage Ventures | 3 SH |
| ENTR 6212 Business Planning for New Ventures | 3 SH |
| Family Business: The Next Generation (pending approval) | 3 SH |
| Business Model Design and Development (pending approval) | 3 SH |
| Financing Early Stage Ventures (pending approval) | 3 SH |

### PROGRAM TOTAL CREDITS          12.0 SH

# *College of Computer and Information Science*

**www.ccs.neu.edu/graduate**

**CARLA E. BRODLEY, PHD,** *Dean*

**Agnes H. Chan, PhD,** *Associate Dean and Director
    of Graduate Studies*
**Doreen L. Hodgkin, MEd,** *Associate Dean, Administration
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617.373.2462
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The College of Computer and Information Science (CCIS) maintains a strong research program with significant funding from the major federal research agencies and private industry. With a substantial increase in faculty strength and research funding in recent years, we are actively seeking highly motivated, bright, hardworking students who are interested in pursuing a PhD degree in computer science or in the interdisciplinary field of information assurance, network science, or personal health informatics. Graduate students and faculty members are involved in exciting projects in a wide range of research areas, including programming languages, software engineering, distributed and parallel computing, cryptography, network security, health informatics, network science, databases, information retrieval, and artificial intelligence. Colloquia and weekly research seminars contribute to the vibrant research atmosphere in the college.

Our curriculum encompasses both the breadth and depth needed for graduate school. Specialized, advanced courses for PhD students in computer science, information assurance, and personal health informatics are designed to prepare all students for research early in their doctoral education.

The MS curriculum in computer science combines the study of basic algorithms and theoretical computer science principles with advanced programming and software design methods. It offers students the opportunity to develop the analytical and problem-solving skills needed to pursue challenging professional careers.

In addition, we offer two interdisciplinary master's degree programs for working professionals: the MS in Health Informatics program, which seeks to prepare graduates to use information technology to improve healthcare delivery and outcomes; and the MS in Information Assurance program, which focuses on information technology and incorporates the understanding of the social sciences, law, criminology, and management needed to prevent and combat cyber attacks.

Three student laboratories house a mix of Linux and Windows workstations and separate research lab facilities. In addition, the Information Assurance Laboratory provides students with hands-on experience in information assurance exercises in an isolated network environment.

All faculty and supported graduate students have their own workstations. Our computing facilities, supported by our own systems administrators and assisted by the student crew, are connected via a high-speed network and serviced by a cadre of dedicated data servers.

Our college is a tightly knit community, and the faculty, staff, and students interact regularly through yearly town hall meetings, weekly teas, and seminars. A diverse, multicultural graduate student body and faculty members encourage rich extracurricular interaction. The student chapter of the Association for Computing Machinery organizes a number of social events to promote friendship and camaraderie within the CCIS community.

## Transferring to the CCIS

A maximum of 9 semester hours of credit obtained at another institution may be accepted toward the degree, provided the credits consist of work taken at the graduate level for graduate credit, carry grades of 3.000 or better, have been earned at an accredited institution, and have not been used toward any other degree. Transfer credit will be offered only for courses that match a course offered at Northeastern University and that have been approved by the graduate committee. However, **no** transfer credits will be given for courses listed as interdisciplinary.

## Academic Requirements for PhD in Computer Science

A minimum of 16 semester hours of course work beyond the master's degree (excluding the six required core courses), or 48 semester hours of course work beyond the BS/BA degree, is required of all students.

### ADMISSION TO CANDIDACY

All students must demonstrate sufficient knowledge in the fundamentals of computer science, as well as the ability to carry out research in an area of computer science.

The student must maintain a minimum GPA of 3.500 among the six courses satisfying the above course requirements and a grade of B or better in each of these courses. Students who have taken equivalent courses in other institutions may petition to be exempted from the course(s) (subject to the approval of the PhD committee). Each student may repeat a course once for no more than three out of the six courses if they do not receive a B or better

in the course. Students with an MS in Computer Science may petition to the PhD committee for an exemption from these courses. Petition forms are available in the college administrative office at 202 West Village H and at www.ccs.neu.edu/graduate/current-students/forms.

The fields listed do not necessarily represent areas of specialization or separate tracks within the PhD program. Rather, they attempt to delineate areas on which the student must be examined in order to measure his or her ability to complete the degree. Therefore, they may be adjusted in the future to reflect changes in the discipline of computer science and in faculty interests within the CCIS. Similarly, these fields do not represent the only areas in which a student may write his or her dissertation. They are, however, intended to serve as a basis for performing fundamental research in computer science.

## RESEARCH/SURVEY PAPER

To demonstrate research ability, the student is required to submit to the PhD committee a research or a survey paper in an area of specialty under the supervision of a faculty advisor. Normally, the length of the paper should not exceed 15 pages. A submitted paper from a student is considered to have fulfilled the paper requirement if:

1. The paper has been submitted to a selective conference.
2. The student has made a substantial contribution to the paper.
3. The advisor has endorsed the paper with a written statement indicating the student's contribution.
4. The PhD committee has voted on a positive recommendation.

Upon completion of the course and the research paper requirements, the student is admitted to candidacy for the PhD degree. It is highly recommended that the student complete the candidacy requirement by the end of his or her second year but no later than the third year.

## RESIDENCY

One year of continuous full-time study is required after admission to the PhD candidacy. It is expected that during this period the student will make substantial progress in preparing for the comprehensive examination.

## COMPREHENSIVE EXAMINATION

The examination is taken after the student has achieved sufficient depth in a field of study in order to prepare a prospectus for the PhD dissertation. This process should take place no later than the end of the fifth year in residence. Prior to taking the comprehensive examination, the student prepares a thesis proposal for the examination, which describes the proposed research, including the relevant background materials from the literature. The thesis proposal should clearly specify the research problems to be attacked, the techniques to be used, and a schedule of milestones toward completion. Normally, the thesis proposal should not exceed 15 pages, excluding appendices and bibliography.

The thesis proposal must be approved by the comprehensive committee. It is strongly recommended that the same members should serve on both the comprehensive and thesis committees. With the help of the advisor, a student selects the comprehensive committee, consisting of four members to be approved by the PhD committee. The four members must include the advisor, two other faculty members from the college, and an external examiner (optional for comprehensive committee).

To help the PhD committee to make an informed decision, a copy of the external examiner's resumé should be submitted at the same time. Upon approval of the written proposal, the student has to present the proposed work orally in a public forum, followed by a closed-door oral examination from the comprehensive committee. The student may take the comprehensive examination twice, at most.

## DOCTORAL DISSERTATION

Upon successful completion of solving the research proposed in the thesis proposal, the candidate has an opportunity to prepare the dissertation for approval by the doctoral committee. The dissertation must contain results of extensive research and make an original contribution to the field of computer science. The work should give evidence of the candidate's ability to carry out independent research. It is expected that the dissertation should be of sufficient quality to merit publication in a reputable journal in computer science.

### Doctoral Committee

If the thesis committee is the same as the comprehensive committee, no further approval is needed. If the thesis committee is changed in its composition, the approval process will follow that of the comprehensive committee.

### Dissertation Defense

The dissertation defense is held in accordance with the regulations of the University Graduate Council. It consists of a lecture given by the candidate on the subject matter of the dissertation. This is followed by questions from the doctoral committee and others in attendance concerning the results of the dissertation as well as any related matters. The examination is chaired by the PhD advisor.

## TIME AND TIME LIMITATION

After the establishment of degree candidacy, a maximum of five years will be allowed for the completion of the degree requirements, unless an extension is granted by the college graduate committee.

<div style="background: red; color: white;">COMPUTER SCIENCE</div>

Our PhD in Computer Science program seeks to prepare students to conduct state-of-the-art computer science research in preparation for careers in government, industry, and academia. Similarly, our MS in Computer Science program offers students the opportunity to broadly expand their knowledge in the field while focusing on one of our curricular specialties:

- Artificial intelligence
- Computer science theory
- Database management
- Graphics and robotics
- Human/computer interaction
- Information security
- Networks
- Programming languages
- Software engineering
- Systems

Graduate education in computer science also features the top-ranked Northeastern co-op program, enabling students to supplement their classroom education with real-world experience in the field. We have consistently placed more than 95 percent of our students in co-op positions. The college partners with several high-profile companies, including:

- Amazon
- Bloomberg
- EMC Corporation
- Fidelity Investments
- IBM Corporation
- Intuit
- Kronos
- MathWorks
- Microsoft
- Nokia
- Phase Forward
- SeaChange International
- Verizon Communications

## Admission Requirements

Applicants must submit an official application, official transcripts from all colleges/universities attended, a personal statement, official scores of the GRE General Test, and three letters of recommendation. International students must also submit official scores of the TOEFL examination. Acceptance into the CCIS is granted upon recommendation of the college graduate committee after a review of the completed application.

Candidates must have completed the undergraduate material listed below:

- Experience in some high-level procedural language, e.g., C, C++, Java, Scheme, ML
- Data structures
- Computer organization
- One year of college calculus
- Discrete mathematics

Industrial experience in these areas may be an acceptable substitute for formal course work. Students may be accepted provisionally while completing these deficiencies and may take graduate courses concurrently as their preparation allows.

## MSCS—Master of Science in Computer Science

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CS 5010 Programming Design Paradigm | 4 SH |
| *Coreq.* CS 5011 | |
| CS 5011 Recitation for CS 5010 | 0 SH |
| *Coreq.* CS 5010 | |
| CCIS concentration elective | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CS 5500 or CS 5600 | 4 SH |
| CS 5800 Algorithms | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CCIS concentration elective | 4 SH |
| CCIS elective | 4 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Two CCIS electives | 8 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MSCS—Master of Science in Computer Science— Align Program

The Align program associated with MSCS is designed to prepare students who have obtained a BS/BA degree in STEM-related fields and are interested in pursuing a MSCS degree. During the fall semester of year 1, students are expected to take foundational courses in CS at the undergraduate level. Upon successful completion of the first semester, students are evaluated for admission to the MS program.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CS 1800 Discrete Structures | 4 SH |
| CS 2500 Fundamentals of Computer Science 1 | 4 SH |
| *Coreq.* CS 2501 | |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CS 5010 Programming Design Paradigm | 4 SH |
| *Coreq.* CS 5011 | |
| CS 5011 Recitation for CS 5010 | 0 SH |
| *Coreq.* CS 5010 | |
| CCIS concentration elective | 4 SH |

## YEAR 2, FALL SEMESTER

| | |
|---|---|
| CS 5500 or CS 5600 | 4 SH |
| CS 5800 Algorithms | 4 SH |

## YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CCIS concentration elective | 4 SH |
| CCIS elective | 4 SH |

## YEAR 3, FALL SEMESTER

| | |
|---|---|
| Two CCIS electives | 8 SH |
| **PROGRAM TOTAL CREDITS** | **40.0 SH** |

## PhD in Computer Science

### GENERAL REQUIREMENTS

| | |
|---|---|
| CS 7400 Intensive Principles of Programming Languages | 4 SH |
| CS 7600 Intensive Computer Systems | 4 SH |
| CS 7800 Advanced Algorithms | 4 SH |
| CS 7805 Theory of Computation | 4 SH |
| Two CCIS specilization courses | 8 SH |
| Open electives | 16 SH |
| Additional course work | 8 SH |
| **PROGRAM TOTAL CREDITS** | **48.0 SH** |

## MS in Health Informatics

See Bouvé College of Health Sciences interdisciplinary programs, page 160, for curriculum information.

## PhD in Personal Health Informatics

### ADMITTANCE

Students will be accepted with either of the following:

- A bachelor's or higher degree in a technical discipline (e.g., computer science or information science, computer systems engineering) with either academic or work experience demonstrating a commitment to working in health.
- A bachelor's or higher degree in a health science discipline (e.g., nursing, medicine, physical therapy, pharmacy, public health) with either some academic course work in technology, such as a course in programming or design, or work experience where the applicant participated in the development, adaptation, or evaluation of consumer- or patient-facing health technology. (Otherwise outstanding applicants without programming skills may be advised to take an introductory programming course prior to entry, and otherwise outstanding applicants without any formal experience working in health settings may be advised to spend some time volunteering in a medical or community health setting prior to entry.)

Applicants will be expected to have a minimum 3.000 undergraduate GPA; a minimum total GRE score of 300 or equivalent; a minimum GRE academic writing score of 3.5; and, for international applicants, a minimum TOEFL score of 105.

### DEGREE REQUIREMENTS

*Year One*

Students take core courses in theoretical foundations of health interface design, software engineering, human-computer interaction, and statistics. Some course content links with a usability evaluation practicum requirement, where all students are paired for a semester with a practitioner in a health field. In the practicum, the students shadow the professional and study patients and their information needs. The student develops proposals for improving patient care using patient-facing technology.

*Year Two*

In addition to other core courses (research methods, healthcare data standards), students participate in a two-semester course, where they work in teams to assess needs in the field using experiences from their practicums and collaboratively design, develop, deploy, and evaluate a personal health or wellness interface technology, either in a local clinical setting or among a population of at-risk individuals associated with one of Bouvé's centers. This research offers practical experience working in the field with consumers/patients, creating sophisticated technology,

conducting formal needs assessment and evaluation, and writing high-quality publications. Modules throughout the course, taught by faculty affiliated with the personal health informatics doctoral program, offer additional core material such as running clinical trials, health dialogue systems, computerized sensing systems, etc.

### Years Three–Five

Students work on individual research projects. We anticipate that students graduating from this program will have multiple, strong publications showing proficiency in building and deploying novel technologies for consumer- and patient-focused care.

## CREDIT REQUIREMENT

A minimum of 48 credit hours of course work beyond a BS is required.

## MINIMUM ACADEMIC STANDARDS AND REQUIREMENTS

### Residency Requirement

The residency requirement will follow the University Graduate Council By-Law policy.

### Dissertation Advising

Each student will have one primary advisor from the personal health informatics doctoral program faculty.

### Dissertation Committee

The committee will consist of at least three members: the dissertation advisor, one additional personal health informatics doctoral program faculty member, and one member external to Northeastern who is an expert in the specific personal health informatics topic of research. The dissertation committee shall include experts with both health and technology backgrounds. The dissertation advisor must be a full-time member of the Northeastern University faculty.

### Qualifying Examination

The qualifying examination consists of a three-part exam conducted by a committee of three personal health informatics doctoral program faculty members, each overseeing one part of the exam. The research core of the exam is fulfilled with submission of a high-quality paper to a strong peer-reviewed conference or journal. The health component of the exam is fulfilled when the student passes a written exam developed by a personal health informatics doctoral program faculty member with a health sciences background, and the technical component of the exam is fulfilled when the student passes an exam developed by a personal health informatics doctoral program faculty member with a technical background. The content of the written exams and the paper topic are developed in consultation with each faculty member.

### Degree Candidacy

A student is considered a PhD degree candidate upon meeting these conditions:

- Completion of core courses with a minimum GPA of 3.000 overall on the core courses
- Completion of the qualifying examination

### Comprehensive Exam

A PhD student must submit a written dissertation proposal to the dissertation committee. The proposal should identify the research problem, the research plan, and its potential impact on the field. A presentation of the proposal will be made in an open forum, and the student must successfully defend it before the dissertation committee.

### Dissertation Defense

A PhD student must complete and defend a dissertation that involves original research in personal health informatics.

## CURRICULUM REQUIREMENTS

### Required and Elective Courses

The curriculum is designed to provide all PhD students with a strong foundation in principles critical to the design and evaluation of personal health interfaces. All students take six core courses (24 semester hours) and the user-interface practicum (2 semester hours). All students must also fulfill the programming fundamentals requirement (4 semester hours) and the statistics fundamentals requirement (4 semester hours), where some flexibility in course selection allows tailoring based on background and experience. Two additional research electives (8 semester hours) are selected based on research interests from the personal health informatics electives list. Students are also expected to participate in the personal health informatics seminar series each semester.

## PROGRAM ASSESSMENT

### Learning Outcomes

This program seeks to produce graduates who are capable of leading and performing independent, new research projects related to personal health informatics and who are well prepared to enter into a number of potential career paths, including industrial research positions, government consultants, postdoctoral or junior faculty positions in academic institutions in either technology programs or schools of health science, public health, or medicine.

### Degree Outcomes

The dissertation committee evaluates whether the student has produced a significant contribution to personal health informatics research. The process used by the dissertation committee is based on an assessment of the goals and objectives described in the written PhD proposal. Student success can also be measured in the number and quality of publications generated by the research.

### Improving Effectiveness

Publication venues will provide a means to assess the quality of the program, as well as the research projects. External research funding and incoming student quality will be used to measure program strength. In addition, graduates will be asked for feedback concerning their training and program preparation.

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| CS 5010 Program Design Paradigm or other approved advanced programming course | 4 SH |
| HINF 5200 Theoretical Foundations in Personal Health Informatics | 4 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| CS 5340 Computer/Human Interaction | 4 SH |
| CS 6350 Empirical Research Methods | 4 SH |
| HINF 5XXX Personal Health Informatics Usability Evaluation Practicum (pending approval) | 2 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| HINF 5XXX Personal Health Interface System Design, Development, and Evaluation 1 (pending approval) | 4 SH |
| MATH 7245 or MATH 7343 or PHTH 5210 | 3 or 4 SH |
| Research | 1 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| HINF 5XXX Personal Health Interface System Design, Development, and Evaluation 2 (pending approval) | 5 SH |
| HINF 5XXX Health Data Systems Standards and Interchange (pending approval) | 4 SH |

**YEAR 3, FALL SEMESTER**

| | |
|---|---|
| Personal health informatics graduate elective | 4 SH |
| Research (candidacy preparation) | 1 SH |

**YEAR 3, SPRING SEMESTER**

| | |
|---|---|
| Personal health informatics graduate elective | 4 SH |
| Research (comprehensive exam) | 1 SH |

**YEAR 4, FALL SEMESTER**

| | |
|---|---|
| Research | 1 SH |

**YEAR 4, SPRING SEMESTER**

| | |
|---|---|
| Research (dissertation proposal defense) | 1 SH |

**CREDIT REQUIREMENT**      **48.0 SH**

## INFORMATION ASSURANCE

We offer both the PhD and MS degree programs in information assurance to meet a wide range of student needs. Each provides interdisciplinary knowledge and skills, focusing on information technology as well as how law, policy, and human behavior influence measures to address global threats to cyberspace.

Our MS in Information Assurance program combines an understanding of information technology with relevant knowledge from law, the social sciences, criminology, and management. The MS in Information Assurance program is designed for working professionals and others who want knowledge they can apply in their workplaces to assess and manage information security risks effectively. The program provides a natural path to the PhD in Information Assurance program for students who want to pursue research in the field and careers involving research.

The research-focused, interdisciplinary PhD in Information Assurance program combines a strong technical foundation with a policy and social sciences perspective. It seeks to prepare graduates to advance the reliability and security of cyberspace in industry, academia, and government. The interdisciplinary nature of the program distinguishes it from traditional doctoral degree programs in computer science, computer engineering, or electrical engineering and makes it unique in the Boston area.

## Admission Requirements

Admission to the Master of Science in Information Assurance program requires:

- A bachelor's degree.
- Knowledge of basic information technology concepts and mathematics. To ensure an adequate background, students are expected to have taken courses or have experience in introductory computer systems and discrete mathematics. If students do not have this preparation, their advisors will assign the necessary prerequisite courses.
- The Graduate Record Examination (GRE) is highly recommended for applicants to the MS in Information Assurance program who would like to be considered for financial assistance. A combined GRE score of 1100 and writing score of 3, or a TOEFL score of 250 CBT/100 IBT, is recommended. English tests may be required of international students when they arrive on campus.
- International students must submit official scores on the TOEFL examination and a Declaration and Certification of Finances (DCF) form (if applicable).

## MSIA—Master of Science in Information Assurance

### GENERAL REQUIREMENTS

| | |
|---|---|
| IA 5010 Foundations of Information Assurance | 4 SH |
| IA 5120, 5130, 5150, 5200, 5210, 5240, 5250 or 6120 | 16 SH |
| IA 7900 Capstone Project/Seminar | 4 SH |
| Elective courses CS 5200, 5500, 5600, 5700, 5770, 6540, 6740; CRIM 7224, 7242, 7252; MGMT 6215; or others approved by the graduate director | 8 SH |

**PROGRAM TOTAL CREDITS**                              **32.0 SH**

## MSIA—Master of Science in Information Assurance—Align Program

The Align program associated with MSCS is designed to prepare students who have obtained a BS/BA degree in STEM-related fields and are interested in pursuing a MSCS degree. During the fall semester of year 1, students are expected to take foundational courses in IA at the undergraduate level. Upon successful completion of the first semester, students are evaluated for admission to the MS program.

### GENERAL REQUIREMENTS

| | |
|---|---|
| CS 1800 Discrete Structures | 4 SH |
| IA 5001 Cyberspace Technology and Applications | 3 SH |
| IA 5010 Foundations of Information Assurance | 4 SH |
| IA 5120, 5130, 5150, 5200, 5210, 5240, 5250, or 6120 | 16 SH |
| IA 7900 Capstone Project/Seminar | 4 SH |
| Elective courses CS 5200, 5500, 5600, 5700, 5770, 6540, 6740; CRIM 7224, 7242, 7252; or MGMT 6215 | 8 SH |

**PROGRAM TOTAL CREDITS**                              **39.0 SH**

## PhD in Information Assurance

### GENERAL REQUIREMENTS

| | |
|---|---|
| CS 5700 or EECE 7336 | 4 SH |
| CS 5770 Software Vulnerabilities and Security | 4 SH |
| CS 6740 or CS 6750 | 4 SH |
| IA 5200 Security Risk Management and Assessment | 4 SH |
| IA 5240 Cyberlaw: Privacy, Ethics, and Digital Rights | 4 SH |
| Other required course work | 28 SH |

**PROGRAM TOTAL CREDITS**                              **48.0 SH**

## MS in Game Science and Design

See the College of Arts, Media and Design, page 47, for curriculum information.

## Certificate in Data Science

See the College of Social Science and Humanities, page 247, for curriculum information.

# College of Engineering

**www.coe.neu.edu/coe/graduate**

**Nadine Aubry, PhD,** *Dean*

**Sara Wadia-Fascetti, PhD,** *Associate Dean for Research and Graduate Studies*

130 Snell Engineering Center
617.373.2711

The Graduate School of Engineering (GSE) offers research and professional degree programs designed to prepare students for technical and leadership positions in industrial organizations, government laboratories, research laboratories, and educational institutions. We offer traditional day and part-time evening Master of Science and doctoral degree programs. Increasingly, more and more courses and degree programs are offered either partially or entirely in an online or hybrid format for distance learners.

## Graduate Degree Programs in Engineering

### DOCTOR OF PHILOSOPHY

- Bioengineering
- Chemical engineering
- Civil engineering
- Computer engineering
- Electrical engineering
- Industrial engineering
- Information assurance
- Interdisciplinary engineering
- Mechanical engineering

### MASTER OF SCIENCE

- Chemical engineering
  - Chemical engineering with graduate certificate in engineering leadership
- Civil engineering
  - Construction management
  - Environmental engineering
  - Geotechnical/geoenvironmental engineering
  - Structural engineering
  - Transportation engineering
  - Civil engineering with graduate certificate in engineering leadership
- Computer systems engineering
  - Engineering software design
  - Computer systems engineering with graduate certificate in engineering leadership

- Electrical and computer engineering
  - Communications, control, and signal processing
  - Computer engineering
  - Electromagnetics, plasma, and optics
  - Microsystems, materials, and devices
  - Power systems, power electronics, and motion control
  - Electrical and computer engineering with graduate certificate in engineering leadership
  - Electrical and computer engineering leadership
- Energy systems
  - Energy systems with graduate certificate in engineering leadership
- Engineering management
  - Engineering management with graduate certificate in engineering leadership
- Industrial engineering
  - Industrial engineering with graduate certificate in engineering leadership
- Information systems
- Mechanical engineering
  - Material science and engineering
  - Mechanics and design
  - Mechatronics
  - Thermofluids engineering
  - Mechanical engineering with graduate certificate in engineering leadership
- Operations research
  - Operations research with graduate certificate in engineering leadership
- Sustainable building systems
- Telecommunications systems management

### GRADUATE CERTIFICATE

- Graduate certificate in engineering leadership

## Learning Outcomes

### DOCTOR OF PHILOSOPHY

The PhD programs' student learning outcomes are:

- Ability to use basic engineering concepts flexibly in a variety of contexts
- Ability to formulate a research plan
- Ability to communicate orally a research plan
- Ability to conduct independent research

## MASTER OF SCIENCE

The MS programs' student learning outcome is:

• Ability to use basic engineering concepts flexibly in a variety of contexts

## Admission Requirements

In order to be minimally qualified to pursue admission through the GSE, a candidate must have successfully completed or be in the process of completing an undergraduate bachelor's degree from a regionally accredited U.S. college or university or its equivalent from a foreign college or university. Any offer of acceptance is contingent upon a candidate's successful completion of an undergraduate bachelor's degree from a regionally accredited U.S. college or university or its equivalent from a foreign college or university.

For most GSE programs, in order to be qualified for admissions consideration from an undergraduate academic preparation standpoint, candidates are required to have had an engineering major directly related to their graduate program of interest, but some exceptions* are made. For the MS in Engineering Management program, a degree in mathematics or physics with linear algebra and multivariable calculus, or students of any major with the equivalent background in mathematics as an engineering major, are acceptable. For the MS in Energy Systems program, quantitative business or finance majors are acceptable if candidates also have some background in computer science and calculus. For the MS in Information Systems program, any technical major (i.e., science, mathematics) is acceptable. For mechanical engineering programs, majors in applied physics are acceptable. For the MS in Operations Research program, majors in any science discipline, including computer science and mathematics, are acceptable; other majors considered are economics, business, or other liberal arts with some background in calculus and linear algebra. For the MS in Telecommunications Systems Management program, majors in mathematics, physics, or computer science are acceptable.

In terms of the admissions process, note that every element of any candidate's background is considered, that there is no single factor that determines whether or not a candidate is admitted, that there are no guarantees of admission for any candidate, and that the decision rests solely with the appropriate faculty admissions committee.

Application requirements:*

• Online application.
• Statement of purpose.
• Professional resumé.
• Transcript(s) from any and all colleges or universities attended evidencing all courses, grades, and credits, as well as any diploma(s) or provisional certificate(s) evidencing that degree(s) have been conferred.
• Two letters of recommendation.
• The GRE is required of most applicants:

– *Department of Electrical and Computer Engineering Program Applicants:* Official GRE scores are required for all applicants to programs offered by the Department of Electrical and Computer Engineering, except applicants who have received or will receive a bachelor's degree in engineering from Northeastern University located in Boston.
– *All Other Graduate Program Applicants:* Official GRE scores are required for all applicants who have not received or will not receive a bachelor's degree in an ABET (Accreditation Board for Engineering and Technology)– accredited engineering program from a college or university that is located within the United States. *Exception:* Applicants to the engineering management program may submit official GMAT scores instead of the GRE.

• Proof of English-language proficiency (for non-native English-language speakers). Official TOEFL or IELTS scores are required of applicants whose native language is not English. Note that applicants who hold or will hold a graduate or undergraduate degree from a college or university in a country where English is the official and predominantly spoken language before beginning any graduate engineering program at Northeastern, if admitted, are exempt from this requirement.

*Interested candidates should check the official website of their program of interest for additional exceptions and/or application requirements.

## Cooperative Education Policies

The College of Engineering Graduate Cooperative Education Program (co-op) is one option for experiential learning and is available to selected students. The goals of cooperative education are to:

• Apply knowledge and skills in new, authentic contexts.
• Develop new knowledge and skills.
• Integrate and use the deepened knowledge and skills in your academic programs.
• Reflect on and articulate how you used your knowledge and skills, how you gained new knowledge and skills, and how "theory and practice" work together.

Students who wish to participate in co-op must meet the eligibility requirements and follow the guidelines that follow. Co-op is not guaranteed for any student; students must compete and be selected for a limited number of co-op opportunities. These guidelines apply to all graduate students in the College of Engineering except for those in programs of the Department of Electrical and Computer Engineering, who have their own co-op program and procedures.

## ELIGIBILITY REQUIREMENTS

1. Students must successfully complete the "Introduction to Cooperative Education" course with a grade of C or higher.
2. Students who wish to pursue a co-op experience *must*:
   • Be a full-time student at Northeastern University
   • Meet the minimum GPA and other requirements for their program (see table)

- Have no disciplinary or academic probation issues and no incomplete courses (i.e., no "I" grade in their records)
- Have at least one term left in their program after completing co-op; i.e., students must return to Northeastern to take courses for at least one term prior to graduating
- Have a valid I-20 for international students

3. Students must have sufficient English language abilities for effective professional communication with employers and co-workers during the co-op experience. This means the completion of any individualized English Language Development Plan (ELDP) a student has been assigned.

4. Students must receive academic and co-op advisor approval prior to accepting a placement.

| Program | Minimum GPA* | Minimum Semesters Completed |
|---|---|---|
| Information systems | 3.000 | 2 |
| Civil and environmental engineering TOEFL at least 95 | 3.250 | 2 |
| Electrical and computer engineering | 3.400 | 2 |
| Telecommunications | 3.150 | 1 |
| All other programs | 3.200 | 1 |

*Minimum GPA requirements will *not* be waived under any circumstances.

### GUIDELINES

1. For the purposes of these guidelines internships, practicums, clinicals, cooperative education, residencies, or similar programs, are all treated as a co-op and are not considered separate experiences in the Graduate School of Engineering. See below for a special note for international PhD student internships only.

2. Students may not hold a graduate stipend assistantship at the university during the semesters planned for co-op.

3. Students may participate in co-op activities with a single company for a four-, six-, or eight-month period. The total duration of co-op cannot exceed eight months or be shorter than four months. Co-ops are aligned with academic terms (fall, spring, and full summer or summer 1 and summer 2). For purposes of determining the length of a co-op, it is based on the terms participated in—a co-op in any one term is a four-month co-op (full summer, fall, or spring); six-month co-ops are spring and summer 1 or summer 2 and fall; eight-month co-ops are two consecutive terms (spring and full summer or full summer and fall).

4. Students on four-month co-op assignments are allowed to have their co-op extended to a maximum of eight months (aligning with terms as stated above), provided they have approval from their academic and co-op advisor.

5. Co-ops are required to be full-time and, thus, students are allowed to take at most one course during the fall and spring semesters while participating in co-op activities. Students participating in co-op during the full summer are only allowed to take a single course over the entire summer (a full summer, summer I, or summer II, not one in each term).

6. Students are permitted to participate in one co-op experience as a graduate student.

7. Students who wish are allowed to create their own co-op placement outside the myNEU COOL, but must meet all the requirements and follow all the guidelines.

8. Final decision regarding any exceptions to the above requirements and guidelines rest with the College of Engineering's director of the Graduate Cooperative Education Program.

### INTERNATIONAL PHD STUDENT INTERNSHIPS

An internship at Northeastern is a special, and rare, case of experiential learning that applies only to international PhD students. Like co-op, it is classified as Curricular Practical Training (CPT) for F-1 visa holders or pre-Academic Training (pre-AT) for J-1 visa holders. An internship must be integral (read: essential, vital, fundamental) to a student's research or dissertation. As such the student's research or dissertation would suffer greatly without this experience. Generally, because of the close relation to the student's research or dissertation, internships are arranged by the student's faculty advisor. Further, it is incumbent upon the faculty advisor to sign and verify that this experience is integral to the student's dissertation or research as part of the visa processing allowing the student to have this experience. Paid or unpaid internships have the same requirements. *Internships are never authorized in a student's final semester.*

#### *Internships, Co-op, and Pre-OPT*

A position that a student finds on their own in a field related to their program of study, to provide funding during the summer, or to supplement their income does not qualify for internship CPT authorization, though the position might qualify as a co-op or Pre-OPT experience—provided the student meets all the qualifications for the relevant authorization. Like co-op, internships are not part of a jobs program, even if they do provide experience that would be beneficial to employment after graduation. The key is that any internship must have a very direct and strong relationship to the student's research or dissertation.

## Online and Video Streaming Examination Policy

### EXAM ADMINISTRATION

Students living within thirty miles of their home campus (Boston, Charlotte, or Seattle) who are enrolled in online and video-streamed sections are strongly encouraged to take exams at their home campus. In cases where a student is unable to travel to campus for exams, the student must make arrangements for an exam proctor. The Graduate School of Engineering reserves the right to reject any proctor application.

## PROCTORING

### *Student Responsibilities*

Students must make arrangements for a proctor. Proctors must be approved prior to the first exam. For approval, students are required to complete and submit a Proctor Application form at the beginning of each semester.

### *Proctor Responsibilities*

The proctor is responsible for administering exams to the students per the instructor's directions and in accordance with the Academic Honesty and Integrity Policy in order to maintain the security and integrity of the exam process.

### *Faculty Responsibilities*

To administer each exam, the instructor will make arrangements for the exchange of exam materials with the proctor.

## ACADEMIC POLICIES AND PROCEDURES

## 1.0 COURSE REGISTRATION AND WITHDRAWAL

### *1.1 Overview*

Degree program curricula and faculty information for each academic department are listed below in the "Academic Programs" section. Course descriptions can be found on the registrar's website: www.northeastern.edu/registrar/cdr.html. Students must follow the curriculum of their program of study published in the *Graduate School of Engineering Student Guide and Catalog*, or *University Graduate Catalog* (2012 and beyond), for the year in which they matriculate. Any change in course work or other program requirements must be approved by the student's program advisor or departmental graduate officer. In addition, students must complete any preparatory courses stipulated at the time of admission.

Registration is mandatory. Any student attending a course who has failed to register properly before the end of the third week of classes in a given semester will not receive a grade at the end of the semester, even if he or she has completed all required course work.

Students must be registered in their last semester of study. Students finishing their requirements in the summer semester must be registered in the full summer, summer 1, or summer 2 term.

Due to last-minute scheduling changes, the Graduate School of Engineering must occasionally substitute faculty or change class meeting times after the registration period has begun. Any student who initially registered for the original course will automatically be registered for the new version should no major schedule conflicts be apparent. Otherwise, the graduate school or the department will contact all registered students for alternatives. Students should not register for an excessive number of courses or for double sections with the intention of dropping half or more of the courses during the first week of classes. Over-registering complicates course and room scheduling and closes courses prematurely to genuinely interested students.

Any student who is financially withdrawn by Student Accounts prior to the start of any given semester will not be permitted to register for that semester until he or she rectifies the outstanding financial obligation.

Northeastern University reserves the right to cancel, postpone, combine, or modify any course.

### *1.2 Course Selection*

Minimum required number of courses: Full-time students (domestic and international) in the Graduate School of Engineering must enroll on a continuous basis and carry a minimum of 8 semester hours of credit per semester.

Any student who holds an SGA is considered full-time if enrolled in a minimum of 6 semester hours of credit. All graduate students who are registered for Dissertation, Dissertation or Thesis Continuation, or PhD Candidacy Preparation are considered full-time. The graduate school does not require part-time students to maintain any minimum enrollment.

Students should formulate a program of study in consultation with their assigned program advisor or departmental graduate officer during fall or spring orientation.

Courses other than required core courses are offered according to demand and are subject to faculty availability. Students should preselect courses whenever possible and plan to take them when offered, maintaining flexibility with alternate courses in mind. Not all courses are offered every year; however, the graduate school will do everything possible to assure continuity of programs and to permit students to make continuous progress toward their degrees.

To register for a course offered by another graduate school at Northeastern, a student must have approval from the Graduate School of Engineering before he or she can request permission from the other graduate school to register for the course. More information is available below in Section 4.

Full-time students may register for a maximum of 16 semester hours per semester. Part-time students may register for a maximum of 8 semester hours per semester. However, a student may petition his or her program advisor or departmental graduate officer for a course overload.

Students who need assistance in course selection, course sequencing, waivers, and/or transfer credits should contact their program advisor, departmental graduate officer, or the Graduate School of Engineering.

### *1.3 Dissertation Continuation and Thesis Continuation*

Once department requirements are met for PhD candidacy, PhD candidates must register for two consecutive semesters (excluding the summer term) of Dissertation before registering for its continuation. Candidates must register for Dissertation Continuation in each subsequent semester (excluding the summer term) until the dissertation is completed and approved by the Graduate School of Engineering. However, students completing their dissertation in the summer term must register for the appropriate continuation course in the summer term.

Part-time PhD students must register for Dissertation Continuation in each term in which they are actively working with their faculty advisor, or need to utilize university library resources,

for their dissertation. All PhD students must register for Dissertation Continuation in their last term.

Master's degree students who are completing a thesis must register for a total of 8 semester hours of Thesis. Students who have not completed their thesis, but have already registered for the required number of thesis hours, must register for Thesis Continuation in each subsequent semester, excluding the summer term, until the thesis is completed and approved by the Graduate School of Engineering. However, students completing their thesis in the summer term must register for the appropriate continuation course in the summer term.

Dissertation Continuation and Thesis Continuation do not carry semester hours of credit; however, students who register are considered to be in full-time status. During graduation clearance, the Graduate School of Engineering will retroactively register students who fail to register for the correct sequence of Dissertation Continuation or Thesis Continuation. Once these retroactive registrations are posted on a student's record, Student Accounts will send a tuition bill to the student.

## 2.0 ACADEMIC STANDARDS AND DEGREE REQUIREMENTS

### 2.1 Academic Requirements

All students must satisfactorily complete an approved program of correlated work of graduate caliber and such other study as may be required by the academic department in which they are enrolled. Regardless of classification, any student whose record is not satisfactory may be withdrawn from the Graduate School of Engineering for poor performance.

To qualify for any degree from the graduate school, a student must attain a cumulative grade-point average (GPA) of 3.000 or higher with no more than 8 semester hours below the grade of B– in all courses applied toward that degree, exclusive of any prerequisite courses required of students admitted provisionally to their program. A student must also earn a grade of C or higher in all required core courses. Individual programs may have additional, more stringent, requirements. **The Graduate School of Engineering allows students to repeat up to 8 semester hours of course work beyond stated minimum degree requirements in order to attain the required 3.000 GPA for graduation. In some cases, it may not be possible to repeat a course if a student wishes to do so. In certain, unusual circumstances, students may petition to substitute one course for another they have already taken, as long as the subject matter of both courses is substantially alike.** Within the above limitations for extra or repeated courses, a student must repeat any required core course in which he or she earns below a grade of C.

### 2.2 Prerequisite Courses/Undergraduate Courses

Students are not awarded credit toward degree requirements for prerequisite courses unless expressly stated by the student's academic department. Students may occasionally be permitted by their advisor to take undergraduate courses. However, undergraduate courses do not count toward a graduate degree and may affect a student's eligibility to receive federal financial aid.

### 2.3 Academic Probation

STUDENT'S ACADEMIC STANDING

Academic standing at Northeastern University is determined by a student's cumulative grade-point average (GPA). All graduate students are expected to maintain a cumulative GPA of 3.000 or higher each term to remain in good academic standing and to progress toward graduation. Students falling below a cumulative GPA of 3.000 are placed on academic probation for each academic term in which the cumulative GPA is below 3.000. This will be noted on the student's unofficial transcript.

ACADEMIC PROBATION POLICY

Academic probation is a period of time when a student must address and remediate academic deficiencies.

A student placed on academic probation will receive written notification by the Graduate School of Engineering (hereafter referred to as the graduate school). The student's academic advisor will also receive notification of the student's probationary status. An Academic Probation Action Plan to clear the deficiency must be developed by the student and the student's academic advisor. It is the student's responsibility to complete an action plan (with input from the advisor) that documents how the deficiency will be remediated. This action plan must be signed by the academic advisor and the student, and a copy must be submitted to the graduate school as soon as possible and no later than seven business days from the start of the next academic term. If the action plan is not received by this deadline, the graduate school will cancel the student's course registration(s). *Failure to file a complete and meaningful action plan may be cause for dismissal from the program.* The graduate school reserves the right to reject or change the action plan.

DISMISSAL FROM PROGRAM

A student (part-time or full-time) placed on probation for a cumulative GPA of less than 3.000 will have one academic term to raise the cumulative GPA greater than or equal to 3.000. A student that has a cumulative GPA less than 3.000 for two consecutive terms is subject to dismissal by the university.

The graduate school may request an extension of one additional academic term; however, this request requires significant justification and demonstration that the student can achieve a cumulative GPA greater than or equal to 3.000 with a one-term extension. No additional extensions will be considered by the university. The university has final authority over dismissal decisions. If requesting an extension, the academic advisor must attach a detailed justification to the action plan and submit it to the graduate school no later than 10 business days from the end of the term.

Students being dismissed from their program will receive written notification from the Graduate School of Engineering.

END OF PROBATIONARY PERIOD

Part III of the Academic Probation Action Plan must be completed by the student's academic advisor at the end of the academic term following the term in which the student was first placed on probation. This process must be initiated by the student. A copy of

the action plan, with part III completed by the advisor, must be filed with the graduate school within 10 business days from the end of the term. The graduate school will review the advisor's recommendation. The university will make the final decision regarding the student's academic status.

APPEALS PROCESS

A student may appeal a dismissal from their program of study due to failure to achieve academic standards set forth in this academic probation policy within the designated period of academic probation. To initiate an appeal, the student must send a written request to the associate dean of the graduate school detailing the reasons the student is appealing the dismissal. The written request must be signed by the student, and the appeal must be received by the Graduate School of Engineering within 30 business days from the day the student received written notification of dismissal. The graduate school will respond to the appeal within 10 business days of the date of receipt.

## 3.0 ADMINISTRATIVE PROCEDURES

### 3.1 Personal Information

All students are responsible for maintaining valid personal contact information on the myNEU Web portal. A student may not use a departmental mailbox as his or her mailing address.

## 4.0 PETITIONS

### 4.1 Overview

The petition procedures described below are required in all cases so that the Graduate School of Engineering may maintain a complete and accurate file for all students. All petitions, unless otherwise noted, must be formally made on a Graduate School of Engineering petition form and approved by a student's advisor or departmental graduate officer and by the Graduate School of Engineering. Other approvals may be required as stipulated by the graduate school upon petition review.

### 4.2 Elective Outside Approved List of Courses for Program of Study

Graduate School of Engineering–approved degree programs and courses for each are found in this *Northeastern University Graduate Catalog*. Students must follow the curriculum of their program of study published in the year in which they matriculate. If a student wishes to take a course that is not on the list of approved courses for their program, the student must request permission from their academic advisor to take the course *prior to* registering for the course. Failure to obtain permission to take the course may result in the course not counting toward the student's graduate degree. The petition must be submitted to the Graduate School of Engineering for review/approval. Final authority on requests made by petition rests with the Graduate School of Engineering.

*Note:* Students enrolled in a PhD program are not subject to this requirement. Course selection is considered a matter between the student, his or her academic advisor, and department.

### 4.3 Course Waiver

A student may petition to waive any core, or required, course when he or she has completed equivalent or similar course work elsewhere. The student must submit a completed petition form, along with a course description and official transcript from the institution where he or she completed the course.

*Note:* Course waivers *do not* decrease the number of required semester hours in any program of study.

### 4.4 Change in Status Classification

Students may petition to change their student status from full-time to part-time study within the same program by filing a petition form in the Graduate School of Engineering. Departmental approval is not required in this case. However, students who hold an assistantship, or whose department requires full-time students to complete a project or thesis, must have departmental approval to change status. International students are subject to the rules governing their immigration status and should consult with an advisor in the International Student and Scholar Institute before filing a status change petition.

Those who wish to change status from part-time to full-time study within the same program must have completed a minimum of 8 semester hours of course work with a minimum 3.000 GPA. Students in this case must submit a petition to change status to their advisor or departmental graduate officer for approval.

### 4.5 Change in Degree Concentration

A student who wishes to change his or her major area of concentration within the same program must submit a completed GSE Change of Degree Program form to his or her program advisor—and, if an electrical and computer engineering student, to the chair of the graduate committee—for approval. The form must then be forwarded to the Graduate School of Engineering for final review and processing. Students should refer to the Graduate School of Engineering website for additional instructions.

### 4.6 Change in Degree Program

A student who wishes to change his or her degree program must apply for admission to the desired program. This means a new online application must be submitted. The application fee is waived. In addition, the student must submit a completed GSE Change of Degree Program form to the advisor of the desired program. The form must then be forwarded to the Graduate School of Engineering for final review and processing. Students should refer to the Graduate School of Engineering website for additional instructions.

### 4.7 Change in Degree Level

A student who wishes to change from MS level to PhD level must apply for admission to the PhD program. This means a new online application must be submitted. The application fee is waived. In addition, the student must submit a completed GSE Change of Degree Level form to the director of the PhD program to which they are applying. The form must then be forwarded to the Graduate School of Engineering for final review and processing (if admitted). Students should refer to the Graduate School of Engineering website for additional instructions.

A student who wishes to change from PhD level to MS level within the same degree program must submit a GSE Change of Degree Level form to their academic advisor—and, if an electrical and computer engineering student, to the chair of the graduate committee—for approval. If approved, the Change of Degree Level form must then be submitted to the Graduate School of Engineering for final review and processing. Students should refer to the Graduate School of Engineering website for additional instructions.

## BIOENGINEERING

**www.bioe.neu.edu**

LEE MAKOWSKI, PHD
*Professor and Interim Chair*

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Our interdisciplinary Doctor of Philosophy (PhD) program in bioengineering draws on faculty across the university and reflects the significant strengths of bioengineering research in multiple areas. Students accepted to the bioengineering program will undertake a rigorous core curriculum in basic bioengineering science followed by an immersion track curriculum. There are currently eight tracks from which to choose:

- Track 1: Biomedical Imaging and Signal Processing
- Track 2: Biomechanics and Mechanobiology
- Track 3: BioMEMs/BioNANO
- Track 4: Biochemical and Bioenvironmental Engineering
- Track 5: Motor Control
- Track 6: Biocomputing
- Track 7: Cell and Tissue Engineering
- Track 8: General Bioengineering Studies

Biology can inspire engineering. Increasingly, discoveries in the life sciences reveal processes, complexity, and control without analogy in the limited world of traditional engineering. Current methods of producing nanoscale control over molecules cannot reproduce the organization found in even the simplest organisms. Energy capture, robust control, remediation, and self-assembly are all employed with efficiency unparalleled by anything in today's laboratories. At the same time, traditional engineering disciplines struggle to find new and complex challenges. The last 50 years of basic life science research have gradually peeled the layers of complexity from biological processes, unmasking the fundamental underpinnings on which biological systems are constructed. Bioinspired engineering has the potential to transform the technological landscape of the 21st century. Astonishingly, it represents merely one of the myriad opportunities presented at the interface of biology and engineering.

The field of bioengineering is broad and includes all research at the interface of engineering and biology—this includes bioprocesses, environmental microbiology, biomaterials and tissue engineering, bioelectricity, biomechanics, biomedical and biological imaging, nanotechnology in medicine and the environment, and engineering design for human interfacing. At Northeastern, bioengineering PhD students have an opportunity to be trained to appreciate advances in bioengineering across a wide range of disciplines while they perform highly focused and cutting-edge bioengineering research with one of our many affiliated faculty.

## Degree Requirements

Completion of the PhD degree requires students to successfully complete the following requirements:

- **Curriculum:** The curriculum comprises a strong fundamental, broad core of courses that is then coupled with one of a series of available tracks for depth in a particular field of study. The detailed course requirements are outlined below.
- **Qualifying exam (written):** To qualify to continue in the PhD program, students must pass the bioengineering comprehensive qualifying examination, which comprises the synthesis of knowledge derived from the core curriculum and current literature in the form of an NIH-style proposal. Oral defense of the proposal is required to pass the exam.
- **Thesis committee:** The thesis committee (minimum of three members) must have at least one faculty member from the list of bioengineering-affiliated faculty in the College of Engineering.
- **Area exam:** PhD students must submit a "prospectus" to their thesis committee in the form of a 15-page NIH research plan and successfully defend the research plan in the form of an open presentation to their thesis committee.
- **Thesis:** PhD candidates must satisfactorily complete and defend a thesis dissertation describing original research in bioengineering.

## PhD in Bioengineering

*Note:* "TBD" stands for "to be determined."

**PhD degree:** Requires a minimum of 16 semester hours of course work beyond the master's degree and PhD dissertation. The required course distribution is shown in the table below.

| Requirements | Credits |
|---|---|
| Required core courses | 24 SH |
| Required and elective track courses | 24 SH |
| Advanced seminar | 0 SH |
| Dissertation | 0 SH |
| **Minimum semester hours required** | **48 SH** |

The core emphasizes the breadth of topics that our graduates must appreciate as internationally competitive bioengineers. It utilizes existing courses within the College of Engineering as well as introducing new/external courses that are necessary and will be developed.

## Track 1: PhD in Bioengineering—Biomedical Imaging and Signal Processing Track

***Track Managers: Dana Brooks and Deniz Erdogmus***

The biomedical imaging and signal processing track reflects Northeastern University's outstanding research profile in various aspects of biological and biomedical imaging and image processing and signal processing. This is evidenced by the Gordon Center for Subsurface Sensing and Imaging Systems, the Center for Communications and Digital Signal Processing Research, and the strong externally funded active research groups and faculty whose interest lie at the intersection of imaging, signal processing technologies, and biological and medical applications.

The courses listed below concentrate largely on general mathematical methods for signal and image processing and image formation and on image acquisition modalities and applications. Research in this area takes place at the intersection of these technical streams, and students completing the track will have a sufficiently strong background in the component areas to be able to carry out high-quality research efforts. Bioengineering PhD candidates may complete this track by taking at least two of the restricted electives and sufficient unrestricted electives to meet course requirements as specified by their degree program in addition to their core bioengineering curriculum.

## Track 1: PhD in Bioengineering—Biomedical Imaging and Signal Processing Track

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOE 5100 Medical Physiology | 4 SH |
| BIOE 7374 Special Topics in Bioengineering | 4 SH |
| BIOE 7390 Seminar | 0 SH |
| BIOE 9990 Dissertation | 0 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| EECE 7204 Applied Probability and Stochastic Processes | 4 SH |
| Course work from the list "Additional Required Courses" below | 12 SH |
| Course work from the list "Suggested Track Elective Courses" below | 16 SH |

### PROGRAM TOTAL CREDITS — 48.0 SH

### ADDITIONAL REQUIRED COURSES

| | |
|---|---|
| BIOE 7001 Biomaterials | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH |

### SUGGESTED TRACK ELECTIVE COURSES

| | |
|---|---|
| BIOL 5553 Biology of Muscle: Molecules to Movements | 4 SH |
| BIOL 5581 Biological Imaging | 4 SH |
| BIOL 5587 Comparative Neurobiology | 4 SH |
| BIOL 5603 Computational Neuroscience | 4 SH |
| BIOL 6200 Bioinformatics Programming | 4 SH |
| BIOL 6302 Bioinformatics Methods and Algorithms | 5 SH |
| BIOL 6308 Bioinformatics Computational Methods 1 | 4 SH |
| BIOL 6309 Bioinformatics Computational Methods 2 | 4 SH |
| CHEM 5612 Principles of Mass Spectrometry | 3 SH |
| CHEM 5613 Optical Methods of Analysis | 3 SH |
| CHEM 5637 Foundations of Spectroscopy | 3 SH |
| EECE 5646 Optics for Engineers | 4 SH |
| EECE 5648 Biomedical Optics | 4 SH |
| EECE 7202 Electromagnetic Theory 1 | 4 SH |

EECE 7271 Computational Methods in Electromagnetics — 4 SH

EECE 7280 Fourier and Binary Optics — 4 SH

EECE 7281 Fourier Optics — 4 SH

EECE 7284 Optical Properties of Matter — 4 SH

EECE 7293 Modern Imaging — 4 SH

EECE 7310 Modern Signal Processing — 4 SH

EECE 7311 Two Dimensional Signal and Image Processing — 4 SH

EECE 7312 Statistical and Adaptive Signal Processing — 4 SH

EECE 7313 Pattern Recognition — 4 SH

EECE 7314 Auditory Signal Processing — 4 SH

EECE 7323 Numerical Optimization Methods — 4 SH

EECE 7335 Detection and Estimation Theory — 4 SH

EECE 7337 Information Theory — 4 SH

EXSC 6200 Cardiopulmonary Physiology — 3 SH

PHSC 6226 Imaging in Medicine and Drug Discovery — 2 SH

PHYS 7741 Biological Physics 2 — 4 SH

PSYC 5120 Proseminar in Sensation — 3 SH

PSYC 5130 Proseminar in Perception — 3 SH

PSYC 7220 Seminar in Sensation — 3 SH

PSYC 7230 Seminar in Perception — 3 SH

PSYC 7300 Advanced Quantitative Analysis — 3 SH

PT 5138 Neuroscience — 4 SH
  *Coreq.* PT 5139

PT 5139 Lab for PT 5138 — 1 SH
  *Coreq.* PT 5138

SLPA 0300 Anatomy and Physiology of the Vocal Mechanism — 3 SH

SLPA 5111 Anatomy and Physiology of the Auditory System — 3 SH

SLPA 6209 Psychoacoustics — 2 SH

SLPA 6301 Speech Science — 3 SH

## Track 2: PhD in Bioengineering—Biomechanics and Mechanobiology Track

***Track Managers: Sinan Muftu and Jeffrey Ruberti***

Biomechanics and mechanobiology are linked by the biological response to applied forces and strains. To understand the overall effect of load on biological systems, it is important to consider not only the deformation and shear rates that result from force application but also the short- and long-term biological responses. The biomechanics and mechanobiology track reflects this understanding and leverages the strong faculty research at Northeastern, which is attempting to tie biomechanics to biological responses at multiple scales.

The biomechanics track is designed to capitalize on the substantial expertise in the mechanical and industrial engineering department, which has a strong fundamental research program in biomechanics. Faculty in the department perform investigations that comprise theoretical, computational, and experimental investigations. Students who select this track must take all of the restricted electives in addition to the bioengineering core

curriculum and sufficient unrestricted electives to meet course requirements as specified by their degree program.

### GENERAL REQUIREMENTS

BIOE 5100 Medical Physiology — 4 SH

BIOE 7374 Special Topics in Bioengineering — 4 SH

BIOE 7390 Seminar — 0 SH

BIOE 9990 Dissertation — 0 SH

BIOL 5553 Biology of Muscle: Molecules to Movements — 4 SH

ME 5665 Musculoskeletal Biomechanics — 4 SH

ME 7210 Elasticity and Plasticity — 4 SH

Course work from the list "Additional Required Courses," below — 12 SH

Course work from the list "Mathematical Methods for Bioengineers," below — 4 SH

Course work from the list "Suggested Track Elective Courses," below — 12 SH

### PROGRAM TOTAL CREDITS — 48.0 SH

### ADDITIONAL REQUIRED COURSES

BIOE 7001 Biomaterials — 4 SH

CHME 5630 Biochemical Engineering — 4 SH

EECE 5664 Biomedical Signal Processing — 4 SH

ME 5667 Solid Mechanics of Cells and Tissues — 4 SH

### MATHEMATICAL METHODS FOR BIOENGINEERS

CHME 7320 Chemical Engineering Mathematics — 4 SH

EECE 7200 Linear Systems Analysis — 4 SH

EECE 7203 Complex Variable Theory and Differential Equations — 4 SH

ME 7205 Advanced Mathematical Methods for Mechanical Engineers — 4 SH

### SUGGESTED TRACK ELECTIVE COURSES

EECE 7367 Robotics and Automation Systems — 4 SH

ME 5650 Advanced Mechanics of Materials — 4 SH

ME 5655 Dynamics and Mechanical Vibration — 4 SH

ME 5657 Finite Element Method — 4 SH

ME 5659 Control and Mechatronics — 4 SH

ME 5667 Solid Mechanics of Cells and Tissues — 4 SH

ME 7238 Advanced Finite Element Method — 4 SH

ME 7240 Composite Materials — 4 SH

ME 7245 Fracture Mechanics and Failure Analysis — 4 SH

ME 7255 Continuum Mechanics — 4 SH

ME 7275 Essentials of Fluid Dynamics — 4 SH

ME 7280 Statistical Thermodynamics — 4 SH

ME 7325 Two Phase Flow — 4 SH

PT 5133 Kinesiology — 3 SH
  *Coreq.* PT 5134

PT 5170 Motor Control — 3 SH
  *Coreq.* PT 5171

PT 6215 Assistive Technology — 3 SH
  *Coreq.* PT 6216

## Track 3: PhD in Bioengineering—BioMEMs/BioNANO Track

***Track Managers: Nicol McGruer and Shashi Murthy***

The bioMEMs/bioNANO track reflects Northeastern University's strength as indicated by the NSF Center for High Rate Nanomanufacturing, the NSF/NCI Nanomedicine IGERT training grant, and the strong pharmaceutical sciences department. In addition, Northeastern also has a research presence in MEMs that, when combined with the bioengineering curriculum, presents significant interdisciplinary opportunities for students in the program. Students may choose to complete this track by taking three of the restricted electives in addition to their core bioengineering curriculum and sufficient unrestricted electives to meet course requirements of their degree program.

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOE 5100 Medical Physiology | 4 SH |
| BIOE 7374 Special Topics in Bioengineering | 4 SH |
| BIOE 7390 Seminar | 0 SH |
| BIOE 9990 Dissertation | 0 SH |
| EECE 5606 Micro- and Nanofabrication | 4 SH |
| ME 6260 Introduction to Microelectromechanical Systems (MEMs) | 4 SH |
| PHYS 5260 Introduction to Nanoscience and Nanotechnology | 4 SH |
| Course work from the list "Additional Required Courses," below | 12 SH |
| Course work from the list "Mathematical Methods for Bioengineers," below | 4 SH |
| Course work from the list "Suggested Track Elective Courses," below | 12 SH |

### PROGRAM TOTAL CREDITS    48.0 SH

### ADDITIONAL REQUIRED COURSES

| | |
|---|---|
| BIOE 7001 Biomaterials | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH |

### MATHEMATICAL METHODS FOR BIOENGINEERS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

### SUGGESTED TRACK ELECTIVE COURSES

| | |
|---|---|
| CHEM 5613 Optical Methods of Analysis | 3 SH |
| CHEM 5638 Molecular Modeling | 3 SH |
| CHEM 7247 Advances in Nanomaterials | 3 SH |
| CHME 5699 Special Topics in Chemical Engineering | 4 SH |
| EECE 5606 Micro- and Nanofabrication | 4 SH |
| ME 7262 Nanomanufacturing 1 | 4 SH |
| PHSC 5100 Concepts in Pharmaceutical Science | 2 SH |
| PHSC 6210 Drug Design, Evaluation, and Development | 2 SH |
| PHSC 6226 Imaging in Medicine and Drug Discovery | 2 SH |
| PHYS 7731 Biological Physics 1 | 4 SH |
| PMST 6250 Advanced Physical Pharmacy | 2 SH |
| PMST 6252 Pharmacokinetics and Drug Metabolism | 3 SH |
| PMST 6254 Advanced Drug Delivery System | 3 SH |
| PMST 6256 Advanced Pharmacokinetics | 2 SH |

## Track 4: PhD in Bioengineering—Biochemical and Bioenvironmental Track

***Track Managers: Rebecca Carrier and April Gu***

The track reflects strengths in biochemical engineering and bioenvironmental engineering by active research programs focused in pharmaceutical bioprocessing, biomaterials, tissue engineering, drug delivery, environmental microbiology, biotreatment/bioremediation, and environmental modeling. Students wishing to pursue this track should take two of the restricted electives listed below in addition to the bioengineering core curriculum and sufficient unrestricted electives to meet the course requirements of their degree program.

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOE 5100 Medical Physiology | 4 SH |
| BIOE 7374 Special Topics in Bioengineering | 4 SH |
| BIOE 7390 Seminar | 0 SH |
| BIOE 9990 Dissertation | 0 SH |
| Course work from the list "Additional Required Courses," below | 12 SH |
| Course work from the list "Mathematical Methods for Bioengineers," below | 4 SH |
| Course work from the list "Required Biochemical and Bioenvironmental Courses," below | 8 SH |
| Course work from the list "Suggested Track Electives," below | 16 SH |

### PROGRAM TOTAL CREDITS    48.0 SH

### ADDITIONAL REQUIRED COURSES

| | |
|---|---|
| BIOE 7001 Biomaterials | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH |

### MATHEMATICAL METHODS FOR BIOENGINEERS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

## REQUIRED BIOCHEMICAL AND BIOENVIRONMENTAL COURSES

| | |
|---|---|
| BIOL 6300 Biochemistry | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| CHME 7340 Chemical Engineering Kinetics | 4 SH |
| CHME 7350 Transport Phenomena | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |

## SUGGESTED TRACK ELECTIVES

| | |
|---|---|
| BIOL 5579 Biochemistry/Molecular Biology Experimental Approaches | 5 SH |
| BIOL 5581 Biological Imaging | 4 SH |
| BIOL 6200 Bioinformatics Programming | 4 SH |
| BIOL 6301 Molecular Cell Biology | 4 SH |
| BIOL 6308 Bioinformatics Computational Methods 1 | 4 SH |
| BIOL 6309 Bioinformatics Computational Methods 2 | 4 SH |
| CHEM 5612 Principles of Mass Spectrometry | 3 SH |
| CHEM 5613 Optical Methods of Analysis | 3 SH |
| CHEM 5620 Protein Chemistry | 3 SH |
| CHEM 5621 Principles of Chemical Biology for Chemists | 3 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH |
| CHEM 5686 Fundamentals of Molecular Structure and Electronics | 3 SH |
| CHEM 7317 Analytical Biotechnology | 3 SH |
| CHME 7330 Chemical Engineering Thermodynamics | 4 SH |
| PHSC 5100 Concepts in Pharmaceutical Science | 2 SH |
| PHSC 6210 Drug Design, Evaluation, and Development | 2 SH |
| PHSC 6218 Biomedical Chemical Analysis | 2 SH |
| PHSC 6226 Imaging in Medicine and Drug Discovery | 2 SH |
| PHSC 6290 Biophysical Methods in Drug Discovery | 2 SH |
| PHYS 7731 Biological Physics 1 | 4 SH |
| PMST 6250 Advanced Physical Pharmacy | 2 SH |
| PMST 6252 Pharmacokinetics and Drug Metabolism | 3 SH |
| PMST 6254 Advanced Drug Delivery System | 3 SH |
| PMST 6256 Advanced Pharmacokinetics | 2 SH |

## Track 5: PhD in Bioengineering—Motor Control Track

***Track Managers: Rifat Sipahi and Dagmar Sternad***

The motor control track is designed to capitalize on the collective expertise of cross-disciplinary collaborations between existing Northeastern faculty whose research lies at the intersection of sensorimotor control systems, neuroscience, and dynamical systems. Insights into learning and coordination of functional motor behavior provides the basis for a better understanding of neurological diseases of motor function such as stroke, Parkinson's disease, and cerebral palsy. Insights will be the foundation for designing better therapy and rehabilitation.

Students who select this track must take four out of five restricted electives in addition to the bioengineering core curriculum and unrestricted elective courses to meet requirements of the track program.

## GENERAL REQUIREMENTS

| | |
|---|---|
| BIOE 5100 Medical Physiology | 4 SH |
| BIOE 7374 Special Topics in Bioengineering | 4 SH |
| BIOE 7390 Seminar | 0 SH |
| BIOE 9990 Dissertation | 0 SH |
| Course work from the list "Additional Required Courses," below | 12 SH |
| Course work from the list "Mathematical Methods for Bioengineers," below | 4 SH |
| Course work from the list "Required Motor Control Track Courses," below | 16 SH |
| Course work from the list " Suggested Motor Control Track Electives," below | 8 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **48.0 SH** |

## ADDITIONAL REQUIRED COURSES

| | |
|---|---|
| BIOE 7001 Biomaterials | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH |

## MATHEMATICAL METHODS FOR BIOENGINEERS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

## REQUIRED MOTOR CONTROL TRACK COURSES

| | |
|---|---|
| BIOL 5553 Biology of Muscle: Molecules to Movements | 4 SH |
| BIOL 5601 Multidisciplinary Approaches in Motor Control | 4 SH |
| ME 5659 Control and Mechatronics | 4 SH |
| ME 5665 Musculoskeletal Biomechanics | 4 SH |

## SUGGESTED MOTOR CONTROL TRACK ELECTIVES

| | |
|---|---|
| BIOL 5587 Comparative Neurobiology | 4 SH |
| CS 5335 Robotic Science and Systems *Coreq.* CS 5336 | 4 SH |
| CS 5336 Lab for CS 5335 *Coreq.* CS 5335 | 0 SH |
| CSYE 5250 Robot Mechanics and Control | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7204 Applied Probability and Stochastic Processes | 4 SH |
| EECE 7213 System Identification and Adaptive Control | 4 SH |
| EECE 7214 Optimal and Robust Control | 4 SH |
| EECE 7310 Modern Signal Processing | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| ME 5655 Dynamics and Mechanical Vibration | 4 SH |
| ME 6200 Mathematical Methods for Mechanical Engineers 1 | 4 SH |

ME 6201 Mathematical Methods for Mechanical Engineers 2 — 4 SH

ME 7350 Graduate Seminar in Robotics — 1 SH

PHYS 7301 Classical Mechanics/Math Methods — 4 SH

PHYS 7321 Computational Physics — 4 SH

PHYS 7735 Nonlinear Dynamics — 4 SH

PHYS 7741 Biological Physics 2 — 4 SH

PSYC 5180 Quantitative Methods 1 — 3 SH

PSYC 5181 Quantitative Methods 2 — 3 SH

PT 5138 Neuroscience — 4 SH
  *Coreq.* PT 5139

PT 5139 Lab for PT 5138 — 1 SH
  *Coreq.* PT 5138

PT 5150 Motor Control, Development, and Learning — 4 SH
  *Coreq.* PT 5151

PT 5151 Lab for PT 5150 — 1 SH
  *Coreq.* PT 5150

## Track 6: PhD in Bioengineering—Biocomputing Track

*Track Managers: Stefano Basagni and Miriam Leeser*

The biocomputing track draws on strengths in computer engineering and computation applied to bioengineering applications. Bioengineering MS or PhD candidates may complete this track by taking both of the restricted electives and sufficient unrestricted electives to meet course requirements as specified by their degree program.

### GENERAL REQUIREMENTS

BIOE 5100 Medical Physiology — 4 SH

BIOE 7374 Special Topics in Bioengineering — 4 SH

BIOE 7390 Seminar — 0 SH

BIOE 9990 Dissertation — 0 SH

EECE 7205 Fundamentals of Computer Engineering — 4 SH

EECE 7360 Combinatorial Optimization — 4 SH

Course work from the list "Additional Required Courses," below — 12 SH

Course work from the list "Mathematical Methods for Bioengineers," below — 4 SH

Course work from the list "Suggested Track Electives," below — 16 SH

### PROGRAM TOTAL CREDITS — 48.0 SH

### ADDITIONAL REQUIRED COURSES

BIOE 7001 Biomaterials — 4 SH

CHME 5630 Biochemical Engineering — 4 SH

EECE 5664 Biomedical Signal Processing — 4 SH

ME 5667 Solid Mechanics of Cells and Tissues — 4 SH

### MATHEMATICAL METHODS FOR BIOENGINEERS

CHME 7320 Chemical Engineering Mathematics — 4 SH

EECE 7200 Linear Systems Analysis — 4 SH

EECE 7203 Complex Variable Theory and Differential Equations — 4 SH

ME 7205 Advanced Mathematical Methods for Mechanical Engineers — 4 SH

### SUGGESTED TRACK ELECTIVES

BIOL 5553 Biology of Muscle: Molecules to Movements — 4 SH

BIOL 5581 Biological Imaging — 4 SH

BIOL 5587 Comparative Neurobiology — 4 SH

BIOL 6200 Bioinformatics Programming — 4 SH

BIOL 6302 Bioinformatics Methods and Algorithms — 5 SH

BIOL 6308 Bioinformatics Computational Methods 1 — 4 SH

BIOL 6309 Bioinformatics Computational Methods 2 — 4 SH

CS 5100 Foundations of Artificial Intelligence — 4 SH

CS 5200 Database Management Systems — 4 SH

CS 5210 Implementation of Database Management Systems — 4 SH

CS 5310 Computer Graphics — 4 SH

CS 5320 Digital Image Processing — 4 SH

CS 5330 Pattern Recognition and Computer Vision — 4 SH

CS 5400 Principles of Programming Language — 4 SH

CS 5600 Computer Systems — 4 SH

CS 5800 Algorithms — 4 SH

CS 6110 Knowledge Based Systems — 4 SH

CS 6140 Machine Learning — 4 SH

CS 6200 Information Retrieval — 4 SH

CS 6410 Compilers — 4 SH

CS 6610 Parallel Computing — 4 SH

CS 6810 Distributed Algorithms — 4 SH

EECE 7200 Linear Systems Analysis — 4 SH

EECE 7203 Complex Variable Theory and Differential Equations — 4 SH

EECE 7204 Applied Probability and Stochastic Processes — 4 SH

EECE 7313 Pattern Recognition — 4 SH

EECE 7339 Testing and Design for Testability — 4 SH

EECE 7350 Software Engineering 1 — 4 SH

EECE 7351 Software Engineering 2 — 4 SH

EECE 7352 Computer Architecture — 4 SH

EECE 7353 VLSI Design — 4 SH

EECE 7354 VLSI Architecture — 4 SH

EECE 7357 Fault-Tolerant Computers — 4 SH

EECE 7358 Parallel Architecture for High-Performance Computing — 4 SH

EECE 7359 Multiprocessor Architectures — 4 SH

EECE 7361 Digital Hardware Synthesis — 4 SH

EECE 7364 Mobile and Wireless Networking — 4 SH

EECE 7365 Distributed Systems — 4 SH

EECE 7367 Robotics and Automation Systems — 4 SH

EECE 7368 High-Level Design of Hardware-Software Systems — 4 SH

EECE 7389 Robot Vision and Sensors — 4 SH

OR 6205 Deterministics Operations Research — 4 SH

OR 7230 Probabilistic Operation Research — 4 SH

## Track 7: PhD in Bioengineering—Cell and Tissue Engineering Track

***Track Managers: Anand Asthagiri and Erin Cram***

Cell and tissue engineering is a major strength at Northeastern University with several research labs focused on understanding and engineering living cells and tissues. These labs are elucidating the quantitative principles that govern cell fate decisions and are developing design strategies to promote the assembly and patterning of multicellular systems into viable, functional tissues. Cells are remarkable physicochemical systems that sense, respond, and actively reshape their rich microenvironment. Parsing the dialogue between the microenvironment and cells and elucidating design strategies to engineer the dynamic cellular milieu has far-reaching implications for biomedicine, including applications such as tissue engineering and the development of novel therapeutic strategies.

This pioneering, multidisciplinary research is enabled by strengths at Northeastern in key foundational areas, such as biomolecular engineering, computational modeling, developmental biology, imaging, materials science, micro- and nanofluidics, mechanobiology, molecular cell biology, and systems biology.

Cell and tissue engineering is widely recognized as a core subfield of bioengineering. A formal track in this area offers our students a program of study that capitalizes on a major strength at Northeastern.

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOE 5100 Medical Physiology | 4 SH |
| BIOE 7374 Special Topics in Bioengineering | 4 SH |
| BIOE 7390 Seminar | 0 SH |
| BIOE 9990 Dissertation | 0 SH |
| BIOL 6401 Research Methods and Critical Analysis in Molecular Cell Biology | 4 SH |
| CHME 5699 Special Topics in Chemical Engineering | 4 SH |
| CHME 7340 Chemical Engineering Kinetics | 4 SH |
| Course work from the list "Additional Required Courses," below | 12 SH |
| Course work from the list "Mathematical Methods for Bioengineers," below | 4 SH |
| Course work from the list "Suggested Track Elective Courses," below | 12 SH |

### PROGRAM TOTAL CREDITS         48.0 SH

### ADDITIONAL REQUIRED COURSES

| | |
|---|---|
| BIOE 7001 Biomaterials | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH |

### MATHEMATICAL METHODS FOR BIOENGINEERS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

### SUGGESTED TRACK ELECTIVE COURSES

| | |
|---|---|
| BIOL 5307 Biological Electron Microscopy | 4 SH |
| BIOL 5577 Developmental Biology | 4 SH |
| BIOL 5579 Biochemistry/Molecular Biology Experimental Approaches | 5 SH |
| BIOL 5581 Biological Imaging | 4 SH |
| CHME 7350 Transport Phenomena | 4 SH |
| EECE 5648 Biomedical Optics | 4 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH |
| PHYS 7741 Biological Physics 2 | 4 SH |

## Track 8: PhD in Bioengineering—General Bioengineering Studies Track

***Track Manager: Jeffrey Ruberti***

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOE 5100 Medical Physiology | 4 SH |
| BIOE 7374 Special Topics in Bioengineering | 4 SH |
| BIOE 7390 Seminar | 0 SH |
| BIOE 9990 Dissertation | 0 SH |
| Course work from the list "Additional Required Courses," below | 12 SH |
| Course work from the list "Mathematical Methods for Bioengineers," below | 4 SH |
| Course work from the list "Suggested Track Electives," below | 24 SH |

### PROGRAM TOTAL CREDITS         48.0 SH

### ADDITIONAL REQUIRED COURSES

| | |
|---|---|
| BIOE 7001 Biomaterials | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH |

### MATHEMATICAL METHODS FOR BIOENGINEERS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

### SUGGESTED TRACK ELECTIVES

| | |
|---|---|
| BIOE 7374 Special Topics in Bioengineering | 4 SH |
| BIOL 5307 Biological Electron Microscopy | 4 SH |
| BIOL 5553 Biology of Muscle: Molecules to Movements | 4 SH |

| | | | | |
|---|---|---|---|---|
| BIOL 5577 Developmental Biology | 4 SH | | CS 6610 Parallel Computing | 4 SH |
| BIOL 5579 Biochemistry/Molecular Biology Experimental Approaches | 5 SH | | CS 6810 Distributed Algorithms | 4 SH |
| | | | CSYE 5250 Robot Mechanics and Control | 4 SH |
| BIOL 5581 Biological Imaging | 4 SH | | EECE 5606 Micro- and Nanofabrication | 4 SH |
| BIOL 5587 Comparative Neurobiology | 4 SH | | EECE 5646 Optics for Engineers | 4 SH |
| BIOL 5601 Multidisciplinary Approaches in Motor Control | 4 SH | | EECE 5648 Biomedical Optics | 4 SH |
| | | | EECE 7200 Linear Systems Analysis | 4 SH |
| BIOL 5603 Computational Neuroscience | 4 SH | | EECE 7202 Electromagnetic Theory 1 | 4 SH |
| BIOL 6200 Bioinformatics Programming | 4 SH | | EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| BIOL 6300 Biochemistry | 4 SH | | | |
| BIOL 6301 Molecular Cell Biology | 4 SH | | EECE 7204 Applied Probability and Stochastic Processes | 4 SH |
| BIOL 6302 Bioinformatics Methods and Algorithms | 5 SH | | | |
| BIOL 6308 Bioinformatics Computational Methods 1 | 4 SH | | EECE 7205 Fundamentals of Computer Engineering | 4 SH |
| BIOL 6309 Bioinformatics Computational Methods 2 | 4 SH | | EECE 7211 Nonlinear Control | 4 SH |
| BIOL 6401 Research Methods and Critical Analysis in Molecular Cell Biology | 4 SH | | EECE 7213 System Identification and Adaptive Control | 4 SH |
| | | | EECE 7214 Optimal and Robust Control | 4 SH |
| CAEP 6202 Research, Evaluation, and Data Analysis | 3 SH | | EECE 7236 Special Topics in Control | 4 SH |
| CHEM 5612 Principles of Mass Spectrometry | 3 SH | | EECE 7271 Computational Methods in Electromagnetics | 4 SH |
| CHEM 5613 Optical Methods of Analysis | 3 SH | | | |
| CHEM 5620 Protein Chemistry | 3 SH | | EECE 7280 Fourier and Binary Optics | 4 SH |
| CHEM 5621 Principles of Chemical Biology for Chemists | 3 SH | | EECE 7281 Fourier Optics | 4 SH |
| | | | EECE 7284 Optical Properties of Matter | 4 SH |
| CHEM 5637 Foundations of Spectroscopy | 3 SH | | EECE 7293 Modern Imaging | 4 SH |
| CHEM 5638 Molecular Modeling | 3 SH | | EECE 7310 Modern Signal Processing | 4 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH | | EECE 7311 Two Dimensional Signal and Image Processing | 4 SH |
| CHEM 5686 Fundamentals of Molecular Structure and Electronics | 3 SH | | | |
| | | | EECE 7312 Statistical and Adaptive Signal Processing | 4 SH |
| CHEM 7247 Advances in Nanomaterials | 3 SH | | EECE 7313 Pattern Recognition | 4 SH |
| CHEM 7317 Analytical Biotechnology | 3 SH | | EECE 7314 Auditory Signal Processing | 4 SH |
| CHME 5155 Nanotechnology in Engineering | 4 SH | | EECE 7323 Numerical Optimization Methods | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH | | EECE 7335 Detection and Estimation Theory | 4 SH |
| CHME 5699 Special Topics in Chemical Engineering | 4 SH | | EECE 7337 Information Theory | 4 SH |
| CHME 7260 Special Topics in Chemical Engineering | 4 SH | | EECE 7339 Testing and Design for Testability | 4 SH |
| CHME 7330 Chemical Engineering Thermodynamics | 4 SH | | EECE 7350 Software Engineering 1 | 4 SH |
| CHME 7340 Chemical Engineering Kinetics | 4 SH | | EECE 7351 Software Engineering 2 | 4 SH |
| CHME 7350 Transport Phenomena | 4 SH | | EECE 7352 Computer Architecture | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH | | EECE 7353 VLSI Design | 4 SH |
| CS 5100 Foundations of Artificial Intelligence | 4 SH | | EECE 7354 VLSI Architecture | 4 SH |
| CS 5200 Database Management Systems | 4 SH | | EECE 7357 Fault-Tolerant Computers | 4 SH |
| CS 5210 Implementation of Database Management Systems | 4 SH | | EECE 7358 Parallel Architecture for High-Performance Computing | 4 SH |
| | | | | |
| CS 5310 Computer Graphics | 4 SH | | EECE 7359 Multiprocessor Architectures | 4 SH |
| CS 5320 Digital Image Processing | 4 SH | | EECE 7360 Combinatorial Optimization | 4 SH |
| CS 5330 Pattern Recognition and Computer Vision | 4 SH | | EECE 7361 Digital Hardware Synthesis | 4 SH |
| CS 5335 Robotic Science and Systems | 4 SH | | EECE 7364 Mobile and Wireless Networking | 4 SH |
| *Coreq.* CS 5336 | | | EECE 7365 Distributed Systems | 4 SH |
| CS 5336 Lab for CS 5335 | 0 SH | | EECE 7367 Robotics and Automation Systems | 4 SH |
| *Coreq.* CS 5335 | | | EECE 7368 High-Level Design of Hardware-Software Systems | 4 SH |
| CS 5600 Computer Systems | 4 SH | | | |
| CS 5800 Algorithms | 4 SH | | EECE 7389 Robot Vision and Sensors | 4 SH |
| CS 6110 Knowledge Based Systems | 4 SH | | EXSC 6200 Cardiopulmonary Physiology | 3 SH |
| CS 6140 Machine Learning | 4 SH | | EXSC 6230 Musculoskeletal Pathophysiology | 3 SH |
| CS 6200 Information Retrieval | 4 SH | | EXSC 6231 Musculoskeletal Assessment | 2 SH |
| CS 6410 Compilers | 4 SH | | EXSC 6263 Research Design and Methodology | 3 SH |

| | | | |
|---|---|---|---|
| IE 7280 Statistical Methods in Engineering | 4 SH | PT 5139 Lab for PT 5138 | 1 SH |
| IE 7315 Human Factors Engineering | 4 SH | *Coreq.* PT 5138 | |
| ME 5650 Advanced Mechanics of Materials | 4 SH | PT 5150 Motor Control, Development, and Learning | 4 SH |
| ME 5655 Dynamics and Mechanical Vibration | 4 SH | *Coreq.* PT 5151 | |
| ME 5657 Finite Element Method | 4 SH | PT 5151 Lab for PT 5150 | 1 SH |
| ME 5659 Control and Mechatronics | 4 SH | *Coreq.* PT 5150 | |
| ME 5665 Musculoskeletal Biomechanics | 4 SH | PT 5170 Motor Control | 3 SH |
| ME 5667 Solid Mechanics of Cells and Tissues | 4 SH | *Coreq.* PT 5171 | |
| ME 6200 Mathematical Methods for Mechanical Engineers 1 | 4 SH | PT 5171 Lab for PT 5170 | 1 SH |
| | | *Coreq.* PT 5170 | |
| ME 6201 Mathematical Methods for Mechanical Engineers 2 | 4 SH | PT 6215 Assistive Technology | 3 SH |
| | | *Coreq.* PT 6216 | |
| ME 6260 Introduction to Microelectromechanical Systems (MEMs) | 4 SH | SLPA 0300 Anatomy and Physiology of the Vocal Mechanism | 3 SH |
| ME 7210 Elasticity and Plasticity | 4 SH | SLPA 5111 Anatomy and Physiology of the Auditory System | 3 SH |
| ME 7238 Advanced Finite Element Method | 4 SH | SLPA 6209 Psychoacoustics | 2 SH |
| ME 7240 Composite Materials | 4 SH | SLPA 6301 Speech Science | 3 SH |
| ME 7245 Fracture Mechanics and Failure Analysis | 4 SH | | |
| ME 7255 Continuum Mechanics | 4 SH | | |
| ME 7262 Nanomanufacturing 1 | 4 SH | | |
| ME 7275 Essentials of Fluid Dynamics | 4 SH | | |
| ME 7280 Statistical Thermodynamics | 4 SH | | |
| ME 7325 Two Phase Flow | 4 SH | | |
| OR 6205 Deterministics Operations Research | 4 SH | | |
| OR 7230 Probabilistic Operation Research | 4 SH | | |
| PHSC 5100 Concepts in Pharmaceutical Science | 2 SH | | |
| PHSC 6210 Drug Design, Evaluation, and Development | 2 SH | | |
| PHSC 6218 Biomedical Chemical Analysis | 2 SH | | |
| PHSC 6226 Imaging in Medicine and Drug Discovery | 2 SH | | |
| PHSC 6246 Pharmacokinetics and Biopharmaceutics | 3 SH | | |
| PHSC 6290 Biophysical Methods in Drug Discovery | 2 SH | | |
| PHYS 5260 Introduction to Nanoscience and Nanotechnology | 4 SH | | |
| PHYS 7301 Classical Mechanics/Math Methods | 4 SH | | |
| PHYS 7321 Computational Physics | 4 SH | | |
| PHYS 7731 Biological Physics 1 | 4 SH | | |
| PHYS 7735 Nonlinear Dynamics | 4 SH | | |
| PHYS 7741 Biological Physics 2 | 4 SH | | |
| PMST 6250 Advanced Physical Pharmacy | 2 SH | | |
| PMST 6252 Pharmacokinetics and Drug Metabolism | 3 SH | | |
| PMST 6254 Advanced Drug Delivery System | 3 SH | | |
| PMST 6256 Advanced Pharmacokinetics | 2 SH | | |
| PSYC 5120 Proseminar in Sensation | 3 SH | | |
| PSYC 5130 Proseminar in Perception | 3 SH | | |
| PSYC 5180 Quantitative Methods 1 | 3 SH | | |
| PSYC 5181 Quantitative Methods 2 | 3 SH | | |
| PSYC 7220 Seminar in Sensation | 3 SH | | |
| PSYC 7230 Seminar in Perception | 3 SH | | |
| PSYC 7300 Advanced Quantitative Analysis | 3 SH | | |
| PT 5133 Kinesiology | 3 SH | | |
| *Coreq.* PT 5134 | | | |
| PT 5138 Neuroscience | 4 SH | | |
| *Coreq.* PT 5139 | | | |

<div style="background:red;color:white">CHEMICAL ENGINEERING</div>

**www.che.neu.edu**

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The department offers a Master of Science and a Doctor of Philosophy in Chemical Engineering. The MS degree is offered as either a thesis or a nonthesis degree. Most courses are offered in the late afternoon or early evening to make them accessible to part-time students pursuing full-time industrial careers. A full-time MS student may apply for participation in the cooperative education plan. Master's students pursuing the thesis option must first gain the consent of their advisor prior to participating in the cooperative education plan. The MS thesis and PhD degrees are only offered as a full-time program. Any deviations from the curriculum must be addressed by petition to the graduate committee and will be considered on a case-by-case basis.

Candidates pursuing a thesis MS or a PhD are able to select thesis topics from a diverse range of faculty research interests. New graduate students can learn about ongoing research topics from individual faculty members, faculty websites, and graduate student seminars. Graduate student seminars are held on a regular basis and provide an interactive forum for learning and exchanging research ideas.

## Master's Degree in Chemical Engineering

The Master of Science in Chemical Engineering is normally pursued by students with a Bachelor of Science in Chemical Engineering or closely allied fields. Students wishing to pursue the master's degree but with undergraduate educational backgrounds other than chemical engineering may be required to complete supplementary undergraduate course work. These courses are in addition to the minimum course requirements. Students enrolled in the program are encouraged to seek guidance from their instructors and advisor regarding additional course work that may supplement the graduate curriculum.

Students originally admitted to the master's degree program may petition the chemical engineering graduate committee for admission to the PhD program. If admission is granted, then the student must satisfy all the requirements of the doctoral degree program, including the requirements for doctoral candidacy. For further information, see the section "PhD in Chemical Engineering," below.

## COURSE REQUIREMENTS

A minimum of 32 semester hours (SH) of academic work is required of all full-time students (continuous and cooperative education full-time students) to qualify for the Master of Science degree in chemical engineering.

**If pursuing a thesis option,** at least 8 semester hours of thesis credit must be included as part of these 32 semester hours of credits. In addition, each student pursuing a thesis option must enroll in the department's seminar course for each semester they are matriculating toward their degree. Students enrolled in the department's seminar course are encouraged to participate in the seminar by providing a research presentation regarding their research project under the guidance of their advisor. The faculty advisor and the student establish the sequence of courses that students take to pursue the Master of Science in Chemical Engineering. Full-time Master of Science degree students who complete the required 8 semester hours of thesis work (CHME 7990) are required to register for CHME 7996 Thesis Continuation (0 SH) each semester until their thesis is completed. Note that although no credits are associated with CHME 7996 Thesis Continuation, a student registered for this course is considered full-time.

**If pursuing a nonthesis option,** students must complete a minimum of 32 semester hours of course work and no enrollment in the seminar course is required. Required core courses and example elective courses for all graduate students are provided below.

## THESIS REQUIREMENTS

Students pursuing a Master of Science in Chemical Engineering with thesis must submit to the Graduate School of Engineering a written thesis that is approved by the thesis committee and department head. The graduate school requirements and electronic submittal instructions can be found on the Web at www.coe.neu.edu/coe/graduate. MS with thesis students must also complete an oral master's thesis defense in order to successfully complete the program. The student will be expected to form a master's thesis committee, composed of a minimum of three members, one who is the advisor, one other faculty member from the chemical engineering department, and one member from outside the department. The oral presentation will be open to the public, including students, faculty, and the candidate's committee.

## PART-TIME STUDENTS

Part-time students may progress according to their abilities within the seven-year time limit. A minimum of 32 semester hours of academic course work is required for part-time students. The thesis and seminar course are not required for part-time students pursuing a master's degree.

Master of Science students wishing to change their status from part-time to full-time must notify the chemical engineering department and make a formal petition to the Graduate School of Engineering. Refer to the regulations of the Graduate School of Engineering for further information on academic administrative policies.

## DEPARTURE PRIOR TO THESIS COMPLETION

Occasionally, students have left the chemical engineering department prior to completion of all degree requirements. In such instances, longtime intervals have often elapsed before thesis or manuscript submission. Accordingly, the department has adopted the guideline that a student cannot submit a thesis for credit beyond three years after the student stops actively pursuing the research. Exceptions may be granted upon petition to the departmental graduate committee. Petitions must demonstrate extenuating circumstances and prove that the research is still of value to the profession.

| Degree Requirements | Thesis Option | Nonthesis Option |
|---|---|---|
| Required core courses | 16 SH | 16 SH |
| Master of Science thesis | 8 SH | N/A |
| Seminar | 0 SH | N/A |
| Elective courses* | 8 SH | 16 SH |
| **Minimum semester hours required\*\*** | **32 SH** | **32 SH** |

*Students may complete a maximum of 8 semester hours (thesis option) or 12 semester hours (nonthesis option) of course work for credit outside the Department of Chemical Engineering under guidance of their advisor and approval of the chemical engineering graduate coordinator.

**Exclusive of any preparatory undergraduate courses.

## MSCHE—Master of Science in Chemical Engineering—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| CHME 7330 Chemical Engineering Thermodynamics | 4 SH |
| CHME 7340 Chemical Engineering Kinetics | 4 SH |
| CHME 7350 Transport Phenomena | 4 SH |
| Course work from the list "Chemical Engineering Electives," below | 16 SH |

| **PROGRAM TOTAL CREDITS** | **32.0 SH** |
|---|---|

### CHEMICAL ENGINEERING ELECTIVES

| | |
|---|---|
| CHME 5204 Heterogeneous Catalysis | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| CHME 7201 Fluid Mechanics | 4 SH |
| CHME 7202 Chemical Process Heat Transfer | 4 SH |
| CHME 7205 Numerical Techniques in Chemical Engineering | 4 SH |
| CHME 7210 Advanced Chemical Engineering Calculations | 4 SH |
| CHME 7220 Electronic Materials, Thin Films, and Nanostructures | 4 SH |
| CHME 7221 Thin Film Technology | 4 SH |

| | |
|---|---|
| CHME 7222 Principals of Membrane Processes | 4 SH |
| CHME 7231 Chemical Process Dynamics and Control | 4 SH |
| CHME 7240 Polymer Science | 4 SH |
| CHME 7260 Special Topics in Chemical Engineering | 4 SH |
| CHME 7261 Special Topics in Chemical Engineering | 2 SH |
| CHME 7978 Independent Study | 1 to 4 SH |
| ENGR 5670 Sustainable Energy: Materials, Conversion, Storage, and Usage | 4 SH |
| ENGR 6150 Nanotechnology in Engineering | 4 SH |

## MSCHE—Master of Science in Chemical Engineering—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| CHME 7330 Chemical Engineering Thermodynamics | 4 SH |
| CHME 7340 Chemical Engineering Kinetics | 4 SH |
| CHME 7350 Transport Phenomena | 4 SH |
| CHME 7390 Seminar | 0 SH |
| CHME 7990 MS Thesis | 8 SH |
| Course work from the list "Chemical Engineering Electives," below | 8 SH |

| **PROGRAM TOTAL CREDITS** | **32.0 SH** |
|---|---|

### CHEMICAL ENGINEERING ELECTIVES

| | |
|---|---|
| CHME 5204 Heterogeneous Catalysis | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| CHME 7201 Fluid Mechanics | 4 SH |
| CHME 7202 Chemical Process Heat Transfer | 4 SH |
| CHME 7205 Numerical Techniques in Chemical Engineering | 4 SH |
| CHME 7210 Advanced Chemical Engineering Calculations | 4 SH |
| CHME 7220 Electronic Materials, Thin Films, and Nanostructures | 4 SH |
| CHME 7221 Thin Film Technology | 4 SH |
| CHME 7222 Principals of Membrane Processes | 4 SH |
| CHME 7231 Chemical Process Dynamics and Control | 4 SH |
| CHME 7240 Polymer Science | 4 SH |
| CHME 7260 Special Topics in Chemical Engineering | 4 SH |
| CHME 7261 Special Topics in Chemical Engineering | 2 SH |
| CHME 7978 Independent Study | 1 to 4 SH |
| ENGR 5670 Sustainable Energy: Materials, Conversion, Storage, and Usage | 4 SH |
| ENGR 6150 Nanotechnology in Engineering | 4 SH |

## MSCHE—Master of Science in Chemical Engineering with Graduate Certificate in Engineering Leadership

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| CHME 7330 Chemical Engineering Thermodynamics | 4 SH |
| CHME 7340 Chemical Engineering Kinetics | 4 SH |
| CHME 7350 Transport Phenomena | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |

**PROGRAM TOTAL CREDITS**                     **32.0 SH**

## PhD in Chemical Engineering

Each student admitted to the PhD program in chemical engineering will initially be designated a *doctoral student.* Upon successful completion of the requirements for doctoral candidacy as described below, a student is reclassified as a *doctoral candidate.* After establishing candidacy, a student must complete a program of academic course work and a dissertation under the direction of a dissertation advisor. All doctoral candidates must also pass a final oral examination. Additional details for departmental procedures on advisor selection, committee selection, candidacy proposal defense, and dissertation defense are provided in the *Chemical Engineering Graduate Student Guidebook,* available online at www.che.neu.edu.

### QUALIFYING FOR DOCTORAL CANDIDACY

To qualify for doctoral candidacy, the student must demonstrate mastery of the four core areas of chemical engineering (thermodynamics, kinetics, transport, and mathematics) through course performance. To become a doctoral candidate, students must earn a 3.500 GPA, typically at the end of the first year, as an average considering all four core courses.

In addition, each student must also demonstrate critical thinking, analysis, and experimental planning skills related to their dissertation research topic through a written candidacy proposal and an oral defense of this proposal. The student must pass, as determined by the student's dissertation committee, this oral candidacy proposal defense in order to advance to doctoral candidacy. The oral presentation will be open to students, faculty, and the student's committee. The student earns the classification of *doctoral candidate* upon successful completion of these requirements.

### COURSE REQUIREMENTS

A minimum of 24 semester hours (SH) of academic course work, **not including any independent study credits,** beyond the bachelor's degree is required. The 24 semester hours must include at least 16 semester hours of academic course work (exclusive of thesis or dissertation) taken at Northeastern University. All four of the core courses (see table below) must be included in the student's academic graduate course work. After reaching PhD candidacy, students are required to register for CHME 9990 Dissertation for two consecutive semesters. This is then followed by registration for CHME 9996 Dissertation Continuation in each semester thereafter until the dissertation has been completed and defended. ***Note:* No course credits are awarded for CHME 9990 Dissertation or CHME 9996 Dissertation Continuation; however, a student is considered full-time if registered for either of these courses.** If a student who was working on a master's thesis is pursuing a PhD without first completing the master's thesis, the 8 semester hours of master's thesis credit earned during the first years of study can be transferred to independent study credits but **not** counted toward the 24-semester-hour minimum course requirements for the PhD degree. All students pursuing a doctoral degree must enroll in the department's seminar course for each semester they are matriculating toward their degree.

Students will be advised on their courses for the first semester by the chemical engineering graduate coordinator during orientation. After the first semester, students will work with their advisor to determine appropriate courses and course schedule to meet their educational needs and aspirations. Upon consultation with the dissertation advisor, a student may take up to 44 semester hours of course credit without additional financial penalty. Students and advisors should keep in mind that the requirements for doctoral candidacy include all four core courses and the proposal defense and that the university residency requirement requires two semesters of academic studies after becoming a doctoral candidate.

### LANGUAGE REQUIREMENT

There is no foreign language requirement for the Doctor of Philosophy degree. However, each candidate must be proficient in technical writing and oral presentation in the English language. The graduate committee may require additional course work to improve language proficiency, if necessary.

### RESIDENCE REQUIREMENT

A student satisfies the residence requirement by completing one academic year of full-time graduate studies during two consecutive academic semesters after qualifying for doctoral candidacy. Additional required course work (exclusive of seminars) may be completed during this period. Students are required to be continually enrolled while pursuing the completion of the dissertation.

### DISSERTATION

After a student establishes doctoral candidacy, he or she must complete a dissertation that embodies the results of extended original research and includes material suitable for publication. The student is responsible for proposing a dissertation committee to be approved by the dissertation advisor at least one month prior to the dissertation defense. The committee must have a minimum of three members, in addition to the primary advisor. The primary dissertation advisor must be a faculty member in the Department

of Chemical Engineering. Additionally, one of these committee members must be external to the Department of Chemical Engineering. Committee membership is not limited to faculty at Northeastern University, nor to engineering faculty. The student is encouraged to consider experts in the dissertation topic and to work with the dissertation advisor to create a meaningful and helpful committee. The dissertation committee will approve the dissertation in its final form. Required dissertation format is the same as for the MS thesis, and the graduate school requirements and electronic submittal instructions can be found on the Web at www.coe.neu.edu/coe/graduate. Students are responsible for contacting the Graduate School of Engineering for any updates to dissertation requirements and appropriate deadlines.

### DISSERTATION DEFENSE AND FINAL ORAL EXAMINATION

This comprehensive examination includes the public dissertation defense as well as a final oral examination to include the subject matter of the doctoral dissertation and significant developments in the field of the dissertation work. The oral presentation will be open to the public, including students, faculty, and the student's committee.

### DEPARTURE PRIOR TO DISSERTATION COMPLETION

Occasionally, students have left the Department of Chemical Engineering prior to completion of all degree requirements. In such instances, a student cannot submit a dissertation for credit beyond three years after he or she stops actively pursuing the research. Exceptions may be granted upon petition to the departmental graduate committee. Petitions must demonstrate extenuating circumstances and prove that the research is still of value to the profession.

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHME 7320 Chemical Engineering Mathematics | 4 SH |
| CHME 7330 Chemical Engineering Thermodynamics | 4 SH |
| CHME 7340 Chemical Engineering Kinetics | 4 SH |
| CHME 7350 Transport Phenomena | 4 SH |
| CHME 9990 Dissertation | 0 SH |
| Approved graduate course work | 8 SH |
| **PROGRAM TOTAL CREDITS** | **24.0 SH** |

<div style="background-color:red; color:white;">CIVIL AND ENVIRONMENTAL ENGINEERING</div>

**www.civ.neu.edu**

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The Department of Civil and Environmental Engineering (CEE) offers graduate programs leading to the degrees of Master of Science in Civil Engineering, Master of Science (without specification), and Doctor of Philosophy in Civil Engineering. At the master's level, five areas of concentration are offered:

• Construction management
• Environmental engineering
• Geotechnical/geoenvironmental engineering
• Structural engineering
• Transportation engineering

Students may pursue the Master of Science degree program on either a full- or part-time basis. Students must pursue the PhD program on a basis consistent with the residence requirements for the degree as described in the curriculum requirements. The curriculum includes areas of concentration in construction management, environmental engineering, geotechnical/geoenvironmental engineering, structural engineering, and transportation engineering. Students in all master's degree programs must complete a minimum of 32 semester hours of approved course work (exclusive of any preparatory courses) with a minimum GPA of 3.000.

## Master's Degree in Civil Engineering with Concentration in Construction Management

This program is intended for students interested in construction management and engineering or a closely related field. It includes required core courses primarily from the CEE department, complemented by electives in civil and environmental engineering, mechanical and industrial engineering, and business administration. Based on proven proficiency in given areas, students may waive certain core courses and replace them with alternate elective courses.

| Degree Requirements | With Report | With Thesis | Course Work Only |
|---|---|---|---|
| Required core courses | 18 SH | 18 SH | 18 SH |
| Elective courses | 10 SH | 6 SH | 14 SH |
| Master of Science report/thesis | 4 SH | 8 SH | |
| **Minimum semester hours required** | **32 SH** | **32 SH** | **32 SH** |

## MSCivE—Master of Science in Civil Engineering with Concentration in Construction Management—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7220 Construction Management | 4 SH |
| CIVE 7221 Construction Project Control and Organization | 2 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| Course work from the list "Construction Course Option Electives," below | 14 SH |

### PROGRAM TOTAL CREDITS — 32.0 SH

### CONSTRUCTION COURSE OPTION ELECTIVES

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| CIVE 7231 Alternative Project Delivery Systems in Construction | 2 SH |
| CIVE 7240 Construction Equipment and Modeling | 4 SH |
| CIVE 7301 Advanced Soil Mechanics | 4 SH |
| CIVE 7302 Advanced Foundation Engineering | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6215 Business Analysis and Information Engineering | 4 SH |
| INFO 6245 Planning and Managing Information Systems Development | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Construction Management—Report Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7220 Construction Management | 4 SH |
| CIVE 7221 Construction Project Control and Organization | 2 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| CIVE 8674 Master's Report | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| Course work from the list "Construction Report Option Electives," below | 10 SH |

### PROGRAM TOTAL CREDITS — 32.0 SH

### CONSTRUCTION REPORT OPTION ELECTIVES

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| CIVE 7231 Alternative Project Delivery Systems in Construction | 2 SH |
| CIVE 7240 Construction Equipment and Modeling | 4 SH |
| CIVE 7301 Advanced Soil Mechanics | 4 SH |
| CIVE 7302 Advanced Foundation Engineering | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6215 Business Analysis and Information Engineering | 4 SH |
| INFO 6245 Planning and Managing Information Systems Development | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Construction Management—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7220 Construction Management | 4 SH |
| CIVE 7221 Construction Project Control and Organization | 2 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| CIVE 7990 MS Thesis | 8 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| Course work from the list "Construction Thesis Option Electives," below | 6 SH |

### PROGRAM TOTAL CREDITS — 32.0 SH

### CONSTRUCTION THESIS OPTION ELECTIVES

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| CIVE 7231 Alternative Project Delivery Systems in Construction | 2 SH |
| CIVE 7240 Construction Equipment and Modeling | 4 SH |
| CIVE 7301 Advanced Soil Mechanics | 4 SH |
| CIVE 7302 Advanced Foundation Engineering | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |

INFO 6215 Business Analysis and Information Engineering   4 SH

INFO 6245 Planning and Managing Information Systems Development   4 SH

OR 6205 Deterministics Operations Research   4 SH

In addition, students may take graduate courses outside those courses listed above with the approval of their advisor.

## Master's Degree in Civil Engineering with Concentration in Environmental Engineering

This program includes study in water and wastewater treatment and disposal, water resources and watershed management, and hazardous waste and groundwater remediation and protection.

| Degree Requirements | With Report | With Thesis | Course Work Only |
|---|---|---|---|
| Required core courses | 12 SH | 12 SH | 12 SH |
| Elective courses | 16 SH | 12 SH | 20 SH |
| Master of Science report/thesis | 4 SH | 8 SH | |
| **Minimum semester hours required** | **32 SH** | **32 SH** | **32 SH** |

## MSCivE—Master of Science in Civil Engineering with Concentration in Environmental Engineering— Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7250 Environmental Chemistry | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |
| CIVE 7260 Hydrology | 4 SH |
| Course work from the list "Environmental Course Option Electives," below | 20 SH |

### PROGRAM TOTAL CREDITS   32.0 SH

### ENVIRONMENTAL COURSE OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| CIVE 5271 Solid and Hazardous Waste Management | 4 SH |
| CIVE 5321 Geoenvironmental Engineering | 4 SH |
| CIVE 5536 Hydrologic Engineering | 4 SH |
| CIVE 7252 Water and Wastewater Treatment Processes | 4 SH |
| CIVE 7261 Surface Water Hydraulics and Quality Modeling | 4 SH |
| CIVE 7263 Groundwater Hydraulics and Quality Modeling | 4 SH |
| CIVE 7322 Engineering Geology | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Environmental Engineering— Report Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7250 Environmental Chemistry | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |
| CIVE 7260 Hydrology | 4 SH |
| CIVE 8674 Master's Report | 4 SH |
| Course work from the list "Environmental Report Option Electives," below | 16 SH |

### PROGRAM TOTAL CREDITS   32.0 SH

### ENVIRONMENTAL REPORT OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| CIVE 5271 Solid and Hazardous Waste Management | 4 SH |
| CIVE 5321 Geoenvironmental Engineering | 4 SH |
| CIVE 5536 Hydrologic Engineering | 4 SH |
| CIVE 7252 Water and Wastewater Treatment Processes | 4 SH |
| CIVE 7261 Surface Water Hydraulics and Quality Modeling | 4 SH |
| CIVE 7263 Groundwater Hydraulics and Quality Modeling | 4 SH |
| CIVE 7322 Engineering Geology | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Environmental Engineering— Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7250 Environmental Chemistry | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |
| CIVE 7260 Hydrology | 4 SH |
| CIVE 7990 MS Thesis | 8 SH |
| Course work from the list "Environmental Thesis Option Electives," below | 12 SH |

### PROGRAM TOTAL CREDITS   32.0 SH

### ENVIRONMENTAL THESIS OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| CIVE 5271 Solid and Hazardous Waste Management | 4 SH |
| CIVE 5321 Geoenvironmental Engineering | 4 SH |
| CIVE 5536 Hydrologic Engineering | 4 SH |
| CIVE 7252 Water and Wastewater Treatment Processes | 4 SH |
| CIVE 7261 Surface Water Hydraulics and Quality Modeling | 4 SH |
| CIVE 7263 Groundwater Hydraulics and Quality Modeling | 4 SH |
| CIVE 7322 Engineering Geology | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |

Students may choose the remaining 12–20 semester hours of elective course work from the list above. In addition, students may take courses outside this list with the approval of their advisor.

## Master's Degree in Civil Engineering with Concentration in Geotechnical/Geoenvironmental Engineering

This program includes study in the areas of soil mechanics/foundations and geoenvironmental engineering.

| Degree Requirements | With Report | With Thesis | Course Work Only |
|---|---|---|---|
| Required core courses | 8 SH | 8 SH | 8 SH |
| Elective courses | 20 SH | 16 SH | 24 SH |
| Master of Science report/thesis | 4 SH | 8 SH | |
| **Minimum semester hours required** | **32 SH** | **32 SH** | **32 SH** |

## MSCivE—Master of Science in Civil Engineering with Concentration in Geotechnical/Geoenvironmental Engineering—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7301 Advanced Soil Mechanics | 4 SH |
| CIVE 7302 Advanced Foundation Engineering | 4 SH |
| Course work from the list "Geotechnical/Geoenvironmental Course Option Electives," below | 24 SH |

| **PROGRAM TOTAL CREDITS** | **32.0 SH** |
|---|---|

### GEOTECHNICAL/GEOENVIRONMENTAL COURSE OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| CIVE 5271 Solid and Hazardous Waste Management | 4 SH |
| CIVE 5321 Geoenvironmental Engineering | 4 SH |
| CIVE 5536 Hydrologic Engineering | 4 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| CIVE 7240 Construction Equipment and Modeling | 4 SH |
| CIVE 7250 Environmental Chemistry | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |
| CIVE 7260 Hydrology | 4 SH |
| CIVE 7263 Groundwater Hydraulics and Quality Modeling | 4 SH |
| CIVE 7303 Geotechnical Instrumentation | 2 SH |
| CIVE 7311 Soil and Foundation Dynamics | 4 SH |
| CIVE 7312 Earthquake Engineering | 4 SH |
| CIVE 7322 Engineering Geology | 4 SH |
| CIVE 7330 Advanced Structural Analysis | 4 SH |
| CIVE 7331 Structural Dynamics | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| ME 5657 Finite Element Method | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Geotechnical/Geoenvironmental Engineering—Report Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7301 Advanced Soil Mechanics | 4 SH |
| CIVE 7302 Advanced Foundation Engineering | 4 SH |
| CIVE 8674 Master's Report | 4 SH |
| Course work from the list "Geotechnical/Geoenvironmental Report Option Electives," below | 20 SH |

| **PROGRAM TOTAL CREDITS** | **32.0 SH** |
|---|---|

### GEOTECHNICAL/GEOENVIRONMENTAL REPORT OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| CIVE 5271 Solid and Hazardous Waste Management | 4 SH |
| CIVE 5321 Geoenvironmental Engineering | 4 SH |
| CIVE 5536 Hydrologic Engineering | 4 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| CIVE 7240 Construction Equipment and Modeling | 4 SH |
| CIVE 7250 Environmental Chemistry | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |
| CIVE 7260 Hydrology | 4 SH |
| CIVE 7263 Groundwater Hydraulics and Quality Modeling | 4 SH |
| CIVE 7303 Geotechnical Instrumentation | 2 SH |
| CIVE 7311 Soil and Foundation Dynamics | 4 SH |
| CIVE 7312 Earthquake Engineering | 4 SH |
| CIVE 7322 Engineering Geology | 4 SH |
| CIVE 7330 Advanced Structural Analysis | 4 SH |
| CIVE 7331 Structural Dynamics | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| ME 5657 Finite Element Method | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Geotechnical/Geoenvironmental Engineering—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7301 Advanced Soil Mechanics | 4 SH |
| CIVE 7302 Advanced Foundation Engineering | 4 SH |
| CIVE 7990 MS Thesis | 8 SH |
| Course work from the list "Geotechnical/Geoenvironmental Thesis Option Electives," below | 16 SH |

| **PROGRAM TOTAL CREDITS** | **32.0 SH** |
|---|---|

## GEOTECHNICAL/GEOENVIRONMENTAL THESIS OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| CIVE 5271 Solid and Hazardous Waste Management | 4 SH |
| CIVE 5321 Geoenvironmental Engineering | 4 SH |
| CIVE 5536 Hydrologic Engineering | 4 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| CIVE 7240 Construction Equipment and Modeling | 4 SH |
| CIVE 7250 Environmental Chemistry | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |
| CIVE 7260 Hydrology | 4 SH |
| CIVE 7263 Groundwater Hydraulics and Quality Modeling | 4 SH |
| CIVE 7303 Geotechnical Instrumentation | 2 SH |
| CIVE 7311 Soil and Foundation Dynamics | 4 SH |
| CIVE 7312 Earthquake Engineering | 4 SH |
| CIVE 7322 Engineering Geology | 4 SH |
| CIVE 7330 Advanced Structural Analysis | 4 SH |
| CIVE 7331 Structural Dynamics | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| ME 5657 Finite Element Method | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |

The CEE department also encourages geotechnical/geoenvironmental engineering students to choose elective courses from the structural engineering program.

## Master's Degree in Civil Engineering with Concentration in Structures

This program is designed for students with career goals in structural engineering and structural design. The program includes courses in structural analysis and design, structural mechanics, dynamics of structures, earthquake engineering, wind engineering, and structural health monitoring.

| Degree Requirements | With Report | With Thesis | Course Work Only |
|---|---|---|---|
| Required core courses | 8 SH | 8 SH | 8 SH |
| Restricted electives | 12 SH | 12 SH | 12 SH |
| Other electives | 8 SH | 4 SH | 12 SH |
| Master of Science report/thesis | 4 SH | 8 SH | |
| **Minimum semester hours required** | **32 SH** | **32 SH** | **32 SH** |

## MSCivE—Master of Science in Civil Engineering with Concentration in Structures—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7330 Advanced Structural Analysis | 4 SH |
| CIVE 7331 Structural Dynamics | 4 SH |
| Course work from the list "Restricted Electives," below | 12 SH |
| Course work from the list "Structures Course Option Electives," below | 12 SH |

### PROGRAM TOTAL CREDITS                    32.0 SH

## RESTRICTED ELECTIVES

| | |
|---|---|
| CIVE 5522 Structural Analysis 2 | 4 SH |
| CIVE 7340 Seismic Analysis and Design | 4 SH |
| CIVE 7341 Structural Reliability | 4 SH |
| CIVE 7342 System Identification | 4 SH |
| CIVE 7350 Behavior of Concrete Structures | 4 SH |
| CIVE 7351 Behavior of Steel Structures | 4 SH |
| CIVE 7354 Wind Engineering | 4 SH |
| CIVE 7355 Advanced Bridge Design | 4 SH |

## STRUCTURES COURSE OPTION ELECTIVES

| | |
|---|---|
| MATH 7241 Probability 1 | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7343 Applied Statistics | 4 SH |
| MATL 7365 Properties and Processing of Electronic Materials | 4 SH |
| ME 5240 Computer Aided Design and Manufacturing | 4 SH |
| ME 5650 Advanced Mechanics of Materials | 4 SH |
| ME 5655 Dynamics and Mechanical Vibration | 4 SH |
| ME 5657 Finite Element Method | 4 SH |
| ME 5659 Control and Mechatronics | 4 SH |
| ME 6200 Mathematical Methods for Mechanical Engineers 1 | 4 SH |
| ME 6201 Mathematical Methods for Mechanical Engineers 2 | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |
| ME 7210 Elasticity and Plasticity | 4 SH |
| ME 7232 Theory of Plates and Shells | 4 SH |
| ME 7238 Advanced Finite Element Method | 4 SH |
| ME 7245 Fracture Mechanics and Failure Analysis | 4 SH |
| ME 7255 Continuum Mechanics | 4 SH |

## MSCivE in Civil Engineering with Concentration in Structures—Report Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7330 Advanced Structural Analysis | 4 SH |
| CIVE 7331 Structural Dynamics | 4 SH |
| CIVE 8674 Master's Report | 4 SH |
| Course work from the list "Restricted Electives," below | 12 SH |
| Course work from the list "Structures Report Option Electives," below | 8 SH |

### PROGRAM TOTAL CREDITS                    32.0 SH

### RESTRICTED ELECTIVES

| | |
|---|---|
| CIVE 5522 Structural Analysis 2 | 4 SH |
| CIVE 7340 Seismic Analysis and Design | 4 SH |
| CIVE 7341 Structural Reliability | 4 SH |
| CIVE 7342 System Identification | 4 SH |
| CIVE 7350 Behavior of Concrete Structures | 4 SH |
| CIVE 7351 Behavior of Steel Structures | 4 SH |
| CIVE 7354 Wind Engineering | 4 SH |
| CIVE 7355 Advanced Bridge Design | 4 SH |

### STRUCTURES REPORT OPTION ELECTIVES

| | |
|---|---|
| MATH 7241 Probability 1 | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7343 Applied Statistics | 4 SH |
| MATL 7365 Properties and Processing of Electronic Materials | 4 SH |
| ME 5240 Computer Aided Design and Manufacturing | 4 SH |
| ME 5650 Advanced Mechanics of Materials | 4 SH |
| ME 5655 Dynamics and Mechanical Vibration | 4 SH |
| ME 5657 Finite Element Method | 4 SH |
| ME 5659 Control and Mechatronics | 4 SH |
| ME 6200 Mathematical Methods for Mechanical Engineers 1 | 4 SH |
| ME 6201 Mathematical Methods for Mechanical Engineers 2 | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |
| ME 7210 Elasticity and Plasticity | 4 SH |
| ME 7232 Theory of Plates and Shells | 4 SH |
| ME 7238 Advanced Finite Element Method | 4 SH |
| ME 7245 Fracture Mechanics and Failure Analysis | 4 SH |
| ME 7255 Continuum Mechanics | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Structures—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7330 Advanced Structural Analysis | 4 SH |
| CIVE 7331 Structural Dynamics | 4 SH |
| CIVE 7990 MS Thesis | 8 SH |
| Course work from the list "Restricted Electives," below | 12 SH |
| Course work from the list "Structures Thesis Option Electives," below | 4 SH |

### PROGRAM TOTAL CREDITS                     32.0 SH

### RESTRICTED ELECTIVES

| | |
|---|---|
| CIVE 5522 Structural Analysis 2 | 4 SH |
| CIVE 7340 Seismic Analysis and Design | 4 SH |
| CIVE 7341 Structural Reliability | 4 SH |
| CIVE 7342 System Identification | 4 SH |
| CIVE 7350 Behavior of Concrete Structures | 4 SH |
| CIVE 7351 Behavior of Steel Structures | 4 SH |
| CIVE 7354 Wind Engineering | 4 SH |
| CIVE 7355 Advanced Bridge Design | 4 SH |

### STRUCTURES THESIS OPTION ELECTIVES

| | |
|---|---|
| MATH 7241 Probability 1 | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7343 Applied Statistics | 4 SH |
| MATL 7365 Properties and Processing of Electronic Materials | 4 SH |
| ME 5240 Computer Aided Design and Manufacturing | 4 SH |
| ME 5650 Advanced Mechanics of Materials | 4 SH |
| ME 5655 Dynamics and Mechanical Vibration | 4 SH |
| ME 5657 Finite Element Method | 4 SH |

| | |
|---|---|
| ME 5659 Control and Mechatronics | 4 SH |
| ME 6200 Mathematical Methods for Mechanical Engineers 1 | 4 SH |
| ME 6201 Mathematical Methods for Mechanical Engineers 2 | 4 SH |
| ME 7205 Advanced Mathematical Methods for Mechanical Engineers | 4 SH |
| ME 7210 Elasticity and Plasticity | 4 SH |
| ME 7232 Theory of Plates and Shells | 4 SH |
| ME 7238 Advanced Finite Element Method | 4 SH |
| ME 7245 Fracture Mechanics and Failure Analysis | 4 SH |
| ME 7255 Continuum Mechanics | 4 SH |

## Master's Degree in Civil Engineering with Concentration in Transportation

This program is designed for students with career goals in transportation engineering and transportation planning. Core courses in transportation planning and engineering are supported by related courses in applied mathematics, engineering, economics, policy, and management.

| Degree Requirements | With Report | With Thesis | Course Work Only |
|---|---|---|---|
| Required core courses | 12 SH | 12 SH | 12 SH |
| Restricted electives | 8 SH | 8 SH | 12 SH |
| Other electives | 8 SH | 4 SH | 8 SH |
| Master of Science report/thesis | 4 SH | 8 SH | |
| **Minimum semester hours required** | **32 SH** | **32 SH** | **32 SH** |

## MSCivE—Master of Science in Civil Engineering with Concentration in Transportation— Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 5373 Transportation Planning and Engineering | 4 SH |
| CIVE 5376 Traffic Engineering | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| Course work from the list "Restricted Electives," below | 12 SH |
| Two approved electives | 8 SH |

### PROGRAM TOTAL CREDITS                     32.0 SH

### RESTRICTED ELECTIVES

| | |
|---|---|
| CIVE 7380 Traffic Simulation, Performance Models, and Signal Control | 4 SH |
| CIVE 7381 Transportation Demand Models | 4 SH |
| CIVE 7385 Public Transportation | 4 SH |
| CIVE 7387 Design Aspects of Roadway Safety | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Transportation—Report Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 5373 Transportation Planning and Engineering | 4 SH |
| CIVE 5376 Traffic Engineering | 4 SH |
| CIVE 8674 Master's Report | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| Course work from the list "Restricted Electives," below | 8 SH |
| Two approved electives | 8 SH |

### PROGRAM TOTAL CREDITS 32.0 SH

### RESTRICTED ELECTIVES

| | |
|---|---|
| CIVE 7380 Traffic Simulation, Performance Models, and Signal Control | 4 SH |
| CIVE 7381 Transportation Demand Models | 4 SH |
| CIVE 7385 Public Transportation | 4 SH |
| CIVE 7387 Design Aspects of Roadway Safety | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |

## MSCivE—Master of Science in Civil Engineering with Concentration in Transportation—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 5373 Transportation Planning and Engineering | 4 SH |
| CIVE 5376 Traffic Engineering | 4 SH |
| CIVE 7990 MS Thesis | 8 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| Course work from the list "Restricted Electives," below | 8 SH |
| Approved elective | 4 SH |

### PROGRAM TOTAL CREDITS 32.0 SH

### RESTRICTED ELECTIVES

| | |
|---|---|
| CIVE 7380 Traffic Simulation, Performance Models, and Signal Control | 4 SH |
| CIVE 7381 Transportation Demand Models | 4 SH |
| CIVE 7385 Public Transportation | 4 SH |
| CIVE 7387 Design Aspects of Roadway Safety | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |

## Master's Degree in Civil Engineering with Graduate Certificate in Engineering Leadership

The department also offers a Master of Science degree in civil engineering with a graduate certificate in engineering leadership from the Gordon Leadership Program. Students pursuing this degree must complete 16 semester hours of course work in the Gordon Leadership Program and 16–18 semester hours of course work in a civil engineering discipline (construction management, environmental engineering, geotechnical/geoenvironmental engineering, structural engineering, or transportation engineering). For some civil engineering disciplines, a petition is required to include course work from the Gordon Leadership Program in lieu of civil engineering restricted electives. All students complete the following Gordon Engineering Leadership Program requirements.

## MSCivE—Master of Science in Civil Engineering with Graduate Certificate in Engineering Leadership with Concentration in Construction Management

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7220 Construction Management | 4 SH |
| CIVE 7221 Construction Project Control and Organization | 2 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |

### PROGRAM TOTAL CREDITS 34.0 SH

## MSCivE—Master of Science in Civil Engineering with Graduate Certificate in Engineering Leadership with Concentration in Environmental Engineering

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7250 Environmental Chemistry | 4 SH |
| CIVE 7251 Environmental Biological Processes | 4 SH |
| CIVE 7260 Hydrology | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| Advisor-approved CIVE course | 4 SH |

### PROGRAM TOTAL CREDITS 32.0 SH

## MSCivE—Master of Science in Civil Engineering with Graduate Certificate in Engineering Leadership with Concentration in Geotechnical/ Geoenvironmental Engineering

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7301 Advanced Soil Mechanics | 4 SH |
| CIVE 7302 Advanced Foundation Engineering | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| Advisor-approved CIVE restricted electives | 8 SH |

### PROGRAM TOTAL CREDITS          32.0 SH

## MSCivE—Master of Science in Civil Engineering with Graduate Certificate in Engineering Leadership with Concentration in Structures

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 7330 Advanced Structural Analysis | 4 SH |
| CIVE 7331 Structural Dynamics | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| Advisor-approved CIVE restricted electives | 8 SH |

### PROGRAM TOTAL CREDITS          32.0 SH

## MSCivE—Master of Science in Civil Engineering with Graduate Certificate in Engineering Leadership with Concentration in Transportation

### GENERAL REQUIREMENTS

| | |
|---|---|
| CIVE 5373 Transportation Planning and Engineering | 4 SH |
| CIVE 5376 Traffic Engineering | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| Advisor-approved CIVE restricted elective | 4 SH |

### PROGRAM TOTAL CREDITS          32.0 SH

## PhD in Civil Engineering

Award of the Doctor of Philosophy degree is based on exceptional performance in course work as well as evidence of ability to formulate and execute original research. The PhD program has two components: (1) An academic program of graduate-level courses that provides depth in a specific area of civil engineering (the major field) as well as other course work that provides additional exposure at an advanced level to one or more disciplines; and (2) the dissertation, an extended independent research effort on a relevant technical problem resulting in an original contribution to the field.

Each student's mastery of subject matter is measured by a qualifying examination covering a subset of subjects selected from the major field. A doctoral dissertation committee periodically monitors research progress, and the candidate is required to present and defend his or her research results before an expanded group of faculty and research staff upon completion of the work.

The doctoral program is deliberately designed to be flexible with respect to subject area. Since the PhD is primarily a research degree, the program must be adaptable to changes in research needs.

### QUALIFYING EXAMINATION AND DEGREE CANDIDACY

The qualifying exam includes written and oral components. Its content depends upon the educational background and objectives of the student. In general, the written component covers subject matter at the master's degree level selected from the major field and includes basic engineering and science disciplines, as well as civil engineering application areas. The oral component measures general comprehension and aptitude for research. If a student fails the exam, he or she may retake it one time with the permission of the qualifying examination committee.

Students must take the qualifying exam during the first 18 months of their PhD program. PhD students who start their graduate program at Northeastern with a BS degree shall take the qualifying exam within the first 30 months after entering the program. Upon successful completion of the exam, the student is classified as a doctoral candidate.

### DISSERTATION

Once degree candidacy is established, a doctoral candidate may proceed with his or her dissertation. The candidate must write a dissertation proposal and name a civil and environmental engineering faculty member as the dissertation advisor. A dissertation committee formed by the student and his or her dissertation advisor will monitor progress and approve the final document. The dissertation committee shall have no fewer than four members, at least two of whom must be full-time faculty from the CEE department. Each doctoral candidate must defend his or her dissertation within seven years from the start of the PhD program.

### COURSE REQUIREMENTS

Each student, along with a faculty advisor, must jointly develop a proposal defining the content of the academic program, subject to review by the qualifying examination committee. Intellectual rigor, connectivity of subject matter, and compatibility with

departmental interests are critical issues. The qualifying exam committee's approval of the proposal represents a mutual agreement between the student and the committee. The CEE department encourages flexibility in program definition, especially in areas where complementary courses exist in other departments or where expertise resides outside the department and where the objective is to introduce new technology in civil engineering practice.

The academic program must include at least 52 semester hours of graduate-level course work beyond the bachelor's degree. Students with a master's degree in civil engineering must complete a minimum of 20 semester hours of course work at Northeastern University.

A student may count no more than 4 semester hours of independent study (such as special project in civil engineering) toward the minimum course requirements. A minimum of 40 semester hours must be related to the major field but may include courses from other departments when appropriate.

Upon successful completion of the qualifying exam and the majority of required course work, each doctoral candidate must register in two consecutive semesters for CIVE 9990 Dissertation. Upon completion of this sequence, the candidate must register for CIVE 9996 Dissertation Continuation in every semester until the dissertation is complete. Students may not register for Continuation until they fulfill the two-semester dissertation sequence.

### RESIDENCE REQUIREMENT

After achieving PhD candidacy, students must complete at least two successive semesters of full-time study on campus to establish residence. The total effort for a PhD program involves a minimum of three years of full-time work beyond the bachelor's degree. Students who enter the doctoral program with a Master of Science degree may complete the requirements in less time but should anticipate at least two years of full-time effort.

### LANGUAGE REQUIREMENT

Each doctoral candidate must be proficient in technical writing and oral presentation in the English language. The qualifying examination committee may require additional course work in the case of any deficiency in these areas.

### COMPREHENSIVE EXAMINATION

The comprehensive exam is a defense of the doctoral research work and an examination on subject matter related to the dissertation area.

## PhD in Civil Engineering— Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Required course work | 20 SH |
| CIVE 9990 Dissertation | 0 SH |
| **PROGRAM TOTAL CREDITS** | **20.0 SH** |

## PhD in Civil Engineering— Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Required course work | 52 SH |
| CIVE 9990 Dissertation | 0 SH |
| **PROGRAM TOTAL CREDITS** | **52.0 SH** |

<div style="background:#cc0000;color:white;padding:4px">COMPUTER SYSTEMS ENGINEERING</div>

**www.coe.neu.edu/programs/cse**

KAL BUGRARA, PHD
*Program Director*

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The Master of Science in Computer Systems Engineering degree is offered by the Department of Electrical and Computer Engineering and may be pursued on a full- or part-time basis.

Graduates of the program have been very successful in obtaining employment during the last 10 years. Many have chosen to work in the Boston area, which has a large number of companies that employ software developers. Graduates of the program have also obtained employment in the New York City area; Washington, D.C.; Silicon Valley, including San Francisco; Seattle (Washington); and several cities in Texas. We expect the employment opportunities for our graduates to remain high.

## MSCSE—Master of Science in Computer Systems Engineering with Concentration in Engineering Software Design—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CSYE 6205 Concepts of Object-Oriented Design with C++ | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| Course work from the list "Approved Electives," below | 20 SH |

**PROGRAM TOTAL CREDITS**     **32.0 SH**

### APPROVED ELECTIVES

| | |
|---|---|
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 7215 Foundations of Parallel, Concurrent, and Multithreaded Programming | 4 SH |
| CSYE 7225 Mobile Wireless Computing | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| CSYE 7374 Special Topics in Computer Systems Engineering | 4 SH |
| CSYE 7978 Independent Study | 1 to 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| INFO 5100 Application Engineering and Development | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6220 Operating Systems | 4 SH |
| INFO 6225 Networks, Telecommunications, and Distributed Systems | 4 SH |
| INFO 6240 C++ Object-Oriented Design | 4 SH |
| INFO 6250 Web Development Tools and Methods | 4 SH |
| INFO 7275 Advanced Database Management Systems | 4 SH |
| INFO 7285 Organizational Change and IT | 4 SH |
| INFO 7300 Engineering Secure Software Systems | 4 SH |

## MSCSE—Master of Science in Computer Systems Engineering with Concentration in Engineering Software Design—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CSYE 6205 Concepts of Object-Oriented Design with C++ | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| CSYE 7990 MS Thesis | 8 SH |
| Course work from the list "Approved Electives," below | 12 SH |

**PROGRAM TOTAL CREDITS**     **32.0 SH**

### APPROVED ELECTIVES

| | |
|---|---|
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 7215 Foundations of Parallel, Concurrent, and Multithreaded Programming | 4 SH |
| CSYE 7225 Mobile Wireless Computing | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| CSYE 7374 Special Topics in Computer Systems Engineering | 4 SH |
| CSYE 7978 Independent Study | 1 to 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| INFO 5100 Application Engineering and Development | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6220 Operating Systems | 4 SH |
| INFO 6225 Networks, Telecommunications, and Distributed Systems | 4 SH |
| INFO 6240 C++ Object-Oriented Design | 4 SH |
| INFO 6250 Web Development Tools and Methods | 4 SH |
| INFO 7275 Advanced Database Management Systems | 4 SH |
| INFO 7285 Organizational Change and IT | 4 SH |
| INFO 7300 Engineering Secure Software Systems | 4 SH |

## MSCSE—Master of Science in Computer Systems Engineering with Graduate Certificate in Engineering Leadership with Concentration in Engineering Software Design

### GENERAL REQUIREMENTS

| | |
|---|---|
| CSYE 6205 Concepts of Object-Oriented Design with C++ | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |

ENLR 5132 Scientific Foundations of Engineering 2     2 SH

ENLR 7440 Engineering Leadership Challenge     4 SH
    Project 1

ENLR 7442 Engineering Leadership Challenge     4 SH
    Project 2

Course work from the list "Approved Electives," below     4 SH

**PROGRAM TOTAL CREDITS**     **32.0 SH**

### APPROVED ELECTIVES

| | |
|---|---|
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 7215 Foundations of Parallel, Concurrent, and Multithreaded Programming | 4 SH |
| CSYE 7225 Mobile Wireless Computing | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| CSYE 7374 Special Topics in Computer Systems Engineering | 4 SH |
| CSYE 7978 Independent Study | 1 to 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| INFO 5100 Application Engineering and Development | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6220 Operating Systems | 4 SH |
| INFO 6225 Networks, Telecommunications, and Distributed Systems | 4 SH |
| INFO 6240 C++ Object-Oriented Design | 4 SH |
| INFO 6250 Web Development Tools and Methods | 4 SH |
| INFO 7275 Advanced Database Management Systems | 4 SH |
| INFO 7285 Organizational Change and IT | 4 SH |
| INFO 7300 Engineering Secure Software Systems | 4 SH |

## ELECTRICAL AND COMPUTER ENGINEERING

**www.ece.neu.edu**

SHEILA S. HEMAMI, PHD
*Professor and Chair*

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The Department of Electrical and Computer Engineering (ECE) offers the following graduate degree programs:

- Master of Science in Electrical and Computer Engineering (MSECE)
- Master of Science in Electrical and Computer Engineering Leadership (MSECEL)
- Doctor of Philosophy in Computer Engineering (PhD)
- Doctor of Philosophy in Electrical Engineering (PhD)

All degrees can be pursued on either a full or part-time basis consistent with residence requirements for the degrees. The curriculum includes areas of concentration in communications, control, and signal processing; computer engineering; electromagnetics, plasma, and optics; microsystems, materials, and devices; and power systems, power electronics, and motion control.

MSECE students pursue their degree by selecting one of the two tracks—MSECE with thesis and course track (MS/T) or MSECE course-only track (MS/C). Students in all master's degree programs must complete a minimum of 32 semester hours of approved course work (exclusive of any preparatory courses) with a minimum GPA of 3.000. Full-time students are responsible for meeting with their faculty academic or research advisor early in their program of study to determine an appropriate sequence of course work. Part-time students should follow the curriculum requirements and confer with their faculty academic advisor as needed.

### Master of Science Degree Requirements

Students must complete a minimum of 32 semester hours of approved course work with a minimum GPA of 3.000. MS/T track students must complete an 8-semester-hour thesis as part of their program of study.

Students who select the MS/T track must form a thesis committee comprised of at least three members. The thesis committee must include the thesis advisor and at least two members must be ECE faculty. The student shall present the thesis to this committee and to the ECE department at-large in the form of a seminar before final approval of the thesis.

The ECE department requires the master's degree students who hold research or teaching assistantships to register full-time.

## Doctor of Philosophy Degree Requirements

The ECE department offers doctoral degree programs both in electrical and in computer engineering.

### QUALIFYING EXAM AND DEGREE CANDIDACY

The PhD qualifying exam is the examination for admissions to the doctoral programs in electrical engineering and in computer engineering. It is a written exam in the student's major area, and some areas include an oral exam. The exam has the dual purposes of serving as an indicator of the student's capability for successful completion of the PhD in Electrical Engineering or in Computer Engineering and of serving as a guide to the student's advisor in developing a suitable plan of study, tailored to the individual needs of the student. Students are tested on graduate course material as specified by the faculty in the chosen area.

A student who has matriculated in the PhD program is considered a predoctoral student. Upon successful completion of the qualifying exam, the student is designated a PhD candidate. All predoctoral students who hold a master's degree or its equivalent must take this exam in the spring semester of their first academic year of study. A student who fails the qualifying exam will be permitted to retake the exam only one more time.

### RESIDENCE REQUIREMENT

After reaching PhD candidacy, one year of full-time graduate work or two consecutive years of part-time graduate work satisfy the university residence requirement. In the latter case, the student's advisor must approve a detailed schedule in order to ensure that the student devotes at least half of the time to the requirements of the Graduate School of Engineering.

### DISSERTATION

After passing the PhD qualifying exam, the PhD candidate must form a dissertation committee. A dissertation committee must have at least three members. At least two of the committee members must be full-time ECE faculty, and the committee must include the student's advisor. The chair of the committee must be a faculty member in the ECE department.

The dissertation committee must design an appropriate program of study that prepares the student to be a successful doctoral-level engineer as well as direct the candidate's dissertation research. The dissertation committee will approve the dissertation in final form.

### DISSERTATION AND DISSERTATION CONTINUATION REGISTRATION

Upon successful completion of the PhD qualifying exam and the majority of required course work, the PhD candidate must register in two consecutive semesters for Dissertation. Upon completion of this sequence, the student must register for Dissertation Continuation in every semester until the dissertation is completed. A student may not register for Continuation until he or she fulfills the two-semester sequence of Dissertation.

### REGISTRATION REQUIREMENTS FOR PRE-DOCTORAL AND PHD CANDIDATE GRADUATE ASSISTANTS

The ECE department requires that predoctoral students and PhD candidates who hold research or teaching assistantships be registered full-time. Predoctoral PhD students may register for EECE 9986 Research (0 credit, full-time equivalent) *if needed* to fulfill the registration requirement.

### COMPREHENSIVE EXAM/PROPOSAL STAGE

Within three years of the establishment of degree candidacy, each PhD candidate must demonstrate, by means of comprehensive exam, subject matter knowledge satisfactory for the award of the degree.

The comprehensive exam is an oral exam administered by the student's dissertation advisor/committee. Normally, the exam will be given at the time the student submits his or her dissertation proposal to the dissertation advisor/committee for approval. As part of this exam, the dissertation advisor/committee will review the student's doctoral program and his or her performance in graduate courses, as well as examine the student on subject matter related to his or her graduate course work and dissertation subject area.

### FINAL DISSERTATION DEFENSE

The final dissertation defense will include the subject matter of the dissertation and significant developments in the field of the dissertation work. Other related fields may be included if recommended by the examining faculty.

## Electrical and Computer Engineering PhD Course Requirements

The student and his or her dissertation committee determine the program of study. A typical program comprises 24 semester hours of course work beyond the Master of Science degree. However, as a minimum, the PhD program must include at least 16 semester hours of graduate course work beyond the Master of Science degree. At least 8 semester hours of the PhD course requirements must be graduate-level ECE courses. All students must achieve a minimum cumulative GPA of 3.000.

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Communications, Control, and Signal Processing (CCSP)—Course Work Option

### GENERAL REQUIREMENTS

The program requires 32 SH of graduate-level courses. At least five of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 24 SH of the 32 required SH must be graduate-level ECE courses.

## APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5576 Wireless Communication Systems | 4 SH |
| EECE 5580 Classical Control Systems | 4 SH |
| EECE 5610 Digital Control Systems | 4 SH |
| EECE 5639 Computer Vision | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| EECE 5666 Digital Signal Processing | 4 SH |
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| EECE 7204 Applied Probability and Stochastic Processes | 4 SH |
| EECE 7211 Nonlinear Control | 4 SH |
| EECE 7212 Multivariable Control Systems | 4 SH |
| EECE 7213 System Identification and Adaptive Control | 4 SH |
| EECE 7214 Optimal and Robust Control | 4 SH |
| EECE 7236 Special Topics in Control | 4 SH |
| EECE 7242 Integrated Circuits for Communications and Mixed-Signal Processing | 4 SH |
| EECE 7245 Microwave Circuit Design for Wireless Communication | 4 SH |
| EECE 7293 Modern Imaging | 4 SH |
| EECE 7310 Modern Signal Processing | 4 SH |
| EECE 7311 Two Dimensional Signal and Image Processing | 4 SH |
| EECE 7312 Statistical and Adaptive Signal Processing | 4 SH |
| EECE 7313 Pattern Recognition | 4 SH |
| EECE 7315 Digital Image Processing | 4 SH |
| EECE 7323 Numerical Optimization Methods | 4 SH |
| EECE 7327 Special Topics in Signal Processing 1 | 4 SH |
| EECE 7328 Special Topics in Signal Processing 2 | 4 SH |
| EECE 7329 Special Topics in Signal Processing 3 | 4 SH |
| EECE 7332 Error Correcting Codes | 4 SH |
| EECE 7334 Wireless Communications | 4 SH |
| EECE 7335 Detection and Estimation Theory | 4 SH |
| EECE 7336 Digital Communications | 4 SH |
| EECE 7337 Information Theory | 4 SH |
| EECE 7340 Broadband Communications Networks | 4 SH |
| EECE 7347 Special Topics in Communications 1 | 4 SH |
| EECE 7348 Special Topics in Communications 2 | 4 SH |
| EECE 7349 Special Topics in Communications 3 | 4 SH |
| EECE 7364 Mobile and Wireless Networking | 4 SH |
| EECE 7398 Special Topics | 4 SH |

**PROGRAM TOTAL CREDITS**   **32.0 SH**

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Communications, Control, and Signal Processing (CCSP)—Thesis Option

### GENERAL REQUIREMENTS

The program requires 24 SH of graduate-level courses. At least three of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 16 SH of the required 24 SH must be graduate-level ECE courses. In addition, the program requires 8 SH of EECE 7990 (MS Thesis).

### APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5576 Wireless Communication Systems | 4 SH |
| EECE 5580 Classical Control Systems | 4 SH |
| EECE 5610 Digital Control Systems | 4 SH |
| EECE 5639 Computer Vision | 4 SH |
| EECE 5664 Biomedical Signal Processing | 4 SH |
| EECE 5666 Digital Signal Processing | 4 SH |
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| EECE 7204 Applied Probability and Stochastic Processes | 4 SH |
| EECE 7211 Nonlinear Control | 4 SH |
| EECE 7212 Multivariable Control Systems | 4 SH |
| EECE 7213 System Identification and Adaptive Control | 4 SH |
| EECE 7214 Optimal and Robust Control | 4 SH |
| EECE 7236 Special Topics in Control | 4 SH |
| EECE 7242 Integrated Circuits for Communications and Mixed-Signal Processing | 4 SH |
| EECE 7245 Microwave Circuit Design for Wireless Communication | 4 SH |
| EECE 7293 Modern Imaging | 4 SH |
| EECE 7310 Modern Signal Processing | 4 SH |
| EECE 7311 Two Dimensional Signal and Image Processing | 4 SH |
| EECE 7312 Statistical and Adaptive Signal Processing | 4 SH |
| EECE 7313 Pattern Recognition | 4 SH |
| EECE 7315 Digital Image Processing | 4 SH |
| EECE 7323 Numerical Optimization Methods | 4 SH |
| EECE 7327 Special Topics in Signal Processing 1 | 4 SH |
| EECE 7328 Special Topics in Signal Processing 2 | 4 SH |
| EECE 7329 Special Topics in Signal Processing 3 | 4 SH |
| EECE 7332 Error Correcting Codes | 4 SH |
| EECE 7334 Wireless Communications | 4 SH |
| EECE 7335 Detection and Estimation Theory | 4 SH |
| EECE 7336 Digital Communications | 4 SH |
| EECE 7337 Information Theory | 4 SH |
| EECE 7340 Broadband Communications Networks | 4 SH |
| EECE 7347 Special Topics in Communications 1 | 4 SH |

| EECE 7348 Special Topics in Communications 2 | 4 SH |
|---|---|
| EECE 7349 Special Topics in Communications 3 | 4 SH |
| EECE 7364 Mobile and Wireless Networking | 4 SH |
| EECE 7398 Special Topics | 4 SH |

**PROGRAM TOTAL CREDITS**      **32.0 SH**

## EXCLUDED COURSES FOR COMMUNICATIONS, CONTROL, AND SIGNAL PROCESSING

All courses offered by the professional master's programs (computer systems engineering, energy systems, engineering management, information systems, sustainable building systems, and telecommunication systems management) except those explicitly included in "approved courses" of one of the ECE concentrations.

# MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Computer Engineering (COMP)—Course Work Option

## GENERAL REQUIREMENTS

The program requires 32 SH of graduate-level courses. At least five of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 20 SH of the required 32 SH must be graduate-level ECE courses.

## APPROVED CONCENTRATION COURSES

| CS 5100 Foundations of Artificial Intelligence | 4 SH |
|---|---|
| CS 5200 Database Management Systems | 4 SH |
| CS 5210 Implementation of Database Management Systems | 4 SH |
| CS 5310 Computer Graphics | 4 SH |
| CS 5340 Computer/Human Interaction | 4 SH |
| CS 5400 Principles of Programming Language | 4 SH |
| CS 5500 Managing Software Development | 4 SH |
| CS 5600 Computer Systems | 4 SH |
| CS 5770 Software Vulnerabilities and Security | 4 SH |
| CS 6110 Knowledge-Based Systems | 4 SH |
| CS 6200 Information Retrieval | 4 SH |
| CS 6310 Computational Imaging | 4 SH |
| CS 6410 Compilers | 4 SH |
| CS 6510 Advanced Software Development | 4 SH |
| CS 6520 Methods of Software Development | 4 SH |
| CS 6530 Analysis of Software Artifacts | 4 SH |
| CS 6540 Foundations of Formal Methods and Software Analysis | 4 SH |
| CS 6610 Parallel Computing | 4 SH |
| CS 6740 Network Security | 4 SH |
| CS 6750 Cryptography and Communications Security | 4 SH |
| CS 6760 Privacy, Security, and Usability | 4 SH |
| CS 6810 Distributed Algorithms | 4 SH |
| CS 7800 Advanced Algorithms | 4 SH |
| EECE 5639 Computer Vision | 4 SH |
| EECE 5640 High-Performance Computing | 4 SH |

| EECE 5688 Analysis of Unbalanced Power Grids | 4 SH |
|---|---|
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7205 Fundamentals of Computer Engineering | 4 SH |
| EECE 7240 Analog Integrated Circuit Design | 4 SH |
| EECE 7313 Pattern Recognition | 4 SH |
| EECE 7332 Error Correcting Codes | 4 SH |
| EECE 7334 Wireless Communications | 4 SH |
| EECE 7352 Computer Architecture | 4 SH |
| EECE 7353 VLSI Design | 4 SH |
| EECE 7357 Fault-Tolerant Computers | 4 SH |
| EECE 7360 Combinatorial Optimization | 4 SH |
| EECE 7364 Mobile and Wireless Networking | 4 SH |
| EECE 7366 Special Topics in Computer Engineering 1 | 4 SH |
| EECE 7368 High-Level Design of Hardware-Software Systems | 4 SH |
| EECE 7369 Simulation and Performance Evaluation | 4 SH |
| EECE 7374 Fundamentals of Computer Networks | 4 SH |
| EECE 7388 Special Topics in Computer Engineering 2 | 4 SH |
| EECE 7398 Special Topics | 4 SH |
| MATH 7232 Combinatorial Analysis | 4 SH |
| MATH 7233 Graph Theory | 4 SH |

**PROGRAM TOTAL CREDITS**      **32.0 SH**

# MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Computer Engineering (COMP)—Thesis Option

## GENERAL REQUIREMENTS

The program requires 24 SH of graduate-level courses. At least three of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 12 SH of the required 24 SH must be graduate-level ECE courses. In addition, the program requires 8 SH of EECE 7990 (MS Thesis).

## APPROVED CONCENTRATION COURSES

| CS 5100 Foundations of Artificial Intelligence | 4 SH |
|---|---|
| CS 5200 Database Management Systems | 4 SH |
| CS 5210 Implementation of Database Management Systems | 4 SH |
| CS 5310 Computer Graphics | 4 SH |
| CS 5340 Computer/Human Interaction | 4 SH |
| CS 5400 Principles of Programming Language | 4 SH |
| CS 5500 Managing Software Development | 4 SH |
| CS 5600 Computer Systems | 4 SH |
| CS 5770 Software Vulnerabilities and Security | 4 SH |
| CS 6110 Knowledge Based Systems | 4 SH |
| CS 6200 Information Retrieval | 4 SH |
| CS 6310 Computational Imaging | 4 SH |

| | |
|---|---|
| CS 6410 Compilers | 4 SH |
| CS 6510 Advanced Software Development | 4 SH |
| CS 6520 Methods of Software Development | 4 SH |
| CS 6530 Analysis of Software Artifacts | 4 SH |
| CS 6540 Foundations of Formal Methods and Software Analysis | 4 SH |
| CS 6610 Parallel Computing | 4 SH |
| CS 6740 Network Security | 4 SH |
| CS 6750 Cryptography and Communications Security | 4 SH |
| CS 6760 Privacy, Security, and Usability | 4 SH |
| CS 6810 Distributed Algorithms | 4 SH |
| CS 7800 Advanced Algorithms | 4 SH |
| EECE 5639 Computer Vision | 4 SH |
| EECE 5640 High-Performance Computing | 4 SH |
| EECE 5688 Analysis of Unbalanced Power Grids | 4 SH |
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7205 Fundamentals of Computer Engineering | 4 SH |
| EECE 7240 Analog Integrated Circuit Design | 4 SH |
| EECE 7313 Pattern Recognition | 4 SH |
| EECE 7332 Error Correcting Codes | 4 SH |
| EECE 7334 Wireless Communications | 4 SH |
| EECE 7352 Computer Architecture | 4 SH |
| EECE 7353 VLSI Design | 4 SH |
| EECE 7357 Fault-Tolerant Computers | 4 SH |
| EECE 7360 Combinatorial Optimization | 4 SH |
| EECE 7364 Mobile and Wireless Networking | 4 SH |
| EECE 7366 Special Topics in Computer Engineering 1 | 4 SH |
| EECE 7368 High-Level Design of Hardware-Software Systems | 4 SH |
| EECE 7369 Simulation and Performance Evaluation | 4 SH |
| EECE 7374 Fundamentals of Computer Networks | 4 SH |
| EECE 7388 Special Topics in Computer Engineering 2 | 4 SH |
| EECE 7398 Special Topics | 4 SH |
| MATH 7232 Combinatorial Analysis | 4 SH |
| MATH 7233 Graph Theory | 4 SH |

**PROGRAM TOTAL CREDITS**   **32.0 SH**

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Electromagnetics, Plasma, and Optics (ELPO)—Course Work Option

### GENERAL REQUIREMENTS

The program requires 32 SH of graduate-level courses. At least five of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 24 SH of the required 32 SH must be graduate-level ECE courses.

### APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7105 Optics for Engineers | 4 SH |
| EECE 7202 Electromagnetic Theory 1 | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| EECE 7245 Microwave Circuit Design for Wireless Communication | 4 SH |
| EECE 7270 Electromagnetic Theory 2 | 4 SH |
| EECE 7271 Computational Methods in Electromagnetics | 4 SH |
| EECE 7274 Propagation in Artificial Structures | 4 SH |
| EECE 7275 Antennas and Radiation | 4 SH |
| EECE 7276 Microwave Properties of Materials | 4 SH |
| EECE 7284 Optical Properties of Matter | 4 SH |
| EECE 7285 Opto-electronics and Fiber Optics | 4 SH |
| EECE 7287 Optical Detection | 4 SH |
| EECE 7293 Modern Imaging | 4 SH |
| EECE 7309 Special Topics in Electromagnetics, Plasma, and Optics | 4 SH |

**PROGRAM TOTAL CREDITS**   **32.0 SH**

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Electromagnetics, Plasma, and Optics (ELPO)—Thesis Option

### GENERAL REQUIREMENTS

The program requires 24 SH of graduate-level courses. At least three of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 16 SH of the required 24 SH must be graduate-level ECE courses. In addition, the program requires 8 SH of EECE 7990 (MS Thesis).

### APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7105 Optics for Engineers | 4 SH |
| EECE 7202 Electromagnetic Theory 1 | 4 SH |
| EECE 7203 Complex Variable Theory and Differential Equations | 4 SH |
| EECE 7245 Microwave Circuit Design for Wireless Communication | 4 SH |
| EECE 7270 Electromagnetic Theory 2 | 4 SH |
| EECE 7271 Computational Methods in Electromagnetics | 4 SH |
| EECE 7274 Propagation in Artificial Structures | 4 SH |
| EECE 7275 Antennas and Radiation | 4 SH |
| EECE 7276 Microwave Properties of Materials | 4 SH |
| EECE 7284 Optical Properties of Matter | 4 SH |

| | |
|---|---|
| EECE 7285 Opto-electronics and Fiber Optics | 4 SH |
| EECE 7287 Optical Detection | 4 SH |
| EECE 7293 Modern Imaging | 4 SH |
| EECE 7309 Special Topics in Electromagnetics, Plasma, and Optics | 4 SH |

**PROGRAM TOTAL CREDITS**                    **32.0 SH**

### EXCLUDED COURSES FOR ELECTROMAGNETICS, PLASMA, AND OPTICS

All courses offered by the professional master's programs (computer systems engineering, energy systems, engineering management, information systems, sustainable building systems, and telecommunication systems management) except those explicitly included in "approved courses" of one of the ECE concentrations.

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Microsystems, Materials, and Devices (MSMD)—Course Work Option

### GENERAL REQUIREMENTS

The program requires 32 SH of graduate-level courses. At least five of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 24 SH of the required 32 SH must be graduate-level ECE courses.

### APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5606 Micro- and Nanofabrication | 4 SH |
| EECE 5648 Biomedical Optics | 4 SH |
| EECE 5680 Electric Drives | 4 SH |
| EECE 5696 Energy Harvesting Systems | 4 SH |
| EECE 7201 Solid State Devices | 4 SH |
| EECE 7240 Analog Integrated Circuit Design | 4 SH |
| EECE 7241 Advanced Solid State Devices | 4 SH |
| EECE 7242 Integrated Circuits for Communications and Mixed-Signal Processing | 4 SH |
| EECE 7243 Integrated Circuit Fabrication | 4 SH |
| EECE 7244 Introduction to Microelectromechanical Systems (MEMS) | 4 SH |
| EECE 7245 Microwave Circuit Design for Wireless Communication | 4 SH |
| EECE 7246 Design and Analysis of Digital Integrated Circuits | 4 SH |
| EECE 7247 Radio Frequency Integrated Circuit Design | 4 SH |
| EECE 7269 Special Topics in Electronics, Semiconductor Devices, and Microfabrication | 4 SH |
| EECE 7276 Microwave Properties of Materials | 4 SH |
| EECE 7284 Optical Properties of Matter | 4 SH |
| EECE 7285 Opto-electronics and Fiber Optics | 4 SH |
| EECE 7291 Plasma Theory | 4 SH |

| | |
|---|---|
| EECE 7292 Plasma Processing Seminar | 4 SH |
| EECE 7353 VLSI Design | 4 SH |
| EECE 7354 VLSI Architecture | 4 SH |
| EECE 7398 Special Topics | 4 SH |

**PROGRAM TOTAL CREDITS**                    **32.0 SH**

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Microsystems, Materials, and Devices (MSMD)—Thesis Option

### GENERAL REQUIREMENTS

The program requires 24 SH of graduate-level courses. At least three of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 16 SH of the required 24 SH must be graduate-level ECE courses. In addition, the program requires 8 SH of EECE 7990 (MS Thesis).

### APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5606 Micro- and Nanofabrication | 4 SH |
| EECE 5648 Biomedical Optics | 4 SH |
| EECE 5680 Electric Drives | 4 SH |
| EECE 5696 Energy Harvesting Systems | 4 SH |
| EECE 7201 Solid State Devices | 4 SH |
| EECE 7240 Analog Integrated Circuit Design | 4 SH |
| EECE 7241 Advanced Solid State Devices | 4 SH |
| EECE 7242 Integrated Circuits for Communications and Mixed-Signal Processing | 4 SH |
| EECE 7243 Integrated Circuit Fabrication | 4 SH |
| EECE 7244 Introduction to Microelectromechanical Systems (MEMS) | 4 SH |
| EECE 7245 Microwave Circuit Design for Wireless Communication | 4 SH |
| EECE 7246 Design and Analysis of Digital Integrated Circuits | 4 SH |
| EECE 7247 Radio Frequency Integrated Circuit Design | 4 SH |
| EECE 7269 Special Topics in Electronics, Semiconductor Devices, and Microfabrication | 4 SH |
| EECE 7276 Microwave Properties of Materials | 4 SH |
| EECE 7284 Optical Properties of Matter | 4 SH |
| EECE 7285 Opto-electronics and Fiber Optics | 4 SH |
| EECE 7291 Plasma Theory | 4 SH |
| EECE 7292 Plasma Processing Seminar | 4 SH |
| EECE 7353 VLSI Design | 4 SH |
| EECE 7354 VLSI Architecture | 4 SH |
| EECE 7398 Special Topics | 4 SH |

**PROGRAM TOTAL CREDITS**                    **32.0 SH**

## EXCLUDED COURSES FOR MICROSYSTEMS, MATERIALS, AND DEVICES

All courses offered by the professional master's programs (computer systems engineering, energy systems, engineering management, information systems, sustainable building systems, and telecommunication systems management) except those explicitly included in "approved courses" of one of the ECE concentrations.

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Power Systems (POWR)—Course Work Option

### GENERAL REQUIREMENTS

The program requires 32 SH of graduate-level courses. At least five of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 24 SH of the required 32 SH must be graduate-level ECE courses.

### APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5580 Classical Control Systems | 4 SH |
| EECE 5610 Digital Control Systems | 4 SH |
| EECE 5666 Digital Signal Processing | 4 SH |
| EECE 5680 Electric Drives | 4 SH |
| EECE 5682 Power Systems Analysis 1 | 4 SH |
| EECE 5684 Power Electronics | 4 SH |
| EECE 5686 Electrical Machines | 4 SH |
| EECE 5688 Analysis of Unbalanced Power Grids | 4 SH |
| EECE 5694 (pending approval) | |
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7211 Nonlinear Control | 4 SH |
| EECE 7212 Multivariable Control Systems | 4 SH |
| EECE 7213 System Identification and Adaptive Control | 4 SH |
| EECE 7214 Optimal and Robust Control | 4 SH |
| EECE 7220 Power System Analysis 2 | 4 SH |
| EECE 7221 Power System Operation and Control | 4 SH |
| EECE 7224 Power Systems State Estimation | 4 SH |
| EECE 7226 Modeling and Simulation of Power System Transients | 4 SH |
| EECE 7236 Special Topics in Control | 4 SH |
| EECE 7237 Special Topics in Power Electronics | 4 SH |
| EECE 7238 Special Topics in Electric Drives | 4 SH |
| EECE 7239 Special Topics in Power Systems | 4 SH |
| EECE 7310 Modern Signal Processing | 4 SH |
| EECE 7312 Statistical and Adaptive Signal Processing | 4 SH |
| EECE 7323 Numerical Optimization Methods | 4 SH |

| | |
|---|---|
| EECE 7325 (pending approval) | |
| EECE 7335 Detection and Estimation Theory | 4 SH |
| ENGR 5670 Sustainable Energy: Materials, Conversion, Storage, and Usage | 4 SH |

### PROGRAM TOTAL CREDITS     32.0 SH

## MSECE—Master of Science in Electrical and Computer Engineering with Concentration in Power Systems (POWR)—Thesis Option

### GENERAL REQUIREMENTS

The program requires 24 SH of graduate-level courses. At least three of these courses must be from the "approved concentration courses" and at least two must be outside "approved concentration courses." None of these courses can be from the list of "excluded courses." At least 16 SH of the required 24 SH must be graduate-level ECE courses. In addition, the program requires 8 SH of EECE 7990 (MS Thesis).

### APPROVED CONCENTRATION COURSES

| | |
|---|---|
| EECE 5580 Classical Control Systems | 4 SH |
| EECE 5610 Digital Control Systems | 4 SH |
| EECE 5666 Digital Signal Processing | 4 SH |
| EECE 5680 Electric Drives | 4 SH |
| EECE 5682 Power Systems Analysis 1 | 4 SH |
| EECE 5684 Power Electronics | 4 SH |
| EECE 5686 Electrical Machines | 4 SH |
| EECE 5688 Analysis of Unbalanced Power Grids | 4 SH |
| EECE 5694 (pending approval) | |
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| EECE 7200 Linear Systems Analysis | 4 SH |
| EECE 7211 Nonlinear Control | 4 SH |
| EECE 7212 Multivariable Control Systems | 4 SH |
| EECE 7213 System Identification and Adaptive Control | 4 SH |
| EECE 7214 Optimal and Robust Control | 4 SH |
| EECE 7220 Power System Analysis 2 | 4 SH |
| EECE 7221 Power System Operation and Control | 4 SH |
| EECE 7224 Power Systems State Estimation | 4 SH |
| EECE 7226 Modeling and Simulation of Power System Transients | 4 SH |
| EECE 7235 (pending approval) | |
| EECE 7236 Special Topics in Control | 4 SH |
| EECE 7237 Special Topics in Power Electronics | 4 SH |
| EECE 7238 Special Topics in Electric Drives | 4 SH |
| EECE 7239 Special Topics in Power Systems | 4 SH |
| EECE 7310 Modern Signal Processing | 4 SH |
| EECE 7312 Statistical and Adaptive Signal Processing | 4 SH |
| EECE 7323 Numerical Optimization Methods | 4 SH |
| EECE 7335 Detection and Estimation Theory | 4 SH |
| ENGR 5670 Sustainable Energy: Materials, Conversion, Storage, and Usage | 4 SH |

### PROGRAM TOTAL CREDITS     32.0 SH

## EXCLUDED COURSES FOR POWER SYSTEMS, POWER ELECTRONICS, AND MOTION CONTROL

All courses offered by the professional master's programs (computer systems engineering, energy systems, engineering management, information systems, sustainable building systems, and telecommunication systems management) except those explicitly included in "approved courses" of one of the ECE concentrations.

## MSECE—Master of Science in Electrical and Computer Engineering with Graduate Certificate in Engineering Leadership—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| Advisor-approved ECE course work | 32 SH |

**PROGRAM TOTAL CREDITS**          **48.0 SH**

## MSECE—Master of Science in Electrical and Computer Engineering with Graduate Certificate in Engineering Leadership—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| MS Thesis | 8 SH |
| Advisor - approved ECE courses | 24 SH |

**PROGRAM TOTAL CREDITS**          **48.0 SH**

## MSECEL—Master of Science in Electrical and Computer Engineering Leadership

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| Advisor-approved ECE course work | 16 SH |

**PROGRAM TOTAL CREDITS**          **32.0 SH**

## PhD in Computer Engineering—Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Course work | 16 SH |
| EECE 9990 Dissertation | 0 SH |

**PROGRAM TOTAL CREDITS**          **16.0 SH**

## PhD in Computer Engineering—Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Course work | 48 SH |
| EECE 9990 Dissertation | 0 SH |

**PROGRAM TOTAL CREDITS**          **48.0 SH**

## PhD in Electrical Engineering—Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Course work | 16 SH |
| EECE 9990 Dissertation | 0 SH |

**PROGRAM TOTAL CREDITS**          **16.0 SH**

## PhD in Electrical Engineering—Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Course work | 48 SH |
| EECE 9990 Dissertation | 0 SH |

**PROGRAM TOTAL CREDITS**          **48.0 SH**

**www.coe.neu.edu/programs/es**

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The Master of Science degree program in energy systems (MSES) integrates the technology side of energy systems development with the financial planning needed to effectively implement them. The goal of the MSES is to create a high-level signature, interdisciplinary graduate program for the engineer or technical business major who is pursuing an industrial or public-planning-based career.

The program curriculum is firmly rooted in energy technology and includes exposure to the interface with business and financial decision processes. Students are exposed to business educators and practicing professionals and have the opportunity to participate in a six-month co-op experience. Practicing professionals with experience at this interface who have successfully implemented energy systems or devices and policies are actively involved in the program as adjunct professors and invited speakers. The curriculum is flexibly designed with a set of six core courses in engineering knowledge and finance and four electives that can be taken from any department within the College of Engineering.

Through this curriculum and interaction with practitioners, the students will be prepared to effectively integrate energy system development over a broad spectrum of technologies with the financial requirements to successfully implement them and to compete in the global energy market.

Graduates of the program will be involved in the decision making or policy planning that will deliver minimally polluting, energy-efficient systems to the global market. They will have the base training necessary to lead efforts within companies to plan and implement new energy-generation investments, realize energy-efficiency improvements specifically at the system level, and participate in energy and environmental markets such as cap-and-trade systems.

The degree requirements are successful completion of a minimum 35.5 semester hours of course work. The curriculum can be completed through either a cooperative education (co-op) or non–co-op track. The six-month co-op rotation in companies or the public sector involved in energy activities is a recommended component of the program. To provide flexibility to satisfy the mission of the program, a program of study will be prepared by the student and program director during the first term of study. This program of study will reflect the student's career goals and will insure that all technical and financial educational competencies are satisfied. All successful degree candidates will have demonstrated sufficient engineering competency as measured by the successful completion of the courses. The required course distribution is shown in the table below.

## Mission Statement

The program's mission is to educate students in current and future energy systems technologies, to integrate energy-related technologies with the economics and financial considerations required to implement them, and to develop leadership and decision-making skills to implement energy systems in either the private or public sectors of the global market. The program will expose students to a combination of academic and corporate experience in energy systems.

## Admission Criteria

Applicants to the program are expected to have either an undergraduate degree from an accredited engineering school or have a quantitative business or finance degree. Applicants are expected to have adequate computer skills and college-level calculus. Foundational course work in these fields is available to students to bridge any gap in their technical backgrounds. However, credit for such courses will not count toward the degree. The successful applicant should have an undergraduate grade-point average of 3.000/4.000 or higher from an accredited U.S. school. International applicants, in addition to the minimum 3.000/4.000 GPA requirement, should submit GRE and TOEFL scores with a minimum 151 (650) (Quantitative) and 550 (paper-based), 213 (computer-based), or 80 (Internet-based), respectively. The applicant will also submit:

- An application to the Graduate School of Engineering.
- A one-page description of their interest and expectations of the program, focusing on their career path. This essay should be placed in the application under the heading "PhD Applicants, Area of Interest."

## Sample Curriculum

Below is a sample curriculum for either the co-op or non–co-op tracks.

### TECHNICAL BACKGROUND TRACK WITH CO-OP

| Fall 1 | Spring 1 | Summer 1 |
|---|---|---|
| ENSY 5000 (4 SH) | FINA 6200 (3 SH) | Co-op (ENSY 6964) |
| ACCT 6200 (3 SH) | ACCT 6201 (1.5 SH) | |
| ME 6200 (4 SH) | Elective (4 SH) | |

| Fall 2 | Spring 2 | Fall/Summer |
|---|---|---|
| Co-op (ENSY 6964) | EMGT 6225 (4 SH) | Elective (4 SH) |
| | Elective (4 SH) | Elective (4 SH) |

## NON–CO-OP TRACK

| Fall 1 | Spring 1 | Summer 1 |
|---|---|---|
| ENSY 5000 (4 SH) | FINA 6200 (3 SH) | No classes |
| ACCT 6200 (3 SH) | ACCT 6201 (1.5 SH) | |
| ME 6200 (4 SH) | Elective (4 SH) | |

| Fall 2 | Spring 2 |
|---|---|
| EMGT 6225 (4 SH) | Elective (4 SH) |
| Elective (4 SH) | Elective (4 SH) |

## MS in Energy Systems

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| ENSY 5000 Fundamentals of Energy System Integration | 4 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| ME 6200 Mathematical Methods for Mechanical Engineers 1 | 4 SH |
| Course work from the list "Energy Systems Electives," below | 16 SH |

**PROGRAM TOTAL CREDITS**                      **35.5 SH**

### ENERGY SYSTEMS ELECTIVES

| | |
|---|---|
| ARCH 5210 Environmental Systems *Coreq.* ARCH 5211 | 4 SH |
| CHEM 5651 Materials Chemistry of Renewable Energy | 3 SH |
| CHEM 5652 Fundamental Science of Photovoltaics | 3 SH |
| CHME 5204 Heterogeneous Catalysis | 4 SH |
| CHME 5630 Biochemical Engineering | 4 SH |
| CIVE 5270 Environmental Protection and Management | 4 SH |
| EECE 5680 Electric Drives | 4 SH |
| EECE 5682 Power Systems Analysis 1 | 4 SH |
| EECE 5684 Power Electronics | 4 SH |
| EECE 5686 Electrical Machines | 4 SH |
| EECE 7201 Solid State Devices | 4 SH |
| EECE 7239 Special Topics in Power Systems | 4 SH |
| EECE 7398 Special Topics | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| ENSY 7374 Special Topics in Energy Systems | 4 SH |
| ENSY 7978 Independent Study | 1 to 4 SH |
| LPSC 7312 Cities, Sustainability, and Climate Change | 3 SH |
| ME 5645 Environmental Issues in Manufacturing and Product Use | 4 SH |
| ME 7300 Combustion and Air Pollution | 4 SH |
| ME 7305 Fundamentals of Combustion | 4 SH |
| ME 7320 Solar Thermal Engineering | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |

## MS in Energy Systems— Online/Hybrid Delivery Option

Course work for this program will be offered online. Students enrolled at a regional campus may enroll in specific hybrid delivery sections of these courses. Hybrid courses have periodic face-to-face regional campus meetings.

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6272 Financial Statement Preparation and Analysis | 2.25 SH |
| ACCT 6273 Identifying Strategic Implications in Accounting Data | 2.25 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| ENSY 5000 Fundamentals of Energy System Integration | 4 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| ME 6200 Mathematical Methods for Mechanical Engineers 1 | 4 SH |
| Course work from the list "Energy Systems Online Option Electives," below | 16 SH |

**PROGRAM TOTAL CREDITS**                      **35.5 SH**

### ENERGY SYSTEMS ONLINE OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| EECE 5682 Power Systems Analysis 1 | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| ENSY 7374 Special Topics in Energy Systems | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| ME 5645 Environmental Issues in Manufacturing and Product Use | 4 SH |
| ME 7320 Solar Thermal Engineering | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |

## MS in Energy Systems with Graduate Certificate in Engineering Leadership

### GENERAL REQUIREMENTS

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| ENSY 5000 Fundamentals of Energy System Integration | 4 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| Two advisor-approved MSES courses | 8 SH |

**PROGRAM TOTAL CREDITS**                      **39.5 SH**

## ENGINEERING LEADERSHIP

**www.northeastern.edu/gordonleadership**

SIMON PITTS
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The Gordon Engineering Leadership Program (GEL) is a transformational graduate program designed to build a future corps of engineering leadership professionals. GEL seeks to accelerate leadership development in an engineering context through a concentrated curriculum of course work, mentoring, and an industry-focused challenge project. Graduates of the program, known as Gordon Fellows, stand out from their peers in their ability to invent, innovate, and implement engineering projects from concept to market success.

Most students pursue GEL as part of a Master of Science degree in the engineering discipline of their choice. Upon completion, students earn both the Master of Science degree and a Graduate Certificate in Engineering Leadership. Students who already hold a graduate degree in engineering can complete the program to earn a Graduate Certificate in Engineering Leadership. The core GEL curriculum takes place during one calendar year (September–August), and additional course work required for the Master of Science degree can be pursued before, after, or in parallel with GEL.

## Certificate in Engineering Leadership

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |

**PROGRAM TOTAL CREDITS**     **16.0 SH**

## ENGINEERING MANAGEMENT

**www.coe.neu.edu/programs/em**

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The Master of Science in Engineering Management offers graduate students an opportunity to develop both the technical expertise and the business competence that is in high demand among prospective technology-based employers. Industry leaders are seeking qualified and talented individuals who are not only able to guide research and design teams but also able to direct and supervise development and production processes. The combination of technical proficiency and business skills fostered in the engineering management program is designed to provide a competitive edge for graduates seeking a wide range of positions in technology-based product or service industries, as well as in comparable local, state, and federal programs.

The program was designed by experienced high-level managers and academic leaders as an option for engineers and scientists to broaden their skill sets to include management tools and techniques that are applicable to technology-based industries. Graduates of the engineering management program work as project managers, product managers, or leaders of teams in technical industries. Upon completion of the program, students find that their acquired skills are applicable to a wide range of industries, primarily those focused upon the development of technical products and the management of technical projects.

Graduates may assist companies in bringing a product from an idea through its development phases to its introduction to the marketplace. They may also be involved in forming and managing teams for assessing cost efficiencies, formulating strategies to improve production, or analyzing a company's supply chain. Few of these projects can be successfully completed without the skills of those possessing a background in management decision making and engineering expertise; therefore, the engineering management graduate is often a technical liaison to management. As a result, many of these assignments have actually proven to be a gateway to upper-level management positions.

The current program of study can be taken on a part-time or full-time basis. There are four core courses required of all students, which have been formulated to satisfy the foundation requirements. In addition to these required courses, the curriculum consists of electives that allow students to choose either a broad-based program of study or one centered on a particular concentration. Some students may elect to refresh or enhance their technical skills in engineering-based subjects such as information

systems, computer systems engineering, or graduate courses from the traditional engineering disciplines. Other students may prefer to broaden their knowledge base by selecting course work in management subjects such as engineering organizational psychology, financial management, logistics and warehousing, or lean systems design.

One recent graduate has observed that "Northeastern's MSEM is like an MBA for engineers, with high-quality, dedicated professors who are proficient in their field yet are able to convey information in a way that's easy to understand." This graduate also noted, "My courses in project management have been key to understanding the subtleties that affect Project Managers while technical courses provide a strong background in fundamentals as well as specialty topics. My experience with co-op has been outstanding and has truly helped me further my career."

## MSEM—Master of Science in Engineering Management—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Course work from the list "Course Option Electives," below | 16 SH |

### PROGRAM TOTAL CREDITS    32.0 SH

### COURSE OPTION ELECTIVES

| | |
|---|---|
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| CSYE 7260 Manufacturing Methods and Techniques | 4 SH |
| CSYE 7270 Building Virtual Environments | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| ENTR 6212 Business Planning for New Ventures | 3 SH |
| ENTR 6218 Business Model Design and Innovation | 3 SH |
| ENTR 6219 Financing Ventures from Early Stage to Exit | 3 SH |
| IE 5617 Lean Concepts and Applications | 4 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7210 Production Systems | 4 SH |
| IE 7255 Manufacturing Processes | 4 SH |
| IE 7270 Intelligent Manufacturing | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |

## MSEM—Master of Science in Engineering Management—Project Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 7945 Master's Project | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Course work from the list "Project Option Electives," below | 12 SH |

### PROGRAM TOTAL CREDITS    32.0 SH

### PROJECT OPTION ELECTIVES

| | |
|---|---|
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| CSYE 7260 Manufacturing Methods and Techniques | 4 SH |
| CSYE 7270 Building Virtual Environments | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| ENTR 6212 Business Planning for New Ventures | 3 SH |
| ENTR 6218 Business Model Design and Innovation | 3 SH |
| ENTR 6219 Financing Ventures from Early Stage to Exit | 3 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7210 Production Systems | 4 SH |
| IE 7255 Manufacturing Processes | 4 SH |
| IE 7270 Intelligent Manufacturing | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6215 Business Analysis and Information Engineering | 4 SH |
| INFO 7260 Business Process Engineering | 4 SH |
| INFO 7285 Organizational Change and IT | 4 SH |
| INFO 7290 Data Warehousing and Business Intelligence | 4 SH |
| INFO 7330 Information Systems for Healthcare-Services Delivery | 4 SH |
| INFO 7390 Advances in Data Sciences and Architecture | 4 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| OR 7230 Probabilistic Operation Research | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |

| | |
|---|---|
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |
| SCHM 6210 Supply Chain Management | 3 SH |
| SCHM 6211 The Transportation Industries | 3 SH |
| SCHM 6212 Executive Roundtable in Supply Chain Management | 3 SH |
| SCHM 6213 Global Supply Chain Management | 3 SH |
| TECE 6200 Innovation and Entrepreneurial Growth | 3 SH |
| TECE 6222 Emerging and Disruptive Technologies | 3 SH |
| TECE 6230 Entrepreneurial Marketing and Selling | 3 SH |
| TECE 6250 Lean Design and Development | 3 SH |
| TECE 6300 Managing a Technology-Based Business | 3 SH |
| TECE 6340 The Technical Entrepreneur as Leader and Innovator | 3 SH |
| TELE 5310 Fundamentals of Communication Systems | 4 SH |
| TELE 5330 Data Networking | 4 SH |

## MSEM—Master of Science in Engineering Management—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 7990 Thesis | 8 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Course work from the list "Thesis Option Electives." below | 8 SH |

### PROGRAM TOTAL CREDITS          32.0 SH

### THESIS OPTION ELECTIVES

| | |
|---|---|
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| CSYE 7260 Manufacturing Methods and Techniques | 4 SH |
| CSYE 7270 Building Virtual Environments | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| ENTR 6212 Business Planning for New Ventures | 3 SH |
| ENTR 6218 Business Model Design and Innovation | 3 SH |
| ENTR 6219 Financing Ventures from Early Stage to Exit | 3 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7210 Production Systems | 4 SH |
| IE 7255 Manufacturing Processes | 4 SH |
| IE 7270 Intelligent Manufacturing | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |

| | |
|---|---|
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6215 Business Analysis and Information Engineering | 4 SH |
| INFO 7260 Business Process Engineering | 4 SH |
| INFO 7285 Organizational Change and IT | 4 SH |
| INFO 7290 Data Warehousing and Business Intelligence | 4 SH |
| INFO 7330 Information Systems for Healthcare-Services Delivery | 4 SH |
| INFO 7390 Advances in Data Sciences and Architecture | 4 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| OR 7230 Probabilistic Operation Research | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |
| SCHM 6210 Supply Chain Management | 3 SH |
| SCHM 6211 The Transportation Industries | 3 SH |
| SCHM 6212 Executive Roundtable in Supply Chain Management | 3 SH |
| SCHM 6213 Global Supply Chain Management | 3 SH |
| TECE 6200 Innovation and Entrepreneurial Growth | 3 SH |
| TECE 6222 Emerging and Disruptive Technologies | 3 SH |
| TECE 6230 Entrepreneurial Marketing and Selling | 3 SH |
| TECE 6250 Lean Design and Development | 3 SH |
| TECE 6300 Managing a Technology-Based Business | 3 SH |
| TECE 6340 The Technical Entrepreneur as Leader and Innovator | 3 SH |
| TELE 5310 Fundamentals of Communication Systems | 4 SH |
| TELE 5330 Data Networking | 4 SH |

## MSEM in Engineering Management—Online/Hybrid Delivery Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Course work from the list "Engineering Management Online Option Electives," below | 16 SH |

### PROGRAM TOTAL CREDITS          32.0 SH

### ENGINEERING MANAGEMENT ONLINE OPTION ELECTIVES

| | |
|---|---|
| CIVE 5270 Environmental Protection and Management | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| ENSY 5000 Fundamentals of Energy System Integration | 4 SH |

| IE 5620 Mass Customization | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| ME 5645 Environmental Issues in Manufacturing and Product Use | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

## MS in Engineering Management with Graduate Certificate in Engineering Leadership

### GENERAL REQUIREMENTS

| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ENLR 7440 Engineering Leadership Challenge Project 1 | 4 SH |
| ENLR 7442 Engineering Leadership Challenge Project 2 | 4 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |

**PROGRAM TOTAL CREDITS          32.0 SH**

## INDUSTRIAL ENGINEERING

**www.mie.neu.edu/graduate/ieeng.html**

HANCHEN HUANG, PHD
*Professor and Chair*
NADER JALILI, PHD
*Professor and Director of Graduate Studies and Research of Mechanical and Industrial Engineering*

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The Department of Mechanical and Industrial Engineering (MIE) offers MS and PhD degree programs in industrial engineering.

## Master of Science Degrees

### REQUIREMENTS

To be eligible for admission to any of the Master of Science (MS) degree programs, a prospective student must hold a Bachelor of Science degree in engineering, science, mathematics, or equivalent field. Students in all master's degree programs must complete a minimum of 32 semester hours of approved course work (exclusive of any preparatory courses) with a minimum GPA of 3.000. Students may pursue any program either on a full- or part-time basis; however, certain restrictions may apply as described below.

Students who receive financial support from the university in the form of a research, teaching, or tuition assistantship must complete an 8-semester-hour thesis. Other students may choose to complete a thesis, project, or pursue their degree on a course-work-only (also known as nonthesis) basis. Students who complete the thesis option must make a presentation at a thesis defense before approval by the department.

### SPECIAL COURSE REQUIREMENTS

All MIE graduate students must complete MEIE 6800 Technical Writing Seminar and MEIE 6850 Research Seminar in Mechanical and Industrial Engineering during their first year of full-time study. MEIE 6850 is typically offered during the fall semester. If appropriate, part-time students may petition the graduate committee to waive these requirements.

All MIE graduate students are also required to complete a brief online session on Responsible Conduct of Research and Plagiarism in one of these seminar courses. The outcome of the online session will be filed with the student's records.

## ACADEMIC AND RESEARCH ADVISORS

All nonthesis students are advised by the academic advisor designated for their respective concentration or program. Thesis-option MS students must find a research advisor within their first year of study and may have thesis reader(s) at the discretion of their research advisor. The research advisor must be a full-time faculty member of the MIE department; otherwise, a petition must be filed and approved by the MIE graduate committee. Thesis-option students are advised by the academic advisor of their concentration before they select their research advisor.

## PLAN OF STUDY AND COURSE SELECTION

It is recommended that all new students attend orientation sessions held by the MIE department and the Graduate School of Engineering to acquaint themselves with the course work requirements and research activities of the department as well as with general policies, procedures, and expectations.

In order to receive proper guidance with their course work needs, all MS students are strongly encouraged to complete and submit a signed Plan of Study (PS) to the department before enrolling in second-semester courses. This form helps the students manage their course work as well as helps the department plan for offering the requested courses. The PS form may be modified at any time as the students proceed in their degree programs. However, requests for changes in PS must be processed before the requested change actually takes place. A revised PS form must also be approved and signed by the academic advisor.

Industrial engineering students must select all required course work, typically consisting of six or more courses, from the list below. Each student's academic advisor must approve all courses prior to registration. Students may not use any courses taken without the approval of the academic advisor toward the 32-semester-hour minimum requirement. However, students may petition the MIE graduate committee to substitute no more than one (4-semester-hour) graduate-level course from outside the approved list of electives. This may include independent study. An independent study must be approved by the research advisor (for thesis option) or academic advisor (for nonthesis option). The petition must clearly state the reason for taking the course; a brief description of the goals; as well as the expected outcomes, deliverables ,and grading scheme.

| Degree Requirements | With Project | With Thesis | Course Work Only |
|---|---|---|---|
| Required core courses | 16 SH | 16 SH | 16 SH |
| Elective courses | 12 SH | 8 SH | 16 SH |
| MEIE 6800 Technical Writing Seminar | 0 SH | 0 SH | 0 SH |
| MEIE 6850 Research Seminar in Mechanical and Industrial Engineering | 0 SH | 0 SH | 0 SH |
| Project/thesis | 4 SH | 8 SH | |
| **Minimum semester hours required** | **32 SH** | **32 SH** | **32 SH** |

# MSIE—Master of Science in Industrial Engineering—Course Work Option

## GENERAL REQUIREMENTS

| | |
|---|---|
| IE 6200 Engineering Probability and Statistics | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Choose two courses from the list "Core Requirements," below | 8 SH |
| Choose four industrial course option electives from the list "Course Option Electives," below | 16 SH |

## PROGRAM TOTAL CREDITS      32.0 SH

## CORE REQUIREMENTS

| | |
|---|---|
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |

## COURSE OPTION ELECTIVES

| | |
|---|---|
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| CSYE 7260 Manufacturing Methods and Techniques | 4 SH |
| CSYE 7270 Building Virtual Environments | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 5617 Lean Concepts and Applications | 4 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 5630 Biosensor and Human Behavior Measurement | 4 SH |
| IE 7255 Manufacturing Processes | 4 SH |
| IE 7270 Intelligent Manufacturing | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| OR 7230 Probabilistic Operation Research | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7260 Constraint Programming | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

## MSIE—Master of Science in Industrial Engineering—Project Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| IE 6200 Engineering Probability and Statistics | 4 SH |
| IE 7945 Master's Project | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Choose two courses from the list "Core Requirements," below | 8 SH |
| Choose three industrial project option electivesfrom the list "Project Option Electives," below | 12 SH |

### PROGRAM TOTAL CREDITS    32.0 SH

### CORE REQUIREMENTS

| | |
|---|---|
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |

### PROJECT OPTION ELECTIVES

| | |
|---|---|
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| CSYE 7260 Manufacturing Methods and Techniques | 4 SH |
| CSYE 7270 Building Virtual Environments | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 5617 Lean Concepts and Applications | 4 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 5630 Biosensor and Human Behavior Measurement | 4 SH |
| IE 7255 Manufacturing Processes | 4 SH |
| IE 7270 Intelligent Manufacturing | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| OR 7230 Probabilistic Operation Research | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7260 Constraint Programming | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

## MSIE—Master of Science in Industrial Engineering—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| IE 6200 Engineering Probability and Statistics | 4 SH |
| IE 7990 MS Thesis | 8 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Choose two courses from the list "Core Requirements," below | 8 SH |
| Choose two industrial thesis option electivesfrom the list "Thesis Option Electives," below | 8 SH |

### PROGRAM TOTAL CREDITS    32.0 SH

### CORE REQUIREMENTS

| | |
|---|---|
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |

### THESIS OPTION ELECTIVES

| | |
|---|---|
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| CSYE 6220 Enterprise Software Design | 4 SH |
| CSYE 7230 Software Engineering | 4 SH |
| CSYE 7260 Manufacturing Methods and Techniques | 4 SH |
| CSYE 7270 Building Virtual Environments | 4 SH |
| CSYE 7280 Human-Computer Interaction | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 5300 Engineering/Organizational Psychology | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 5617 Lean Concepts and Applications | 4 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 5630 Biosensor and Human Behavior Measurement | 4 SH |
| IE 7255 Manufacturing Processes | 4 SH |
| IE 7270 Intelligent Manufacturing | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| OR 7230 Probabilistic Operation Research | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7260 Constraint Programming | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

## MSIE—Master of Science in Industrial Engineering with Graduate Certificate in Engineering Leadership

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| IE 6200 Engineering Probability and Statistics | 4 SH |
| IE 7440 Industrial Engineering Leadership Challenge Project 1 | 4 SH |
| IE 7442 Industrial Engineering Leadership Challenge Project 2 | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| Choose two courses from the list "Core Requirements," below | 8 SH |

### PROGRAM TOTAL CREDITS   32.0 SH

### CORE REQUIREMENTS

| | |
|---|---|
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |

## Doctor of Philosophy

### REQUIREMENTS

The PhD is awarded to students who demonstrate high academic achievement and research competence in the fields of mechanical or industrial engineering. To earn a PhD, a student must complete an approved, rigorous program of advanced course work and submit and defend an original dissertation of independent research. The mechanical and industrial engineering (MIE) department expects all successful doctoral candidates to show depth of knowledge and research innovation in their chosen field of specialization.

The MIE department admits applicants to the PhD program either directly after earning a suitable bachelor's degree or after earning a master's degree. Upon acceptance into the program, an applicant is designated as a doctoral student. This designation is changed to doctoral candidate upon successful completion of the doctoral qualifying examinations.

PhD students must find a research advisor within their first year of study. The research advisor must be a full-time faculty member of the MIE department; otherwise, a petition must be filed and approved by the MIE graduate committee. Students are advised by the academic advisor of their discipline before they select their research advisor.

### DOCTORAL QUALIFYING EXAMINATIONS

To qualify as a doctoral candidate, a doctoral student must successfully complete both a written preliminary exam and an oral area exam. All doctoral students who hold a master's degree must take the preliminary exam no later than the first time that it is offered after their first academic year of study. Those admitted directly with a bachelor's degree must take the preliminary exam no later than the first time that it is offered after their first two years of study.

### PRELIMINARY EXAMINATION

The MIE department offers the written preliminary exam twice during each academic year, in the morning and afternoon of Thursday and Friday of the first week of each regular semester. The objective of this exam is to test the student's fundamental knowledge of core subjects in a specific engineering discipline and to test skill in implementing the methods of inquiry in that field. The exam is six hours in length and covers, with equal emphasis, four different subjects from among the twenty-five subjects organized in the following nine groups (see table below). Each student's research advisor must approve the student's four subject selections. For mechanical engineering students, at least three of these selections must be in categories A–E. All written exams shall be closed book; however, students may prepare and use a single double-sided 8.5" x 11" sheet of reference material for each exam. Students may find further guidance in the *Doctoral Qualifying Examination Handbook,* as prepared and distributed by the MIE graduate committee. Students should also consult extensively with their advisors regarding all aspects of the qualifying exams.

The MIE graduate committee will review all students' performance in the preliminary exam. In consultation with the student's research advisor, the committee will recommend one of three possible exam results:

Pass: This grade indicates successful completion of the preliminary exam. In this case, the student is prepared to develop a research plan and literature survey. However, in some cases, the MIE graduate committee may recommend additional course work in any subject(s) where the preliminary exam indicated some weakness.

These students, in consultation with their research advisor, must form a dissertation committee no later than six months after successfully passing their PhD preliminary exams. The dissertation committee must be comprised of at least three members, two or more of which must be full-time MIE faculty members.

Conditional: If three out of four exams are passed in the first attempt, the student is invited to retake, at the next offering, only the failed exam. Otherwise, the student is invited to retake the full preliminary examination (any four subjects) at the next offering. The result of the second preliminary exam will be either pass or fail.

Fail: The student is not permitted to continue as a doctoral student in any of the programs offered by the MIE department.

The results of the preliminary exam and any recommended course work become part of the student's record.

The subject areas of the preliminary examinations are shown in the following table:

| Group | Subjects |
| --- | --- |
| A | Engineering mathematics (A1) |
| | Engineering computation (A2) |
| | Probability and statistics (A3) |
| B | Thermodynamics (B1) |
| | Fluid mechanics (B2) |
| | Heat transfer (B3) |
| C | Dynamics and vibrations (C1) |
| | Mechanics of deformable bodies (C2) |
| | Dynamic systems and control (C3) |
| | Finite element method (C4) |
| D | Materials science (D1) |
| | Mechanical behavior of materials (D2) |
| | Thermodynamics of materials (D3) |
| | Kinetics of phase transformations (D4) |
| | Fundamentals of polymer science and engineering (D5) |
| E | Design and CAD/CAM (E1) |
| F | Human-machine systems (F1) |
| G | Manufacturing systems (G1) |
| | Supply chain engineering and logistics (G2) |
| H | Operations research (H1) |
| | Reliability and quality assurance (H2) |
| | Simulation (H3) |
| I | Software engineering (I1) |
| | Computer graphics (I2) |
| | Artificial intelligence in engineering (I3) |

## AREA EXAMINATION

Students must take the area examination no more than 12 months after successfully completing the preliminary exam. The area exam comprises two parts: (1) an oral presentation by the student of a written literature survey and initial plan of research (independently developed results are not required at this stage); and (2) an oral exam of the student covering topics specifically related to the student's field of research.

The objective of the area exam is to assess the student's potential to perform independent research in the chosen field of specialization. The student's dissertation committee will invite any additional faculty deemed appropriate to that field; this area examining committee will then conduct the area exam. Each student's dissertation committee must comprise at least three members; two of those three must be MIE faculty members.

The area examining committee may either recommend admission to doctoral candidacy or may allow the student a single additional opportunity to complete the area exam successfully. Students not admitted to doctoral candidacy after a second attempt at the area exam will no longer be eligible for candidacy in any of the PhD programs offered by the MIE department. The committee's recommendation, the literature survey, and the initial research plan are added to the student's record upon admission to doctoral candidacy.

To meet the full-time registration requirement for PhD students who have completed all course work and not yet reached PhD candidacy, a zero-credit course, IE 8960 PhD Exam Preparation, can be taken in place of the Dissertation course. The course is an individual instruction course, billed at 1 semester hour, and graded S or U. There is no course content, and students must register in a section with their research or academic advisor as the "instructor."

## COURSE REQUIREMENTS

A typical program of study includes at least 48 semester hours of course work beyond the bachelor's degree or 24 semester hours of course work beyond the master's degree.

A minor field of study is also required, comprising at least 8 semester hours of course work in a discipline other than that in which the candidate is concentrating (and which may also be taken outside the MIE department). Doctoral candidates must attain a minimum 3.000 GPA in minor area course work.

All MIE graduate students must complete MEIE 6800 Technical Writing Seminar and MEIE 6850 Research Seminar in Mechanical and Industrial Engineering during their first year of full-time study. MEIE 6850 is typically offered during the fall semester. If appropriate, part-time students may petition the graduate committee to waive these requirements.

All MIE graduate students are also required to complete a brief online session on Responsible Conduct of Research and Plagiarism in one of these seminar courses. The outcome of the online session will be filed with the student's records.

Each doctoral student, together with his or her research advisor, should develop an initial program during the first semester of study. The final program is also subject to the approval of the area examining committee, who will add the program of study to the student's record upon admission to doctoral candidacy.

Students may petition the MIE graduate committee to substitute no more than one (4-semester-hour) graduate-level course from outside the approved program. This may include independent study. An independent study must be approved by the research advisor.

Upon successful completion of the PhD preliminary qualifying exams and the majority of required course work, the doctoral candidate, in consultation with his or her research advisor, must register in two consecutive semesters for IE 9990 Dissertation. Upon completion of this sequence, the student must then register for IE 9996 Dissertation Continuation in every semester until the dissertation is completed. Students may not register for IE 9996 until they fulfill the two-semester sequence.

## FINAL ORAL EXAMINATION

All doctoral candidates must pass a final oral exam. This exam will be scheduled once the dissertation committee agrees that the candidate's research is in a form appropriate for formal presentation and after completion of all other requirements for the PhD, including all course work approved in the final program of

study. The objective of the exam is for the candidate to present and defend the results of the dissertation research and to demonstrate depth of knowledge and significant expertise in the area of that research under questioning from the dissertation committee and other attendees.

The exam shall be publicly advertised at least one week in advance and all faculty members may attend and participate. At the conclusion of the presentation and subsequent question period, the dissertation committee will convene to determine the outcome. The committee may recommend that the candidate be awarded the PhD or may require additional research and/or modifications of the dissertation. In some cases, candidates may be asked to present themselves for an additional final oral exam.

### RESIDENCY REQUIREMENT

After achieving PhD candidacy, the university residency requirement is satisfied by two semesters of full-time graduate registration or four semesters of part-time graduate registration. Students must be continually enrolled during the pursuit of the dissertation.

## PhD in Industrial Engineering— Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Approved course work | 24 SH |
| IE 9990 Dissertation | 0 SH |
| MEIE 6800 Technical Writing Seminar | 0 SH |
| MEIE 6850 Research Seminar in Mechanical and Industrial Engineering | 0 SH |

**PROGRAM TOTAL CREDITS**            **24.0 SH**

## PhD in Industrial Engineering— Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Approved course work | 48 SH |
| IE 9990 Dissertation | 0 SH |
| MEIE 6800 Technical Writing Seminar | 0 SH |
| MEIE 6850 Research Seminar in Mechanical and Industrial Engineering | 0 SH |

**PROGRAM TOTAL CREDITS**            **48.0 SH**

**www.ccs.neu.edu/graduate/degree-programs/
ph-d-in-information-assurance**

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The College of Computer and Information Science offers a
Doctor of Philosophy in Information Assurance in conjunction
with the College of Engineering. The PhD in Information
Assurance program is designed for both students with a strong
background in a technical field and those with nontechnical
backgrounds and a strong desire to pursue interdisciplinary work
in areas related to information assurance. Applicants are expected
to have a minimum 3.000 undergraduate GPA.

Students who do not have the necessary technical background
may be required to take courses such as Fundamentals of
Information Assurance, Network and Systems, and Fundamentals
of Computer Engineering to prepare for the program.

The PhD in Information Assurance degree requires
completion of at least 48 semester credit hours beyond a
bachelor's degree. Students who enter with an undergraduate
degree will typically need four to five years to complete the
program and have the option of obtaining an MS degree from one
of the departments participating in the program. To do so, they
must meet all of the department's degree requirements.

Students who enter the program with a master's degree will
be required to complete 16 semester credit hours beyond the
master's degree. They also must complete the required core
courses.

For detailed program requirements, please see the
Information Assurance entry in the College of Computer and
Information Science, page 69.

**www.msis.northeastern.edu**

Kal Bugrara, PhD
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We offer cutting-edge expertise in a variety of courses that
combine technological advances and business practices. We stress
creative and inventive approaches to problem solving, which
necessitates empowering students so that they can take charge of
their own software projects to become originally productive. Our
information systems program is as much an art as a science. It
bypasses mechanical learning and highlights the value and
excitement of engineering thinking that gets things done
efficiently as well as imaginatively. We balance theory and
practice, on the premise that they are always intertwined and
interdependent.

We seek to provide a basic foundation for our students and
then seek to push them to new heights to advance their
information technology skills in a way that keeps up and, better
yet, exceeds the necessarily fast pace of this progressive field. It is
not for us just a question of not being left behind; we strive to be
at the forefront of software innovation in an effort to transform
contemporary society even more radically than technology has
already done—to take gigantic strides in business, medicine,
education, and security. In addition to the general requirements,
the program offers multiple tracks (20 semester hours):

- Track 1: Business Process Engineering
- Track 2: Software Project Planning and Management
- Track 3: Web Engineering and Development
- Track 4: Information Systems Auditing and Compliance
- Track 5: Data Architecture and Engineering
- Track 6: Application-Level Security Analysis and Engineering
- Track 7: Enterprise Architecture and Governance
- Track 8: Engineering Clinical Information Systems

### MSIS—Master of Science in Information Systems

#### GENERAL REQUIREMENTS

| | |
|---|---|
| INFO 5100 Application Engineering and Development | 4 SH |
| Course work from the list "Info Systems Electives," below | 28 SH |

**PROGRAM TOTAL CREDITS**                         **32.0 SH**

## INFO SYSTEMS ELECTIVES

| | |
|---|---|
| INFO 5000 C Programming and Development | 4 SH |
| INFO 6150 Web Design and User Experience Engineering | 4 SH |
| INFO 6205 Program Structure and Algorithms | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| INFO 6215 Business Analysis and Information Engineering | 4 SH |
| INFO 6220 Operating Systems | 4 SH |
| INFO 6225 Networks, Telecommunications, and Distributed Systems | 4 SH |
| INFO 6240 C++ Object-Oriented Design | 4 SH |
| INFO 6245 Planning and Managing Information Systems Development | 4 SH |
| INFO 6250 Web Development Tools and Methods | 4 SH |
| INFO 6255 Software Quality Control and Management | 4 SH |
| INFO 6260 Business Process Engineering and Management | 4 SH |
| INFO 6350 Smartphones-Based Web Development | 4 SH |
| INFO 6640 People, Processes, and Products: Ethics for Engineers | 2 SH |
| INFO 6650 People, Problems, and Patents: Basics of Intellectual Property | 4 SH |
| INFO 6660 People, Problems, and Patents: Ethical Principles and Basics of Intellectual Property | 4 SH |
| INFO 7205 Advanced Application Engineering and Development | 4 SH |
| INFO 7225 Accounting and Budgetary Systems for Engineers | 4 SH |
| INFO 7245 Agile Software Development | 4 SH |
| INFO 7250 Engineering of Big-Data Systems | 4 SH |
| INFO 7260 Business Process Engineering | 4 SH |
| INFO 7265 Enterprise Systems Architecture and Engineering | 4 SH |
| INFO 7270 PERL Programming | 4 SH |
| INFO 7275 Advanced Database Management Systems | 4 SH |
| INFO 7280 Model-Driven Architecture | 4 SH |
| INFO 7285 Organizational Change and IT | 4 SH |
| INFO 7290 Data Warehousing and Business Intelligence | 4 SH |
| INFO 7300 Engineering Secure Software Systems | 4 SH |
| INFO 7305 System Architecture and Technology Management | 4 SH |
| INFO 7310 Introduction to Distributed Security | 4 SH |
| INFO 7315 Web Services/Service-Oriented Architecture | 4 SH |
| INFO 7320 Global Technology Outsourcing | 3 SH |
| INFO 7325 Introduction to Information Technology Auditing | 4 SH |
| INFO 7330 Information Systems for Healthcare-Services Delivery | 4 SH |
| INFO 7365 Enterprise Architecture Planning and Management | 4 SH |
| INFO 7374 Special Topics in Information Systems | 1 to 4 SH |
| INFO 7390 Advances in Data Sciences and Architecture | 4 SH |
| INFO 7420 Drug Development Processes and Information Systems Compliance | 4 SH |

**www.coe.neu.edu/coe/graduate/degrees.html**

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The Graduate School of Engineering offers an interdisciplinary Doctor of Philosophy degree involving substantial work in two or more academic departments or disciplines. Those interested in this program of study must submit a detailed proposal of the areas of inquiry and research with their application for admission. Interdisciplinary study requires favorable recommendation by a sponsoring doctoral-degree-granting department and approval by authorized representatives of the graduate committees of the departments appropriate to the disciplines covered under the applicant's proposal. The sponsoring department serves as the student's registration department.

## Formation of Interdisciplinary Committee

Students admitted for interdisciplinary study must obtain the consent of a faculty advisor who will direct his or her doctoral dissertation. This advisor, who may or may not be a member of the registration department, will chair the student's interdisciplinary committee. The chair of the registration department, or his or her designee, will then appoint a second member to the committee. These two members will invite one or more additional members or request that the director of the Graduate School of Engineering do so. The committee must represent at least two academic departments or programs, and a majority of the committee members must represent doctoral-degree-granting departments. The chair of the registration department, or his or her designee, will notify the director of the Graduate School of Engineering of the membership of the committee as soon as arrangements are finalized.

## Duties of Interdisciplinary Committee

A member of the interdisciplinary committee who is also a member of the registration department will serve as the registration officer to approve course registration for the student. The registration officer will file a copy of the approved course registration with the other committee members and with the graduate committee of the registration department. The interdisciplinary committee is responsible for overseeing the completion of all requirements. The committee must also certify to the registration department and to the Graduate School of Engineering the completion of all requirements for the award of the doctoral degree.

The interdisciplinary committee must assure that the student's program represents standards comparable to those of the registration department and that the program is not so broad that it has inadequate depth in any area. The director of the Graduate School of Engineering may review a student's interdisciplinary program at any time to verify that the student meets program objectives.

## MECHANICAL ENGINEERING

**www.mie.neu.edu/graduate/mecheng.html**

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The Department of Mechanical and Industrial Engineering (MIE) offers MS and PhD degree programs in mechanical engineering.

## Master of Science Degrees

### REQUIREMENTS

To be eligible for admission to any of the Master of Science (MS) degree programs, a prospective student must hold a Bachelor of Science degree in engineering, science, mathematics, or an equivalent field. Students in all master's degree programs must complete a minimum of 32 semester hours of approved course work (exclusive of any preparatory courses) with a minimum GPA of 3.000. Students may pursue any program either on a full- or part-time basis; however, certain restrictions may apply as described below.

Students who receive financial support from the university in the form of a research, teaching, or tuition assistantship must complete an 8-semester-hour thesis. Other students may choose to complete a thesis, project, or pursue their degree on a course-work-only (also known as nonthesis) basis. Students who complete the thesis option must make a presentation at a thesis defense before approval by the department.

### SPECIAL COURSE REQUIREMENTS

All MIE graduate students must complete MEIE 6800 Technical Writing Seminar and MEIE 6850 Research Seminar in Mechanical and Industrial Engineering during their first year of full-time study. MEIE 6850 is typically offered during the fall semester. If appropriate, part-time students may petition the graduate committee to waive these requirements.

All MIE graduate students are also required to complete a brief online session on Responsible Conduct of Research and Plagiarism in one of these seminar courses. The outcome of the online session will be filed with the student's records.

### ACADEMIC AND RESEARCH ADVISORS

All nonthesis students are advised by the academic advisor designated for their respective concentration or program. Thesis-option MS students must find a research advisor within their first year of study and may have thesis reader(s) at the discretion of their research advisor. The research advisor must be a full-time faculty member of the MIE department; otherwise, a petition must be filed and approved by the MIE graduate committee. Thesis-option students are advised by the academic advisor of their concentration before they select their research advisor.

### PLAN OF STUDY AND COURSE SELECTION

It is recommended that all new students attend orientation sessions held by the MIE department and the Graduate School of Engineering to acquaint themselves with the course work requirements and research activities of the department as well as with general policies, procedures, and expectations.

In order to receive proper guidance with their course work needs, all MS students are strongly encouraged to complete and submit a fully signed Plan of Study (PS) to the department before enrolling in second-semester courses. This form helps the students manage their course work as well as helps the department to plan for offering the requested courses. The PS form may be modified at any time as the students proceed in their degree programs. However, requests for changes in PS must be processed before the requested change actually takes place. A revised PS form must also be approved and signed.

Mechanical engineering students must select all required course work from the list below. A typical program consists of six or more mechanical engineering or materials engineering courses (courses with the ME or MATL subject code). Each student's academic advisor must approve all courses prior to registration. Students may not use any courses taken without the approval of the academic advisor toward the 32-semester-hour minimum requirement. However, students may petition the MIE graduate committee to substitute no more than one (4-semester-hour) graduate-level course from outside the approved list of electives. This may include independent study. An independent study must be approved by the research advisor (for thesis option) and academic advisor (for nonthesis option). The petition must clearly state the reason for taking the course; a brief description of the goals; as well as the expected outcomes, deliverables ,and grading scheme.

| Degree Requirements | With Thesis | Course Work Only |
|---|---|---|
| Courses (with approval of advisor) | 24 SH | 32 SH |
| MEIE 6800 Technical Writing Seminar | 0 SH | 0 SH |
| MEIE 6850 Research Seminar in Mechanical and Industrial Engineering | 0 SH | 0 SH |
| Thesis | 8 SH | 0 SH |
| **Minimum semester hours required** | **32 SH** | **32 SH** |

# MSME—Master of Science in Mechanical Engineering with Concentration in Mechanics—Course Work Option

## GENERAL REQUIREMENTS

| | |
|---|---|
| ME 6200 or ME 6201 | 4 SH |
| Choose from any ME XXXX and/or MATL XXXX course | 8 SH |
| Electives from ME XXXX, MATL XXXX or other graduate engineering or science courses (by petition) | 8 SH |
| Any three courses from the list "Mechanics Concentration," below | 12 SH |

**PROGRAM TOTAL CREDITS**　　　　**32.0 SH**

## MECHANICS CONCENTRATION

| | |
|---|---|
| ME 5650 Advanced Mechanics of Materials | 4 SH |
| ME 5655 Dynamics and Mechanical Vibration | 4 SH |
| ME 5657 Finite Element Method | 4 SH |
| ME 5659 Control and Mechatronics | 4 SH |
| ME 7210 Elasticity and Plasticity | 4 SH |

# MSME—Master of Science in Mechanical Engineering with Concentration in Mechanics—Thesis Option

## GENERAL REQUIREMENTS

| | |
|---|---|
| ME 6200 or ME 6201 | 4 SH |
| Electives from ME XXXX, MATL XXXX or other graduate engineering or science courses (by petition) | 8 SH |
| ME 7990 MS Thesis | 8 SH |
| Any three courses from the list "Mechanics Concentration," below | 12 SH |

**PROGRAM TOTAL CREDITS**　　　　**32.0 SH**

## MECHANICS CONCENTRATION

| | |
|---|---|
| ME 5650 Advanced Mechanics of Materials | 4 SH |
| ME 5655 Dynamics and Mechanical Vibration | 4 SH |
| ME 5657 Finite Element Method | 4 SH |
| ME 5659 Control and Mechatronics | 4 SH |
| ME 7210 Elasticity and Plasticity | 4 SH |

# MSME—Master of Science in Mechanical Engineering with Concentration in Thermofluids—Course Work Option

## GENERAL REQUIREMENTS

| | |
|---|---|
| ME 6200 or ME 6201 | 4 SH |
| ME 7270 General Thermodynamics | 4 SH |
| ME 7275 Essentials of Fluid Dynamics | 4 SH |
| ME 7285 or ME 7290 | 4 SH |
| Choose electives from ME XXXX, MATL XXXX, or other approved graduate engineering or science courses | 4 SH |
| Any three courses from the list "Thermofluids Concentration," below | 12 SH |

**PROGRAM TOTAL CREDITS**　　　　**32.0 SH**

## THERMOFLUIDS CONCENTRATION

| | |
|---|---|
| ME 5690 Gas Turbine Combustion | 4 SH |
| ME 5695 Aerodynamics | 4 SH |
| ME 7280 Statistical Thermodynamics | 4 SH |
| ME 7295 Multiscale Flow and Transport Phenomena | 4 SH |
| ME 7300 Combustion and Air Pollution | 4 SH |
| ME 7305 Fundamentals of Combustion | 4 SH |
| ME 7310 Computational Fluid Dynamics with Heat Transfer | 4 SH |
| ME 7320 Solar Thermal Engineering | 4 SH |
| ME 7330 Turbulent Flow | 4 SH |
| ME 7340 Turbomachinery Design | 4 SH |

# MSME—Master of Science in Mechanical Engineering with Concentration in Thermofluids—Thesis Option

## GENERAL REQUIREMENTS

| | |
|---|---|
| ME 6200 or ME 6201 | 4 SH |
| ME 7270 General Thermodynamics | 4 SH |
| ME 7275 Essentials of Fluid Dynamics | 4 SH |
| ME 7285 or ME 7290 | 4 SH |
| Choose electives from ME XXXX, MATL XXXX, or other approved graduate engineering or science courses | 4 SH |
| ME 7990 MS Thesis | 8 SH |
| One course from the list "Thermofluids Concentration," below | 4 SH |

**PROGRAM TOTAL CREDITS**　　　　**32.0 SH**

## THERMOFLUIDS CONCENTRATION

| | |
|---|---|
| ME 5690 Gas Turbine Combustion | 4 SH |
| ME 5695 Aerodynamics | 4 SH |
| ME 7280 Statistical Thermodynamics | 4 SH |
| ME 7300 Combustion and Air Pollution | 4 SH |
| ME 7305 Fundamentals of Combustion | 4 SH |
| ME 7310 Computational Fluid Dynamics with Heat Transfer | 4 SH |
| ME 7320 Solar Thermal Engineering | 4 SH |
| ME 7330 Turbulent Flow | 4 SH |
| ME 7340 Turbomachinery Design | 4 SH |

# MSME—Master of Science in Mechanical Engineering with Concentration in Material Science—Course Work Option

## GENERAL REQUIREMENTS

| | |
|---|---|
| Any MATL XXXX courses (including ME 5600) | 16 SH |
| Choose electives from MATL XXXX, ME XXXX, or other approved graduate engineering or science courses | 16 SH |

**PROGRAM TOTAL CREDITS**　　　　**32.0 SH**

## MSME—Master of Science in Mechanical Engineering with Concentration in Material Science—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| Any MATL XXXX courses (including ME 5600) | 16 SH |
| Choose electives from ME XXXX, MATL XXXX, or other graduate engineering or science courses (by petition) | 8 SH |
| ME 7990 MS Thesis | 8 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MSME—Master of Science in Mechanical Engineering with Graduate Certificate in Engineering Leadership

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| ME 7440 Mechanical Engineering Leadership Challenge Project 1 | 4 SH |
| ME 7442 Mechanical Engineering Leadership Challenge Project 2 | 4 SH |
| Advisor-approved ME courses | 16 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## Doctor of Philosophy

### REQUIREMENTS

The PhD is awarded to students who demonstrate high academic achievement and research competence in the fields of mechanical or industrial engineering. To earn a PhD, a student must complete an approved, rigorous program of advanced course work and submit and defend an original dissertation of independent research. The mechanical and industrial engineering (MIE) department expects all successful doctoral candidates to show depth of knowledge and research innovation in their chosen field of specialization.

The MIE department admits applicants to the PhD program either directly after earning a suitable bachelor's degree or after earning a master's degree. Upon acceptance into the program, an applicant is designated as a doctoral student. This designation is changed to doctoral candidate upon successful completion of the doctoral qualifying examinations.

PhD students must find a research advisor within their first year of study. The research advisor must be a full-time faculty member of the MIE department; otherwise, a petition must be filed and approved by the MIE graduate committee. Students are advised by the academic advisor of their discipline before they select their research advisor.

### DOCTORAL QUALIFYING EXAMINATIONS

To qualify as a doctoral candidate, a doctoral student must successfully complete both a written preliminary exam and an oral area exam. All doctoral students who hold a master's degree must take the preliminary exam no later than the first time that it is offered after their first academic year of study. Those admitted directly with a bachelor's degree must take the preliminary exam no later than the first time that it is offered after their first two years of study.

### PRELIMINARY EXAMINATION

The MIE department offers the written preliminary exam twice during each academic year, in the morning and afternoon of Thursday and Friday of the first week of each regular semester. The objective of this exam is to test the student's fundamental knowledge of core subjects in a specific engineering discipline and to test skill in implementing the methods of inquiry in that field. The exam is six hours in length and covers, with equal emphasis, four different subjects from among the twenty-five subjects organized in the following nine groups (see table below). Each student's research advisor must approve the student's four subject selections. For mechanical engineering students, at least three of these selections must be in categories A–E. All written exams shall be closed book; however, students may prepare and use a single double-sided 8.5" x 11" sheet of reference material for each exam. Students may find further guidance in the *Doctoral Qualifying Examination Handbook,* as prepared and distributed by the MIE graduate committee. Students should also consult extensively with their advisors regarding all aspects of the qualifying exams.

The MIE graduate committee will review all students' performance in the preliminary exam. In consultation with the student's research advisor, the committee will recommend one of the following three possible exam results:

Pass: This grade indicates successful completion of the preliminary exam. In this case, the student is prepared to develop a research plan and literature survey. However, in some cases, the MIE graduate committee may recommend additional course work in any subject(s) where the preliminary exam indicated some weakness.

These students, in consultation with their research advisor, must form a dissertation committee no later than six months after successfully passing their PhD preliminary exams. The dissertation committee must be comprised of at least three members, two or more of which must be full-time MIE faculty members.

Conditional: If three out of four exams are passed in the first attempt, the student is invited to retake, at the next offering, only the failed exam. Otherwise, the student is invited to retake the full preliminary examination (any four subjects) at the next offering. The result of the second preliminary exam will be either pass or fail.

Fail: The student is not permitted to continue as a doctoral student in any of the programs offered by the MIE department.

The results of the preliminary exam and any recommended course work become part of the student's record.

## PRELIMINARY EXAMINATION SUBJECTS

The subject areas of the preliminary examinations are shown in the following table:

| Group | Subjects |
|---|---|
| A | Engineering mathematics (A1) |
| | Engineering computation (A2) |
| | Probability and statistics (A3) |
| B | Thermodynamics (B1) |
| | Fluid mechanics (B2) |
| | Heat transfer (B3) |
| C | Dynamics and vibrations (C1) |
| | Mechanics of deformable bodies (C2) |
| | Dynamic systems and control (C3) |
| | Finite element method (C4) |
| D | Materials science (D1) |
| | Mechanical behavior of materials (D2) |
| | Thermodynamics of materials (D3) |
| | Kinetics of phase transformations (D4) |
| | Fundamentals of polymer science and engineering (D5) |
| E | Design and CAD/CAM (E1) |
| F | Human-machine systems (F1) |
| G | Manufacturing systems (G1) |
| | Supply chain engineering and logistics (G2) |
| H | Operations research (H1) |
| | Reliability and quality assurance (H2) |
| | Simulation (H3) |
| I | Software engineering (I1) |
| | Computer graphics (I2) |
| | Artificial intelligence in engineering (I3) |

## AREA EXAMINATION

Students must take the area examination no more than 12 months after successfully completing the preliminary exam. The area exam comprises two parts: (1) an oral presentation by the student of a written literature survey and initial plan of research (independently developed results are not required at this stage); and (2) an oral exam of the student covering topics specifically related to the student's field of research.

The objective of the area exam is to assess the student's potential to perform independent research in the chosen field of specialization. The student's dissertation committee will invite any additional faculty deemed appropriate to that field; this area examining committee will then conduct the area exam. Each student's dissertation committee must comprise at least three members; two of those three must be MIE faculty members.

The area examining committee may either recommend admission to doctoral candidacy or may allow the student a single additional opportunity to complete the area exam successfully. Students not admitted to doctoral candidacy after a second attempt at the area exam will no longer be eligible for candidacy in any of the PhD programs offered by the MIE department. The committee's recommendation, the literature survey, and the initial research plan are added to the student's record upon admission to doctoral candidacy.

To meet the full-time registration requirement for PhD students who have completed all course work and have not yet reached PhD candidacy, a zero-credit course, ME 8960 PhD Exam Preparation, can be taken in place of the Dissertation course. The course is an individual instruction course, billed at 1 semester hour, and graded S or U. There is no course content, and students must register in a section with their research or academic advisor as the "instructor."

## COURSE REQUIREMENTS

A typical program of study includes at least 48 semester hours of course work beyond the bachelor's degree or 24 semester hours of course work beyond the master's degree.

A minor field of study is also required, comprising at least 8 semester hours of course work in a discipline other than that in which the candidate is concentrating (and that may also be taken outside the MIE department). Doctoral candidates must attain a minimum 3.000 GPA in minor area course work.

All MIE graduate students must complete MEIE 6800 Technical Writing Seminar and MEIE 6850 Research Seminar in Mechanical and Industrial Engineering during their first year of full-time study. MEIE 6850 is typically offered during the fall semester. If appropriate, part-time students may petition the graduate committee to waive these requirements.

All MIE graduate students are also required to complete a brief online session on Responsible Conduct of Research and Plagiarism in one of these seminar courses. The outcome of the online session will be filed with the student's records.

Each doctoral student, together with his or her research advisor, should develop an initial program during the first semester of study. The final program is also subject to the approval of the area examining committee, who will add the program of study to the student's record upon admission to doctoral candidacy.

Students may petition the MIE graduate committee to substitute no more than one (4-semester-hour) graduate-level course from outside the approved program. This may include independent study. An independent study must be approved by the research advisor.

Upon successful completion of the PhD preliminary qualifying exams and the majority of required course work, the doctoral candidate, in consultation with his or her research advisor, must register in two consecutive semesters for ME 9990 Dissertation. Upon completion of this sequence, the student must then register for ME 9996 Dissertation Continuation in every semester until the dissertation is completed. A student may not register for Continuation until they fulfill the two-semester Dissertation sequence.

## FINAL ORAL EXAMINATION

All doctoral candidates must pass a final oral exam. This exam will be scheduled once the dissertation committee agrees that the candidate's research is in a form appropriate for formal presentation and after completion of all other requirements for the PhD, including all course work approved in the final program of study. The objective of the exam is for the candidate to present and defend the results of the dissertation research and to demonstrate depth of knowledge and significant expertise in the area of that research under questioning from the dissertation committee and other attendees.

The exam shall be publicly advertised at least one week in advance and all faculty members may attend and participate. At the conclusion of the presentation and subsequent question period, the dissertation committee will convene to determine the outcome. The committee may recommend that the candidate be awarded the PhD or may require additional research and/or modifications of the dissertation. In some cases, candidates may be asked to present themselves for an additional final oral exam.

## RESIDENCY REQUIREMENT

After reaching PhD candidacy, the university residency requirement is satisfied by two semesters of full-time graduate registration or four semesters of part-time graduate registration. Students must be continually enrolled during the pursuit of the dissertation.

## PhD in Mechanical Engineering— Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Approved course work | 24 SH |
| ME 9990 Dissertation | 0 SH |
| MEIE 6800 Technical Writing Seminar | 0 SH |
| MEIE 6850 Research Seminar in Mechanical and Industrial Engineering | 0 SH |

| **PROGRAM TOTAL CREDITS** | **24.0 SH** |
|---|---|

## PhD in Mechanical Engineering— Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Approved course work | 48 SH |
| ME 9990 Dissertation | 0 SH |
| MEIE 6800 Technical Writing Seminar | 0 SH |
| MEIE 6850 Research Seminar in Mechanical and Industrial Engineering | 0 SH |

| **PROGRAM TOTAL CREDITS** | **48.0 SH** |
|---|---|

## OPERATIONS RESEARCH

**www.mie.neu.edu/graduate/operres.html**

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Operations research (OR) deals with the application of scientific methods to decision making. Students have an opportunity to learn how to develop and solve mathematical and computer models of systems using optimization and statistical methods. OR graduates work in a wide variety of fields, such as transportation, supply chain operations, communications and computer operations, manufacturing, finance, and healthcare. The OR program is offered jointly by the Department of Mechanical and Industrial Engineering (MIE) and the Department of Mathematics, thus achieving a unique balance of theory and application.

## Master of Science Degrees

### REQUIREMENTS

To be eligible for admission to any of the Master of Science (MS) degree programs, a prospective student must hold a Bachelor of Science degree in engineering, science, mathematics, or an equivalent field. Students in all master's degree programs must complete a minimum of 32 semester hours of approved course work (exclusive of any preparatory courses) with a minimum GPA of 3.000. Students may pursue any program either on a full- or part-time basis; however, certain restrictions may apply as described below.

Students who receive financial support from the university in the form of a research, teaching, or tuition assistantship must complete an 8-semester-hour thesis. Other students may choose to complete a thesis, project, or pursue their degree on a course-work-only (also known as nonthesis) basis. Students who complete the thesis option must make a presentation at a thesis defense before approval by the department.

### SPECIAL COURSE REQUIREMENTS

All MIE graduate students must complete MEIE 6800 Technical Writing Seminar and MEIE 6850 Research Seminar in Mechanical and Industrial Engineering during their first year of full-time study. MEIE 6850 is typically offered during the fall semester. If

appropriate, part-time students may petition the graduate committee to waive these requirements.

All MIE graduate students are also required to complete a brief online session on Responsible Conduct of Research and Plagiarism in one of these seminar courses. The outcome of the online session will be filed with the student's records.

### ACADEMIC AND RESEARCH ADVISORS

All nonthesis students are advised by the academic advisor designated for their respective concentration or program. Thesis-option MS students must find a research advisor within their first year of study and may have thesis reader(s) at the discretion of their research advisor. The research advisor must be a full-time faculty member of the MIE department; otherwise, a petition must be filed and approved by the MIE graduate committee. Thesis-option students are advised by the academic advisor of their concentration before they select their research advisor.

### PLAN OF STUDY AND COURSE SELECTION

It is recommended that all new students attend orientation sessions held by the MIE department and the Graduate School of Engineering to acquaint themselves with the course work requirements and research activities of the department as well as with general policies, procedures, and expectations.

In order to receive proper guidance with their course work needs, all MS students are strongly encouraged to complete and submit a signed Plan of Study (PS) to the department before enrolling in second-semester courses. This form helps the students in managing their course work as well as helping the department to plan for offering the requested courses. The PS form may be modified at any time as the students proceed in their degree programs. However, requests for changes in PS must be processed before the requested change actually takes place. A revised PS form must also be approved and signed by the student's academic advisor.

Operations research students must select all required course work, typically consisting of six or more courses, from the list below. Each student's academic advisor must approve all courses prior to registration. Students may not use any courses taken without the approval of the academic advisor toward the 32-semester-hour minimum requirement. However, students may petition the MIE graduate committee to substitute no more than one (4-semester-hour) graduate-level course from outside the approved list of electives. This may include independent study. An independent study must be approved by the research advisor (for thesis option) and academic advisor (for nonthesis option). The petition must clearly state the reason for taking the course; a brief description of the goals; as well as the expected outcomes, deliverables, and grading scheme.

## MSOR—Master of Science in Operations Research—Course Work Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| IE 6200 or MATH 7241 | 4 SH |
| MATH 7234 Optimization and Complexity | 4 SH |
| MEIE 6800 Technical Writing Seminar | 0 SH |
| MEIE 6850 Research Seminar in Mechanical and Industrial Engineering | 0 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| OR 7230 or MATH 7341 | 4 SH |
| Choose four courses from the list "Operations Course Option Electives," below | 16 SH |

### PROGRAM TOTAL CREDITS        32.0 SH

### OPERATIONS COURSE OPTION ELECTIVES

| | |
|---|---|
| CS 5800 Algorithms | 4 SH |
| CS 7805 Theory of Computation | 4 SH |
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| EECE 7360 Combinatorial Optimization | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 5400 Healthcare Systems Modeling and Analysis | 4 SH |
| IE 5500 Systems Engineering in Public Programs | 4 SH |
| IE 5617 Lean Concepts and Applications | 4 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 6300 Manufacturing Methods and Processes | 4 SH |
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6205 Program Structure and Algorithms | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| MATH 7232 Combinatorial Analysis | 4 SH |
| MATH 7233 Graph Theory | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7346 Time Series | 4 SH |
| MATH 7347 Statistical Decision Theory | 4 SH |
| MATH 7349 Stochastic Calculus and Introduction to No-Arbitrage Finance | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7260 Constraint Programming | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

## MSOR—Master of Science in Operations Research—Project Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| IE 6200 or MATH 7241 | 4 SH |
| MATH 7234 Optimization and Complexity | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| OR 7230 or MATH 7341 | 4 SH |
| OR 7945 Master's Project | 4 SH |
| Choose three courses from the list "Operations Project Option Electives," below | 12 SH |

### PROGRAM TOTAL CREDITS — 32.0 SH

### OPERATIONS PROJECT OPTION ELECTIVES

| | |
|---|---|
| CS 5800 Algorithms | 4 SH |
| CS 7805 Theory of Computation | 4 SH |
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| CSYE 6210 Component Software Development | 4 SH |
| EECE 7360 Combinatorial Optimization | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 5400 Healthcare Systems Modeling and Analysis | 4 SH |
| IE 5500 Systems Engineering in Public Programs | 4 SH |
| IE 5617 Lean Concepts and Applications | 4 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 6300 Manufacturing Methods and Processes | 4 SH |
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6205 Program Structure and Algorithms | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| MATH 7232 Combinatorial Analysis | 4 SH |
| MATH 7233 Graph Theory | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7346 Time Series | 4 SH |
| MATH 7347 Statistical Decision Theory | 4 SH |
| MATH 7349 Stochastic Calculus and Introduction to No-Arbitrage Finance | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7260 Constraint Programming | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

## MSOR—Master of Science in Operations Research—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| IE 6200 or MATH 7241 | 4 SH |
| MATH 7234 Optimization and Complexity | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| OR 7230 or MATH 7341 | 4 SH |
| OR 7990 MS Thesis | 8 SH |
| Choose two courses from the list "Operations Thesis Option Electives," below | 8 SH |

### PROGRAM TOTAL CREDITS — 32.0 SH

### OPERATIONS THESIS OPTION ELECTIVES

| | |
|---|---|
| CS 5800 Algorithms | 4 SH |
| CS 7805 Theory of Computation | 4 SH |
| CSYE 6200 Concepts of Object-Oriented Design | 4 SH |
| EECE 7360 Combinatorial Optimization | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| IE 5400 Healthcare Systems Modeling and Analysis | 4 SH |
| IE 5500 Systems Engineering in Public Programs | 4 SH |
| IE 5617 Lean Concepts and Applications | 4 SH |
| IE 5620 Mass Customization | 4 SH |
| IE 6300 Manufacturing Methods and Processes | 4 SH |
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| INFO 6205 Program Structure and Algorithms | 4 SH |
| INFO 6210 Data Management and Database Design | 4 SH |
| MATH 7232 Combinatorial Analysis | 4 SH |
| MATH 7233 Graph Theory | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7346 Time Series | 4 SH |
| MATH 7347 Statistical Decision Theory | 4 SH |
| MATH 7349 Stochastic Calculus and Introduction to No-Arbitrage Finance | 4 SH |
| OR 7235 Inventory Theory | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7260 Constraint Programming | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

## MSOR—Master of Science in Operations Research with Graduate Certificate in Engineering Leadership

### GENERAL REQUIREMENTS

| | |
|---|---|
| ENLR 5121 Engineering Leadership 1 | 2 SH |
| ENLR 5122 Engineering Leadership 2 | 2 SH |
| ENLR 5131 Scientific Foundations of Engineering 1 | 2 SH |
| ENLR 5132 Scientific Foundations of Engineering 2 | 2 SH |
| IE 6200 or MATH 7241 | 4 SH |
| MATH 7234 Optimization and Complexity | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |
| OR 7230 or MATH 7341 | 4 SH |
| OR 7440 Operations Research Engineering Leadership Challenge Project 1 | 4 SH |
| OR 7442 Operations Research Engineering Leadership Challenge Project 2 | 4 SH |

**PROGRAM TOTAL CREDITS**          **32.0 SH**

**www.northeastern.edu/camd/architecture/ academic-programs/ master-science-sustainable-building-systems**

SARA WADIA-FASCETTI, PhD
*Associate Dean for Research and Graduate Studies, Graduate School of Engineering*

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The sustainable building systems program focuses on the design and operation of buildings to provide a comfortable, healthy, and productive indoor environment with minimal energy and environmental impact. Students develop leadership and decision-making skills to implement sustainable building practices in either the private or public sectors in the global market.

The graduates of the Master of Science in Sustainable Building Systems program should display a high level of engineering knowledge in a broad range of architectural engineering, civil engineering, and construction management while embracing the concepts of engineering sustainability as related to energy and materials usage and the effects on the environment. Graduates will have the base training necessary to lead efforts within companies to plan and implement sustainable practices for the design and operation of buildings, realize energy and materials efficiency improvements, and minimize environmental impact. Upon graduation, students will be prepared to take the LEED (Leadership in Energy and Environmental Design) Green Associate examination, providing them with an internationally recognized certificate in this field.

## Sample Curriculum

Below is a typical course sequence for graduation in two semesters.

| Fall | Spring |
|---|---|
| ARCH 5210 (4 SH) | ARCH 5220 or elective (4 SH) |
| CIVE 7220 (4 SH) | CIVE 5270 or elective (4 SH) |
| CIVE 7230 or elective (4 SH) | SBSY 5200 (4 SH) |
| SBSY 5100 (4 SH) | SBSY 5300 or elective (4 SH) |

The program is flexible to accommodate full-time students—who wish to proceed over a period of three to four semesters—and part-time students—who can complete the program requirements by taking one to two courses per semester, finishing the program in approximately four years.

## MSSBS—Master of Science in Sustainable Building Systems

### GENERAL REQUIREMENTS

| | |
|---|---|
| ARCH 5210 Environmental Systems | 4 SH |
|    *Coreq.* ARCH 5211 | |
| CIVE 7220 Construction Management | 4 SH |
| SBSY 5100 Sustainable Design and Technologies in Construction | 4 SH |
| SBSY 5200 Sustainable Engineering Systems for Buildings | 4 SH |
| Course work from the list "Approved Open Electives," below | 8 SH |
| Course work from the list "Approved Restricted Electives," below | 8 SH |

| **PROGRAM TOTAL CREDITS** | **32.0 SH** |
|---|---|

### APPROVED OPEN ELECTIVES

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| ACCT 6201 Financial Reporting and Managerial Decision Making 2 | 1.5 SH |
| CIVE 5270 Environmental Protection and Management | 4 SH |
| CIVE 7350 Behavior of Concrete Structures | 4 SH |
| CIVE 7351 Behavior of Steel Structures | 4 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| FINA 6216 Valuation and Value Creation | 3 SH |
| FINA 6217 Real Estate Finance and Investment | 3 SH |
| ME 5645 Environmental Issues in Manufacturing and Product Use | 4 SH |

### APPROVED RESTRICTED ELECTIVES

| | |
|---|---|
| ARCH 5220 Integrated Building Systems | 4 SH |
| CIVE 7221 Construction Project Control and Organization | 2 SH |
| CIVE 7230 Legal Aspects of Civil Engineering | 4 SH |
| CIVE 7231 Alternative Project Delivery Systems in Construction | 2 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| SBSY 5300 Information Systems for Integrated Project Delivery | 4 SH |

**www.coe.neu.edu/programs/tsm**

PETER O'REILLY, PhD
*Program Director*

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The Master of Science in Telecommunication Systems Management degree is designed for professionals currently in the telecommunications or networking field who either wish to enhance their technical skills and credentials or who wish to make a transition to the business side of telecommunications or networking. We also welcome applications from prospective students with limited industry experience. This program, which may be pursued on a full- or part-time basis, is one of only a very few master's programs in telecommunications and networking in the United States that is truly multidisciplinary, giving students the flexibility to tailor the curriculum to their specific interests, backgrounds, and career goals.

## MSTSM—Master of Science in Telecommunication Systems Management

### DEGREE REQUIREMENTS

A minimum of 30 semester hours must be earned toward completion of the MSTSM degree. A minimum grade-point average of 3.000 is required over all courses applied toward the degree.

To qualify for any degree from the Graduate School of Engineering, a student must attain a cumulative grade-point average (GPA) of 3.000 or higher with no more than 8 semester hours below the grade of B– in all courses applied toward that degree, exclusive of any prerequisite courses. However, prerequisite courses are calculated into GPA. The committee on graduate study in engineering allows students to take 8 semester hours of credit beyond stated minimum degree requirements for the purpose of repeating failed required courses or substituting for elective courses in order to attain the required 3.000 GPA for the completion of degree requirements. Within the above limitations for extra or repeated courses, a student must repeat any required course in which he or she earns a grade of C+ or less and earn a grade of B– or better.

| Degree Requirements | Full-Time Study | Part-Time Study |
|---|---|---|
| Required core courses | 16 SH | 16 SH |
| Approved business and technical elective courses | 14 SH | 14 SH |
| **Minimum semester hours required** | **30 SH** | **30 SH** |

The program requires that a mix of core required courses and elective courses be taken. Although there are some dependencies among the core courses, the program may be started in either the fall or spring semester.

There are four core courses and a wide range of technical and business electives available. The core courses each carry 4 semester hours of credit. Students must receive a grade of at least a B– in each of the core courses, otherwise they will need to repeat the course. A maximum of two of the core courses may be waived —and only if a student has taken similar course material at another university with a satisfactory grade. Students should apply for such waivers during their first semester at Northeastern. If a technical core course is waived, it must be replaced with a technical elective. Similarly, if the business core course is waived, it must be replaced with a business elective.

At least one of the electives must be a business elective and at least one must be a technical elective. The technical electives include courses on network and communications technology and on the development of software systems and applications. The list of business electives is focused on engineering management and marketing. Electives come from an approved list of courses supplied by the colleges of engineering, business administration, and computer and information science. All students must take at least one technical elective and one business elective. These electives must be courses of at least 3 semester hours. Students may take elective course work outside this list with the prior approval of their program advisor.

It is expected that students beginning this program will have an adequate background in the following areas: C, C++, or Java programming languages; probability and statistics; and differential and integral calculus.

Special topics courses, as well as other courses from outside the program, may be used as electives with prior approval of the program director. Participants may elect TELE 6945 Master's Project (4 semester hours) in place of one of the electives with approval of the program director.

All transfer credits must be approved by petition before course enrollment.

TELE 5978 Independent Study, usually for 1 or 2 semester hours, is sometimes available for students. Independent study must be carried out under the supervision of a professor and must have prior approval of the TELE program director. Proposals for independent study need to be submitted at least one month before the start of the semester.

TELE 5976 Directed Study, also for 1 or 2 semester hours, is sometimes available for students. On directed study projects, a student follows a prescribed curriculum, usually with some form of an exam at the end of the semester.

## MSTSM in Telecommunications Systems Management with Concentration in Telecommunications Business Management

### GENERAL REQUIREMENTS

| | |
|---|---|
| TELE 5310 Fundamentals of Communication Systems | 4 SH |
| TELE 5320 Telecommunications Architecture and Systems | 4 SH |
| TELE 5330 Data Networking | 4 SH |
| TELE 5340 Telecommunications Public Policy and Business Management | 4 SH |
| Course work from the list "Approved Business Electives" and "Approved Technical Electives,"below | 14 SH |

### PROGRAM TOTAL CREDITS                    30.0 SH

### APPROVED BUSINESS ELECTIVES

| | |
|---|---|
| ACCT 6200 Financial Reporting and Managerial Decision Making 1 | 3 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |
| EMGT 6305 Financial Management for Engineers | 4 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| ENTR 6212 Business Planning for New Ventures | 3 SH |
| HRMG 6200 Managing People and Organizations | 3 SH |
| HRMG 6210 Managing Professionals and High Performance Teams | 3 SH |
| INFO 6245 Planning and Managing Information Systems Development | 4 SH |
| INFO 7285 Organizational Change and IT | 4 SH |
| MGMT 6214 Negotiations | 2 or 3 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| MKTG 6208 Marketing and Customer Value | 4 SH |
| MKTG 6214 New Product Development | 3 SH |
| TECE 6200 Innovation and Entrepreneurial Growth | 3 SH |
| TECE 6250 Lean Design and Development | 3 SH |
| TELE 5331 Lab for TELE 5330 | 0 SH |
| TELE 6370 Perspectives in Telecommunications Policy | 4 SH |
| TELE 6380 Consulting Project in Telecommunications | 4 SH |
| TELE 6602 Special Topics—Business | 1 to 4 SH |
| TELE 6603 Special Topics—Networking | 1 to 4 SH |

### APPROVED TECHINCAL ELECTIVES

| | |
|---|---|
| CS 5010 Programming Design Paradigm  *Coreq.* CS 5011 | 4 SH |
| CS 5500 Managing Software Development | 4 SH |
| CS 5520 Mobile Application Development | 4 SH |
| CS 5700 Fundamentals of Computer Networking | 4 SH |
| CS 6520 Methods of Software Development | 4 SH |
| CS 6710 Wireless Network | 4 SH |
| CS 6740 Network Security | 4 SH |
| EECE 5576 Wireless Communication Systems | 4 SH |
| EECE 7364 Mobile and Wireless Networking | 4 SH |

IA 5150 Network Security Practices                        4 SH
  *Coreq.* IA 5151
INFO 6210 Data Management and Database Design             4 SH
INFO 6215 Business Analysis and Information               4 SH
  Engineering
INFO 7310 Introduction to Distributed Security            4 SH
TELE 6100 Telecommunications Convergence                  4 SH
TELE 6200 Advanced Data Networking                        4 SH
TELE 6350 IP Telephony                                    4 SH
TELE 6360 Operation Support Systems in                    4 SH
  Telecommunications
TELE 6600 Special Topics—Telecommunication Policy 1 to 4 SH
TELE 6601 Special Topics—Systems                    1 to 4 SH

# *Bouvé College of Health Sciences*

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**TERRY FULMER, PHD, RN, FAAN,** *Dean*

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**Tom Olson, PhD,** *Associate Dean for Graduate Education*
**Margaret K. Schnabel,** *Director of Graduate Admissions and
    Student Services*

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*Dean's Office*
215 Behrakis Health Sciences Center
617.373.3323
617.373.3030 (fax)

*Graduate Admissions and Student Services Office*
123 Behrakis Health Sciences Center
617.373.2708
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$T$he Bouvé College of Health Sciences (BCHS) strongly
supports the mission of Northeastern University as a practice-
oriented, student-centered, urban research institution. The college
is committed to the goals of the institution, which include
excellence in education, research, scholarship, access to
educational opportunity, and a strong professional orientation.
Each of the programs within the college supports these aims both
individually and collectively.

Graduate programs in the Schools of Nursing,
Pharmaceutical Sciences, and the Health Professions (counseling
and applied education psychology, audiology, exercise sciences,
physical therapy, physician assistant, public health, speech-
language pathology) and the interdisciplinary programs of
biotechnology and health informatics incorporate experience in the
related field of study. Students have an opportunity to interact with
faculty contributing to research advances, as well as with Boston's
world-class healthcare and educational institutions, and study in a
comprehensive health-sciences college, where interdisciplinary
approaches to complex issues reflect professional practice.

The result: At Northeastern, you have an opportunity to
acquire the knowledge and capability needed for a lifetime of
social contribution and professional achievement.

## Health Certification

All new students must complete the University Health Report
form following acceptance to the university. These forms may be
obtained at the University Health and Counseling Services
(UHCS) located at 135 Forsyth Building or downloaded from
www.northeastern.edu/uhcs/forms/index.html. Graduate students
may additionally be expected to provide UHCS with proof of a
physical exam or statement of good health prior to registration;
this may vary among programs.

As a condition of matriculation at Northeastern University,
all students are required to submit the completed University
Health Report form to UHCS. Graduate students must return the
form **no later than one month** prior to entering the university.
The health center will block the registration of those who do not
file correct forms. All documentation must be signed by a medical
doctor, nurse practitioner, or physician assistant.

The Commonwealth of Massachusetts requires all university
students to provide documentation of immunity to the following:

- Hepatitis B (series of three immunizations or one positive titre)
- Measles (two immunizations or positive antibody titre)
- Mumps (one immunization or positive antibody titre)
- Rubella (one immunization or positive antibody titre)
- Meningitis (optional; students may decline immunization)
- Tetanus/Diphtheria (immunization within last 10 years)

Graduate students in the Bouvé College of Health Sciences are
additionally required to provide documentation of immunity to the
following:

- Varicella/chicken pox
- Tuberculin skin test (PPD): within six months of registration

Please refer to page two of the University Health Report for further
clarification. The University Health Report is to be completed once
prior to students beginning their graduate studies; however, some
programs in the Bouvé College of Health Sciences may require that
students provide proof of physical examination annually. Similarly,
some programs may require proof of additional immunities. Please
consult your program handbook or your program advisor for more
information. Medical documentation and health certification are
maintained by UHCS. Additional clinical clearance may be required
by some programs prior to your presence in any clinical setting.

## Practicum/Internship Policies

Students taking practicum courses or doing internships in their field of study may be required to submit certification of health status to each of their clinical placement coordinators. Each program has its own regulations for practicum health clearance. Students should consult their program handbooks or clinical placement coordinator for these requirements. Students who do not present the appropriate health certification will be blocked from registering for, or attending, practicum until satisfactory evidence is provided. An annual update of the student's health certification is also required in some internships and practica. Students taking practicum courses may also be required to submit to and successfully clear criminal history/background checks (CORI; see below). International nursing students must have a current U.S. nursing license and social security number.

## Background Checks

An increasing number of clinical sites require background checks for employees as well as students who come to their facilities. Northeastern University students will need to have background checks done *only* if their assigned clinical agency requires it. The most common background check required is the Massachusetts Criminal Offender Record Information (CORI), although some clinical sites require other types of checks, such as drug testing.

Bouvé College contracts with a national company, CertifiedBackground.com, to perform these checks. The company provides this service for universities nationwide. Log onto their website to learn more about them: certifiedbackground.com.

CertifiedBackground.com charges fees to conduct background checks. The fee varies depending on the type of background check needed. All fees will be paid by the student directly to CertifiedBackground.com.

All background check information is confidential. Results are sent to the designated clearance officer for Bouvé College, who is the only person who has access to the results. A student will be contacted by the clearance officer *only* if there is a question about the results. Neither the student nor the clearance officer is required to reveal the actual results of a background check to an on-campus clinical coordinator/clinical placement office, a clinical site, or anyone else at the university.

If an assigned clinical site requires students to have a background check, the on-campus clinical coordinator/clinical placement officer will inform the student of the requirements and provide the student with instructions and a deadline for completing the check. It is crucial that the student complete the check by the deadline given to assure adequate processing time prior to the start of a clinical experience. Failure to complete the check in a timely manner could jeopardize the student's progression in the program.

## Liability Insurance

All students on practicum/internship must register each semester while on practicum/internship to be covered by liability insurance. As long as they are registered, all Northeastern University matriculated students in fields of study requiring malpractice insurance are covered under a professional liability insurance for which they pay a yearly fee. This insurance covers injury to third parties by students doing work or professional studies outside Northeastern University premises that are clearly part of their duties. It does not cover willful misconduct. Students or the clinical placement coordinator can request that the institutional audit, compliance, and risk services office send evidence-confirming coverage to their field site. Students should consult their practicum placement officer, program coordinator, and specialization policies for information about further requirements for liability insurance. If you are not sure if your program is covered under this policy, coverage can be verified through the Office of Institutional Audit, Compliance and Risk Services at extension x5997 or www.northeastern.edu/risk_services/index.php.

## Grading

Although credit can be transferred, grades transferred from another institution are not calculated in the grade-point average (GPA) on the Northeastern University transcript. Therefore, courses repeated due to failure should be completed at Northeastern.

## Transfer of Credit

A maximum of 9 semester/12 quarter hours of credit obtained at another institution may be accepted toward the degree, provided the credits consist of work taken at the graduate level for graduate credit, carry grades of 3.000 or better, have been earned at an accredited institution, and have not been used toward any other degree. These courses must have been taken within five years prior to the transfer and cannot be taken in the last semester prior to graduation.

The exact requirements for fulfillment of a degree in the BCHS graduate school vary by program. Students must consult their individual academic program catalogs and policies, as well as program directors, if applicable, for specific credit and non-credit requirements necessary to achieve a specific degree.

If the course had been taken prior to matriculation at Bouvé, the student must submit to his or her academic advisor a petition requesting transfer along with the official transcript indicating successful completion of the course to be transferred. Upon obtaining the advisor's approval, the student submits the documentation to the graduate school office on the appropriate petition form. A student may petition to transfer credit only after matriculation in Bouvé.

Courses that have not been taken but will be taken for transfer from another institution must receive preapproval from the student's academic advisor. Students should submit the petition with the course description attached to their advisor for approval and then submit the completed petition to the Bouvé graduate school office.

Graduate courses at the Northeastern University College of Professional Studies (CPS) can be considered for transfer only with prior approval of the academic advisor. Courses taken in the CPS cannot be considered to fulfill full-time requirements for international students. For consideration of financial aid for CPS courses, please check with your financial aid officer.

**Students may not take courses required for the completion of their program in the last semester of their program.**

## Course Waiver

A student must obtain approval from their academic advisor to waive a course that was taken for credit toward a prior degree. To obtain approval by the academic advisor, the student must provide an official transcript and a syllabus of the content of the course to the program director, in order to verify equivalency with the course to be waived. The student must submit the signed appropriate petition form to the Bouvé graduate office. If approved to waive the course, the student must take another course in its place for equivalent credit.

## Academic Progression

All students should register by the first week of the semester for course work or continuation credit each semester of the academic year (fall, spring, and, where indicated, summer) once they are matriculated as full- or part-time students. All physician assistant students must register all three semesters. If a student does not register for two consecutive semesters, the student's file will be placed in the "inactive" archives and kept there for no longer than five years. Therefore, if a student plans on being absent more than one semester, he or she must notify the Bouvé graduate student office and file a petition for a leave of absence. (Please see page 19.)

For information about withdrawal and refund policies, please refer to www.northeastern.edu/financialaid/studentaccounts/refunds.html.

All degree requirements must be completed within a maximum of seven years of matriculation, although individual academic programs may require completion in a shorter time frame. Each student is responsible for reviewing the requirements for his or her particular program. A student's failure or inability to register does not extend the amount of time allowed to complete the program. Course credits earned in programs of graduate study are valid for a maximum of seven years unless an extension is granted by the Bouvé associate dean of graduate studies. After establishment of candidacy for the PhD degree, a maximum of five years will be allowed for completion of the degree requirements, unless an extension is granted (see "Extension Procedures," below). In order to progress in clinical courses that

are sequenced, students must receive a passing grade in all prior courses in the sequence. In the event that a student fails a clinical course that is not part of a sequence, progression is at the discretion of the student's academic advisor and/or the program director. When a student fails a clinical course that is part of a sequence of courses, the course instructor must notify the Bouvé College graduate office. Course material related to the student's failure (examination reports, clinical reports) must be made available to the student for review**.**

## Student's Academic Standing

Academic standing in BCHS is determined by the student's grade-point average (GPA) and performance in academic and clinical courses that are required by his or her program. All BCHS students are expected to maintain a cumulative GPA of 3.000 each semester to remain in good academic standing and to progress toward graduation. Students who do not maintain a cumulative GPA of 3.000 each semester will be placed on probation. Additionally, some programs require students to earn a grade of B (3.000) or better in each specified course.(Please see "Deficiency Information," below). Students must also earn a grade of B (3.000) or better in graduate courses taken at another institution that are subject to transfer credit.

### DEFICIENCY INFORMATION BY PROGRAM

- Audiology: 3.000 GPA and B lowest grade approved
- Biotechnology: 3.000 GPA and C– lowest grade approved
- Exercise science: 3.000 GPA and B lowest grade approved
- Health informatics: 3.000 GPA and B– lowest grade approved
- Nursing: 3.000 GPA and B lowest grade approved (Direct Entry has exceptions for undergraduate courses taken during the program)
- Physical therapy: 3.000 GPA and C lowest grade approved
- Physician assistant: 3.000 GPA and C lowest grade approved
- Public health: 3.000 GPA and B– lowest grade approved
- Pharmaceutical: 3.000 GPA and B lowest grade approved
- Psychology: 3.000 GPA and B lowest grade approved
- Speech: 3.000 GPA and B lowest grade approved

## Academic Probation Policy

Academic probation is a period of time when a student must address and remediate academic deficiencies. An action plan to clear the deficiency must be developed by the student, the student's academic advisor, and the specific program graduate committee (if applicable). A student placed on probation will receive written notification by the Office of Graduate Student Services. The student's program advisor will also receive notification of probationary status. It is the student's responsibility to write an action plan with his or her advisor. The plan should document how the deficiency will be remediated. This action plan must be signed by the advisor and the student and placed in the student's file in the graduate office within one month from the date of the written notification of probation. The student's failure to file an action plan may be cause for dismissal from the program.

The action plan must specify the date by which the deficiency will be cleared. Students will be placed on probation for the following deficiencies:

- A cumulative GPA below 3.000. If the student remains on academic probation for two semesters, he or she may be terminated from the graduate program.
- In some programs, a grade of B– or below in a specified course.
- Unsatisfactory final grade in a clinical course, practicum, internship, or research course, etc.

A BCHS graduate student may repeat a course only once to achieve a passing grade and may only repeat two courses during his or her entire program of study. A student may be on probation for only one semester, or until the course is offered again, unless the advisor approves an action plan that specifies a longer, but definite, period. A student may only be placed on probation twice during enrollment in BCHS and must correct all deficiencies, as specified, in each respective action plan during the applicable probationary period. Failure to remediate the deficiency within the agreed-upon time may result in dismissal from the program. During the period of probation, the student must earn a GPA of 3.000 or better each semester, or he or she is subject to dismissal from BCHS. Note that individual graduate programs may have additional requirements that must be included in the probation action plan.

Once the student has regained a GPA of 3.000, earned a grade of B or better in a repeated course, and/or demonstrated satisfactory performance in a clinical course, he or she must petition to be removed from probation.

## COUNSELING AND APPLIED EDUCATIONAL PSYCHOLOGY

**www.northeastern.edu/bouve/caep**

KARIN LIFTER, PhD
*Professor and Interim Chair*

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Graduate programs in the Department of Counseling and Applied Educational Psychology reflect Northeastern University's tradition of practice-oriented education with an ecological and multicultural focus. Faculty and students come from diverse ethnic and cultural backgrounds, providing an enriching learning experience. Our doctoral programs provide excellent educational opportunities for those interested in professional psychology with specialized training for future careers in academic or practice positions as licensed psychologists.

The Bouvé College of Health Sciences emphasizes experiential and field-based learning, interdisciplinary and global knowledge, and integration of science and practice. The Department of Counseling and Applied Educational Psychology seeks to produce students who are well prepared to become counseling and psychology professionals in a variety of educational, government, community, organizational, and private settings. As a Bouvé student, you have an opportunity to acquire knowledge and competency needed for a lifetime of personal fulfillment and professional achievement.

## Certificate in Applied Behavior Analysis

The Certificate in Applied Behavior Analysis program seeks to provide students with the knowledge base necessary for eligibility to take the Behavior Analysis Certification Board (BACB) exam. The curriculum, which is based on the BACB Fourth Edition Task List, includes six courses, all of which are offered online. Four standard programs of study are available; students may take one or two courses each term and may elect not to enroll at all during the summer, regardless of course load chosen. Special programs of study may also be arranged.

A representative program in which students take two courses during the academic year and the summer off follows. "Behavior Assessment" and "Research and Design Methods" are taken first as they are prerequisites for enrolling in the remaining four courses.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 6327 Behavior Assessment | 3 SH |
| CAEP 6328 Research and Design Methods | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6331 Advanced Learning Seminar 1 | 3 SH |
| CAEP 6334 Applied Programming Seminar 1 | 3 SH |

## Certificate of Advanced Graduate Studies (CAGS) in Applied Behavior Analysis

The Certificate of Advanced Graduate Studies (CAGS) program seeks to prepare graduates to assume supervisory behavior analyst roles in service agencies and in private and public school settings and to serve as independent consultants. Additionally, it seeks to give graduates expertise in a specific clinical area within applied behavior analysis. The six-course sequence that seeks to prepare students to take the BACB exam is followed by four additional courses in behavior analysis. These courses, which are related, explore the particular clinical issue in-depth.

Four standard programs of study are offered; students may take one or two courses each academic term and choose from a number of summer enrollment options. These options include taking one or two courses or not enrolling at all.

A representative program in which the student takes two courses during the academic year and one course in the summer follows. "Behavior Assessment" and "Research and Design Methods" must be taken first as they are prerequisites for enrolling in the remaining four courses. Specialization courses are indicated only generally; specific courses are determined by the area chosen.

The capstone for the program is the Professional Portfolio (see curriculum listing for MS in Applied Behavior Analysis, following, for description). This portfolio, which is compiled electronically, documents the student's acquisition of critical behavioral procedures.

**YEAR 1, FALL SEMESTER**
CAEP 6327 Behavior Assessment            3 SH
CAEP 6328 Research and Design Methods    3 SH

**YEAR 1, SPRING SEMESTER**
CAEP 6331 Advanced Learning Seminar 1       3 SH
CAEP 6334 Applied Programming Seminar 1     3 SH

**YEAR 1, SUMMER FULL SEMESTER**
CAEP 6336 Systematic Inquiry 1              3 SH

**YEAR 2, FALL SEMESTER**
CAEP 6329 Service Administration            3 SH
Foundations in specialization area          3 SH

**YEAR 2, SPRING SEMESTER**
Behavior Intervention 1: Specialization Area    3 SH
Behavior Intervention 2: Specialization Area    3 SH

**YEAR 2, SUMMER FULL SEMESTER**
CAEP 6337 Systematic Inquiry 2              3 SH

**PROGRAM TOTAL CREDITS            30.0 SH**

## Certificate in Early Intervention

Northeastern University's Certificate Program in Early Intervention is an interdisciplinary, preservice training program that is designed to fulfill requirements for certification as an early intervention specialist, at the advanced provisional level, as set forth by the Department of Public Health (DPH), Commonwealth of Massachusetts. The interdisciplinary nature of the program is facilitated by the interaction of students from school psychology, physical therapy, speech and language pathology, human services, psychology, and other disciplines who participate in the program.

The goals for the early intervention certificate program are:

- To increase the number of early intervention personnel
- To prepare personnel who have attained all competencies relative to early intervention, specified by the Massachusetts DPH, and that are consistent with best practice and research
- To prepare personnel in an interdisciplinary manner, drawing from Northeastern University's multidisciplinary resources
- To prepare personnel to function effectively across teams (IFSP teams, community teams, interagency teams) and to understand the roles of their interdisciplinary teammates
- To prepare personnel to provide services to infants and toddlers with disabilities, and their families, from linguistically and culturally diverse backgrounds in urban environments

Courses meet on campus one day each month, and additional course content is delivered through online distance education. The program can be taken alone or integrated with master's or bachelor's degree programs. Personnel who are working in the field may use their work site for field training. Course sequence for the certificate only program is as follows. Degree-bearing programs incorporate the courses in alternative arrangements (e.g., MS/Certificate of Advanced Graduate Studies in School Psychology).

**YEAR 1, FALL SEMESTER**
CAEP 5150 Early Intervention: Family Systems       3 SH
CAEP 5151 Early Intervention: Infant and Toddler   3 SH
  Development, Risk, and Disability
CAEP 8425 Early Intervention Practicum 1           2 SH

**YEAR 1, SPRING SEMESTER**
CAEP 5152 Early Intervention: Planning and Evaluating   3 SH
  Services
CAEP 8426 Early Intervention Practicum 2           2 SH
SLPA 6335 Early Intervention: Assessment and       3 SH
  Intervention

**PROGRAM TOTAL CREDITS            16.0 SH**

## MS in Applied Behavior Analysis

The Master of Science in Applied Behavior Analysis program seeks to prepare graduates to assume supervisory behavior analyst roles in service agencies and in private and public school settings and to serve as independent consultants. The six-course sequence that seeks to prepare students to take the BACB exam is followed by four additional courses in behavior analysis. These courses

explore the principles and procedures of applied behavior analysis in more depth and address its philosophical underpinnings.

Four standard programs of study are offered; students may take one or two courses each academic term and choose from a number of summer enrollment options. These options include taking one or two courses or not enrolling at all.

A representative program in which the student takes two courses during the academic year and one course in the summer follows. "Behavior Assessment" and "Research and Design Methods" must be taken first as they are prerequisites for enrolling in the remaining four courses. Similarly, "Systematic Inquiry 1" must be taken before "Systematic Inquiry 2."

The capstone for the program is the Professional Portfolio (see below). This portfolio, which is compiled electronically, documents the student's acquisition of critical behavioral procedures.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 6327 Behavior Assessment | 3 SH |
| CAEP 6328 Research and Design Methods | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6331 Advanced Learning Seminar 1 | 3 SH |
| CAEP 6334 Applied Programming Seminar 1 | 3 SH |

### YEAR 1, SUMMER FULL SEMESTER

| | |
|---|---|
| CAEP 6336 Systematic Inquiry 1 | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CAEP 6329 Service Administration | 3 SH |
| CAEP 6337 Systematic Inquiry 2 | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CAEP 6324 Programmed Learning | 3 SH |
| CAEP 6335 Applied Programming Seminar 2 | 3 SH |

### YEAR 2, SUMMER FULL SEMESTER

| | |
|---|---|
| CAEP 6332 Advanced Learning Seminar 2 | 3 SH |

**PROGRAM TOTAL CREDITS**      **30.0 SH**

### PROFESSIONAL PORTFOLIO

The Professional Portfolio is the capstone for both the Master of Science in Applied Behavior Analysis and CAGS programs. This portfolio documents the student's behavioral competency in critical clinical skills. These skills, each of which is associated with a specific project, include:

• Intake assessment
• Preference assessment
• Reinforcer assessment
• Functional analysis
• Antecedent intervention
• Consequence intervention
• Task analysis
• Discrimination training
• Literature review

Course assignments are designed to assist the student in designing and executing the projects associated with the skills and in preparing the documentation required for their inclusion in the Professional Portfolio.

A faculty member reviews and signs each project in the Professional Portfolio. The signature indicates that student has achieved the faculty-established standards for the project. Graduates are encouraged to use their Professional Portfolios when applying for employment.

Although a thesis is not required for graduation from either the Master of Science or CAGS program, students interested in research may combine two or three of the Professional Portfolio items into a research project. For example, the student may complete a literature search on stereotypical behavior, then conduct a functional analysis and intervention with a participant who exhibits that behavior. The research project is then prepared in journal format for inclusion in the Professional Portfolio.

Projects may be submitted for inclusion in the Professional Portfolio at anytime during the graduate program. When the student has completed all Professional Portfolio requirements, the program director should be notified so that a final review may take place. A complete Professional Portfolio is required for graduation.

## MS in College Student Development and Counseling

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 6200 Introduction to Counseling: Theory and Process in an Ecological Context | 3 SH |
| CAEP 6202 Research, Evaluation, and Data Analysis | 3 SH |
| CAEP 6235 Vocational, Education, and Career Development | 3 SH |
| CAEP 6300 Introduction to College Student Development | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6203 Understanding Culture and Diversity | 3 SH |
| CAEP 6262 Evaluation and Outcomes Assessment of Community, School, and Health-Related Programs | 3 SH |
| CAEP 6301 Planning and Administering Student Affairs | 3 SH |
| CAEP 6303 Financial Aspects of Higher Education | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CAEP 6230 Health Issues in Counseling or Elective | 3 SH |
| CAEP 6302 Law and Ethics in Higher Education | 3 SH |
| CAEP 8402 College Student Development Practicum 1 | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CAEP 6215 Groups: Dynamics and Leadership | 3 SH |
| CAEP 6305 Special Topics in Higher Education | 3 SH |
| CAEP 8403 College Student Development Practicum 2 | 3 SH |

**PROGRAM TOTAL CREDITS**      **42.0 SH**

## MS in Counseling Psychology—Full-Time Track

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 6200 Introduction to Counseling: Theory and Process in an Ecological Context | 3 SH |
| CAEP 6201 Introduction to Assessment | 3 SH |
| CAEP 6235 Vocational, Education, and Career Development | 3 SH |
| CAEP 6250 Individual Interventions | 3 SH |
| CAEP 6399 Clinical Skills in Counseling Psychology | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6203 Understanding Culture and Diversity | 3 SH |
| CAEP 6242 Psychopathology: Diagnosis and Treatment Planning | 3 SH |
| CAEP 6287 Group Counseling | 3 SH |
| CAEP 8401 Practicum in Counseling Psychology | 3 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| CAEP 6320 (elective, pending approval) | 3 SH |
| CAEP 6375 Substance Use and Treatment | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CAEP 6220 Development Across the Life Span | 3 SH |
| CAEP 6282 Ethics and Professional Development | 3 SH |
| CAEP 6380 Seminar in Feminist Psychology | 3 SH |
| CAEP 8510 Internship in Counseling Psychology 1 | 3 SH |
| Graduate elective | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CAEP 6202 or PHTH Qualitative Health Research | 3 SH |
| CAEP 6260 Community Counseling Psychology | 3 SH |
| CAEP 8511 Internship in Counseling Psychology 2 | 3 SH |
| Graduate elective | 3 SH |

### PROGRAM TOTAL CREDITS    60.0 SH

## MS in Counseling Psychology—Part-Time Track

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 6200 Introduction to Counseling: Theory and Process in an Ecological Context | 3 SH |
| CAEP 6250 Individual Interventions | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6203 Understanding Culture and Diversity | 3 SH |
| CAEP 6235 Vocational, Education, and Career Development | 3 SH |
| CAEP 6287 Group Counseling | 3 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| CAEP 6375 Substance Use and Treatment | 3 SH |
| Graduate elective | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CAEP 6201 Introduction to Assessment | 3 SH |
| CAEP 6282 Ethics and Professional Development | 3 SH |
| CAEP 6399 Clinical Skills in Counseling Psychology | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CAEP 6242 Psychopathology: Diagnosis and Treatment Planning | 3 SH |
| CAEP 8401 Practicum in Counseling Psychology | 3 SH |
| Graduate elective | 3 SH |

### YEAR 2, SUMMER 1 SEMESTER

| | |
|---|---|
| CAEP 6202 Research, Evaluation, and Data Analysis | 3 SH |
| Graduate elective | 3 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| CAEP 6220 Development Across the Life Span | 3 SH |
| CAEP 6380 Seminar in Feminist Psychology | 3 SH |
| CAEP 8510 Internship in Counseling Psychology 1 | 3 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| CAEP 6260 Community Counseling Psychology | 3 SH |
| CAEP 8511 Internship in Counseling Psychology 2 | 3 SH |

### PROGRAM TOTAL CREDITS    60.0 SH

## MS/Certificate of Advanced Graduate Studies in School Psychology—With Early Intervention

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 5150 Early Intervention: Family Systems | 3 SH |
| CAEP 6201 Introduction to Assessment | 3 SH |
| CAEP 6206 Learning Principles | 3 SH |
| CAEP 6218 Infant, Child, and Adolescent Development | 3 SH |
| CAEP 8425 Early Intervention Practicum 1 | 2 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6203 Understanding Culture and Diversity | 3 SH |
| CAEP 6247 Child and Adolescent Psychopathology | 3 SH |
| CAEP 6335 Applied Programming Seminar 2 | 3 SH |
| CAEP 6347 Behavior Management | 3 SH |
| CAEP 6350 Introduction to Cognitive Assessment | 3 SH |
| CAEP 8426 Early Intervention Practicum 2 | 2 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| CAEP 6202 Research, Evaluation, and Data Analysis | 3 SH |
| CAEP 6226 Neuropsychological and Ecological Perspectives on Cognitive Assessment | 3 SH |
| CAEP 6400 Prepracticum in School Psychology | 1 SH |

### YEAR 1, SUMMER 2 SEMESTER

| | |
|---|---|
| CAEP 6399 Clinical Skills in Counseling Psychology | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CAEP 6352 Personality Assessment | 3 SH |
| CAEP 6353 Curriculum-Based Assessment and Instruction | 3 SH |
| CAEP 6365 Seminar in School Psychology | 3 SH |
| CAEP 8415 Practicum in School Psychology 1 | 2 SH |

## YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CAEP 6345 Learning Problems: Educational, Biological, and Ecological Perspectives | 3 SH |
| CAEP 6355 School-Based Counseling | 3 SH |
| CAEP 6360 Consultation and Program Evaluation | 3 SH |
| CAEP 8416 Practicum in School Psychology 2 | 2 SH |

## YEAR 3, FALL SEMESTER

| | |
|---|---|
| CAEP 8501 Internship in School Psychology 1 | 3 SH |

## YEAR 3, SPRING SEMESTER

| | |
|---|---|
| CAEP 8502 Internship in School Psychology 2 | 3 SH |

**PROGRAM TOTAL CREDITS**      **69.0 SH**

# MS/Certificate of Advanced Graduate Studies in School Psychology—Without Early Intervention

## YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 6201 Introduction to Assessment | 3 SH |
| CAEP 6206 Learning Principles | 3 SH |
| CAEP 6218 Infant, Child, and Adolescent Development | 3 SH |
| CAEP 6365 Seminar in School Psychology | 3 SH |

## YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6203 Understanding Culture and Diversity | 3 SH |
| CAEP 6247 Child and Adolescent Psychopathology | 3 SH |
| CAEP 6347 Behavior Management | 3 SH |
| CAEP 6350 Introduction to Cognitive Assessment | 3 SH |

## YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| CAEP 6226 Neuropsychological and Ecological Perspectives on Cognitive Assessment | 3 SH |
| CAEP 6240 Family, School, and Community Systems | 3 SH |
| CAEP 6400 Prepracticum in School Psychology | 1 SH |

## YEAR 1, SUMMER 2 SEMESTER

| | |
|---|---|
| CAEP 6399 Clinical Skills in Counseling Psychology | 3 SH |

## YEAR 2, FALL SEMESTER

| | |
|---|---|
| CAEP 6202 Research, Evaluation, and Data Analysis | 3 SH |
| CAEP 6352 Personality Assessment | 3 SH |
| CAEP 6353 Curriculum-Based Assessment and Instruction | 3 SH |
| CAEP 8415 Practicum in School Psychology 1 | 2 SH |

## YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CAEP 6345 Learning Problems: Educational, Biological, and Ecological Perspectives | 3 SH |
| CAEP 6355 School-Based Counseling | 3 SH |
| CAEP 6360 Consultation and Program Evaluation | 3 SH |
| CAEP 8416 Practicum in School Psychology 2 | 2 SH |

## YEAR 3, FALL SEMESTER

| | |
|---|---|
| CAEP 8501 Internship in School Psychology 1 | 3 SH |

## YEAR 3, SPRING SEMESTER

| | |
|---|---|
| CAEP 8502 Internship in School Psychology 2 | 3 SH |

**PROGRAM TOTAL CREDITS**      **62.0 SH**

# PhD in Counseling Psychology

## PROGRAM REQUIREMENTS

| | |
|---|---|
| Basic core | 15 SH |
| Clinical core | 29 SH |
| Elective core | 3 SH |
| Professional core | 6 SH |
| Research core | 9 SH |

**CREDIT REQUIREMENT**      **62.0 SH**

## BASIC CORE

| | |
|---|---|
| CAEP 6390 History and Systems of Psychology | 3 SH |
| CAEP 6394 Advanced Multicultural Psychology | 3 SH |
| CAEP 7750 Biological Bases of Behavior | 3 SH |
| CAEP 7755 Cognitive and Affective Bases of Behavior | 3 SH |
| CAEP 7756 Social Psychology in an Organizational and Ecological Context | 3 SH |

## CLINICAL CORE

| | |
|---|---|
| CAEP 6350 Introduction to Cognitive Assessment | 3 SH |
| CAEP 6352 Personality Assessment | 3 SH |
| CAEP 7720 Advanced Clinical Interventions | 3 SH |
| CAEP 7723 Rorschach | 3 SH |
| CAEP 7741 Advanced Fieldwork 1 | 2 SH |
| CAEP 7742 Advanced Fieldwork 2 | 2 SH |
| CAEP 7743 Advanced Fieldwork 3 | 2 SH |
| CAEP 7744 Advanced Fieldwork 4 | 2 SH |
| CAEP 7758 Doctoral Seminar in Contemporary Theories of Psychotherapy | 3 SH |
| CAEP 7778 Doctoral Seminar: Leadership, Consultation, and Supervision | 3 SH |
| CAEP 7798 Doctoral Internship 1 | 1 to 2 SH |
| CAEP 7799 Doctoral Internship 2 | 2 SH |

## ELECTIVE CORE

| | |
|---|---|
| CAEP 7751 Advanced Clinical Neuropsychology | 3 SH |

## PROFESSIONAL CORE

| | |
|---|---|
| CAEP 7701 Doctoral Seminar in Counseling Psychology | 0 to 1 SH |
| CAEP 7732 Legal and Ethical Issues in Community and Educational Settings | 3 SH |

## RESEARCH CORE

| | |
|---|---|
| CAEP 7711 Measurement: Advanced Psychometric Principles | 3 SH |
| CAEP 7712 Intermediate Statistical Data Analysis Techniques | 3 SH |
| CAEP 7716 Advanced Research and Data Analyses 2 | 3 SH |
| CAEP 9990 Dissertation | 0 SH |
| CAEP 9996 Dissertation Continuation | 0 SH |

## PhD in School Psychology

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CAEP 6206 Learning Principles | 3 SH |
| CAEP 6218 Infant, Child, and Adolescent Development | 3 SH |
| CAEP 6365 Seminar in School Psychology | 3 SH |
| CAEP 7711 Measurement: Advanced Psychometric Principles | 3 SH |
| CAEP 7771 Research Team Experience 1 | 1 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CAEP 6347 Behavior Management | 3 SH |
| CAEP 6350 Introduction to Cognitive Assessment | 3 SH |
| CAEP 7712 Intermediate Statistical Data Analysis Techniques | 3 SH |
| CAEP 7772 Research Team Experience 2 | 1 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| CAEP 6240 Family, School, and Community Systems | 3 SH |
| CAEP 6400 Prepracticum in School Psychology | 1 SH |

### YEAR 1, SUMMER 2 SEMESTER

| | |
|---|---|
| CAEP 6399 Clinical Skills in Counseling Psychology | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CAEP 6352 Personality Assessment | 3 SH |
| CAEP 6353 Curriculum-Based Assessment and Instruction | 3 SH |
| CAEP 7715 Advanced Research and Data Analyses 1 | 3 SH |
| CAEP 7773 Research Team Experience 3 | 1 SH |
| CAEP 8415 Practicum in School Psychology 1 | 2 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CAEP 6345 Learning Problems: Educational, Biological, and Ecological Perspectives | 3 SH |
| CAEP 6355 School-Based Counseling | 3 SH |
| CAEP 7716 Advanced Research and Data Analyses 2 | 3 SH |
| CAEP 7774 Research Team Experience 4 | 1 SH |
| CAEP 8416 Practicum in School Psychology 2 | 2 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| CAEP 6390 or CAEP 6394 | 3 SH |
| CAEP 7741 Advanced Fieldwork 1 | 2 SH |
| CAEP 7750 or CAEP 7756 | 3 SH |
| CAEP 7755 Cognitive and Affective Bases of Behavior | 3 SH |
| CAEP 7775 Research Team Experience 5 | 1 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| CAEP 6247 Child and Adolescent Psychopathology | 3 SH |
| CAEP 6360 Consultation and Program Evaluation | 3 SH |
| CAEP 6722 or CAEP 7752 | 3 SH |
| CAEP 7742 Advanced Fieldwork 2 | 2 SH |
| CAEP 7776 Research Team Experience 6 | 1 SH |

### YEAR 4, FALL SEMESTER

| | |
|---|---|
| CAEP 6390 or CAEP 6394 | 3 SH |
| CAEP 7743 Advanced Fieldwork 3 | 2 SH |
| CAEP 7750 or CAEP 7756 | 3 SH |
| CAEP 7778 Doctoral Seminar: Leadership, Consultation, and Supervision | 3 SH |
| CAEP 9990 Dissertation | 0 SH |

### YEAR 4, SPRING SEMESTER

| | |
|---|---|
| CAEP 6722 or CAEP 7752 | 3 SH |
| CAEP 7732 Legal and Ethical Issues in Community and Educational Settings | 3 SH |
| CAEP 7744 Advanced Fieldwork 4 | 2 SH |
| CAEP 7778 Doctoral Seminar: Leadership, Consultation, and Supervision | 3 SH |

### YEAR 5, FALL SEMESTER

| | |
|---|---|
| CAEP 7798 Doctoral Internship 1 | 2 SH |

### YEAR 5, SPRING SEMESTER

| | |
|---|---|
| CAEP 7799 Doctoral Internship 2 | 2 SH |

### PROGRAM TOTAL CREDITS        104.0 SH

## HEALTH SCIENCES

**www.northeastern.edu/bouve/hs**

JEAN FLATLEY MCGUIRE, PhD
*Professor of the Practice and Interim Department Chair*

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Welcome to the Department of Health Sciences at the Bouvé College of Health Sciences at Northeastern University. Our department provides a unique, transdisciplinary setting that incorporates academics, research, and practice and seeks to prepare students for a wide range of career paths. We offer an engaging undergraduate academic program in health sciences as well as graduate degree programs, including the Master of Public Health, focusing in urban health, and Master of Science in Exercise Science with Concentration in Physical Activity and Public Health.

Our diverse faculty has expertise in the fields of population health, health disparities, nutritional epidemiology, social epidemiology, exercise science, medical sociology, public policy, personal health technologies, neurodevelopmental disorders, and mental health. Students have the opportunity to work side by side with faculty in conducting cutting-edge research in these fields. We also have research staff highly skilled in providing unique, specialized dietary assessment services.

In line with Northeastern's commitment to interdisciplinary research and urban engagement, we teach and work closely with many other schools, centers, and departments in the university, including the Institute on Urban Health Research (IUHR), the Center for Community Health Education Research and Service (CCHERS), and our National Institutes of Health- (NIH) funded Center for Population Health and Health Disparities (CPHHD), as well as community agencies and neighborhood health centers in the local Boston area.

## MS in Exercise Science with Concentration in Physical Activity and Public Health

*Director: Carmen Castaneda Sceppa, MD, PhD*

### PROGRAM REQUIREMENTS

| | |
|---|---|
| EXSC 5200 Cardiopulmonary Physiology | 3 SH |
| EXSC 5210 Physical Activity and Exercise: Prescription, Measurement, and Testing | 3 SH |
| EXSC 5220 Advanced Exercise Physiology | 3 SH |
| EXSC 5230 Physical Activity and Exercise: Effects on Musculoskeletal Health and Disease | 3 SH |
| EXSC 6202 Electrocardiography | 3 SH |
| EXSC 6400 Applied Research Methods | 3 SH |
| PHTH 5202 Epidemiology | 3 SH |
| PHTH 5210 Biostatistics in Public Health | 3 SH |
| PHTH 5212 Public Health Administration and Policy | 3 SH |
| PHTH 5540 Health Education and Program Planning | 3 SH |
| Two public health and/or nutrition electives | 6 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **36.0 SH** |

## MPH in Urban Health

*Director: Shan Mohammed, MD, MPH*

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| PHTH 5202 Epidemiology | 3 SH |
| PHTH 5210 Biostatistics in Public Health | 3 SH |
| PHTH 5212 Public Health Administration and Policy | 3 SH |
| PHTH 6204 Society, Behavior, and Health | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| PHTH 5120 Race, Ethnicity, and Health in the United States | 3 SH |
| PHTH 5214 Environmental Health | 3 SH |
| PHTH 6200 Principles and History of Urban Health | 3 SH |
| PHTH 6208 Urban Community Health Assessment | 3 SH |
| PHTH 6901 Capstone 1 | 1 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| One MPH or other approved elective | 3 SH |
| PHTH 5540 or POLS 7318 | 3 SH |
| PHTH 6966 Public Health Practicum | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Two MPH or other approved electives | 6 SH |
| PHTH 6902 Capstone 2 | 2 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **42.0 SH** |

**www.northeastern.edu/bouve/nursing**

PAMELA J. BURKE, PhD, RN, FNP, FSAHM, FAAN
*Professor and Interim Dean*
JANET RICCO, MBA, NP-BC, PhD
*Professor and Assistant Dean*
*of Graduate Nursing Programs*

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Susan McDonald, *Administrative Coordinator, Academic*
*Programs*, s.mcdonald@neu.edu

This is an exciting time in healthcare and nursing in particular. According to a recent Gallup Poll, the public ranks nursing as the "most ethical" profession. In the newly enacted healthcare legislation passed by Congress, nurses are considered the critical backbone and life force of the delivery system. What does that mean for those considering nursing as a profession? It means that as a nurse you will carry an awesome responsibility—to improve the health outcomes of patients and their families. It also means that you must be among the best prepared of health professionals. Excellent preparation is just what we seek to offer.

If you are coming to the School of Nursing to earn a master's, PhD, or DNP, your learning will be guided by our senior faculty, nursing leaders who are expert advance practice nurses in their respective specialty areas. Our affiliation with over 100 institutions means that you and the faculty can select the best place for your clinical rotations. *U.S. News & World Report* ranked our nurse anesthesia graduate program in the top 10 in the United States.

You want to change career pathways? We have the Certificate of Advanced Graduate Studies (CAGS) that facilitates attainment of a specialty track if you already have an advanced nursing degree. You want research? We have excellent nurse researchers who are working to improve patient care and advance nursing knowledge. Come join nursing at its finest. Northeastern University is a school on the move.

## Admission Requirement

Admissions requirements are specific to the program. Please refer to www.northeastern.edu/bouve/grad/chart.html.

## BSN/MS Nursing Program

If you are a diploma or associate degree registered nurse, this program offers a pathway to earning a joint degree that combines the baccalaureate and master degrees in two years on a full-time basis or up to five years on a part-time basis. We offer BSN/MS in the following areas:

- Nursing administration
- Acute adult gerontology nurse practitioner
- Neonatal nurse practitioner
- Pediatric nurse practitioner, acute and primary care
- Adult gerontology primary care nurse practitioner
- Family nurse practitioner
- Psychiatric mental health

The curriculum encompasses graduate courses in one of the areas of specialization, the core and foundation courses, and specific courses that address topics such as pathophysiology, cultural diversity, nursing informatics, and public health nursing.

## MS in Nursing—Direct Entry

### PROGRAM REQUIREMENTS

| | |
|---|---|
| HLTH 5450 Healthcare Research | 4 SH |
| NRSG 2210 Influences on Health and Illness: A Nursing Perspective | 3 SH |
| NRSG 2220 Nursing Interventions, Assessment, and Community Care<br>*Coreq.* NRSG 2221 | 3 SH |
| NRSG 2221 Lab for NRSG 2220<br>*Coreq.* NRSG 2220 | 2 SH |
| NRSG 3302 Nursing with Women and Families<br>*Coreq.* NRSG 3303 | 3 SH |
| NRSG 3303 Clinical for NRSG 3302<br>*Coreq.* NRSG 3302 | 2 SH |
| NRSG 3320 Nursing Care of Adults 1<br>*Coreq.* NRSG 3321 | 4 SH |
| NRSG 3321 Clinical for NRSG 3320<br>*Coreq.* NRSG 3320 | 2 SH |
| NRSG 3323 Intermediate Interventions and Assessment<br>*Coreq.* NRSG 3324 | 1 SH |
| NRSG 3324 Lab for NRSG 3323<br>*Coreq.* NRSG 3323 | 1 SH |
| NRSG 3400 Nursing and the Promotion of Mental Health<br>*Coreq.* NRSG 3401 | 3 SH |
| NRSG 3401 Clinical for NRSG 3400<br>*Coreq.* NRSG 3400 | 2 SH |
| NRSG 3420 Nursing Care of Adults 2<br>*Coreq.* NRSG 3421 | 4 SH |
| NRSG 3421 Clinical for NRSG 3420<br>*Coreq.* NRSG 3420 | 2 SH |
| NRSG 4502 Nursing Care of the Child<br>*Coreq.* NRSG 4503 | 4 SH |
| NRSG 4503 Clinical for NRSG 4502<br>*Coreq.* NRSG 4502 | 2 SH |
| NRSG 4604 Public Health Community Nursing<br>*Coreq.* NRSG 4605 | 3 SH |
| NRSG 4605 Clinical for NRSG 4604<br>*Coreq.* NRSG 4604 | 2 SH |
| NRSG 4610 Managing and Leading in Healthcare | 3 SH |
| NRSG 4995 Comprehensive Nursing Practicum | 6 SH |

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| **PROGRAM TOTAL CREDITS** | **64.0 SH** |

## MS in Nursing Administration

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6300 Healthcare Finance and Marketing | 3 SH |
| NRSG 6301 Human Resources and Operations | 3 SH |
| NRSG 6302 Health Policy and Law | 3 SH |
| NRSG 6305 Case Management | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| NRSG 6307 Health Informatics 2 | 3 SH |
| NRSG 6311 Program Development and Evaluation | 3 SH |
| NRSG 6500 Nursing Administration Practicum 1 | 4 SH |
| NRSG 6501 Nursing Administration Practicum 2 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Graduate elective | 3 SH |
| **PROGRAM TOTAL CREDITS** | **43.0 SH** |

## MS in Nursing Administration (BSN/MS)

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6300 Healthcare Finance and Marketing | 3 SH |
| NRSG 6301 Human Resources and Operations | 3 SH |
| NRSG 6302 Health Policy and Law | 3 SH |
| NRSG 6305 Case Management | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| NRSG 6307 Health Informatics 2 | 3 SH |
| NRSG 6311 Program Development and Evaluation | 3 SH |
| NRSG 6500 Nursing Administration Practicum 1 | 4 SH |
| NRSG 6501 Nursing Administration Practicum 2 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Qualified electives | 13 SH |
| **PROGRAM TOTAL CREDITS** | **67.0 SH** |

## Certificate of Advanced Graduate Studies (CAGS) in Nursing Administration

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6300 Healthcare Finance and Marketing | 3 SH |
| NRSG 6301 Human Resources and Operations | 3 SH |
| NRSG 6302 Health Policy and Law | 3 SH |
| NRSG 6305 Case Management | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| NRSG 6307 Health Informatics 2 | 3 SH |
| NRSG 6500 Nursing Administration Practicum 1 | 4 SH |
| NRSG 6501 Nursing Administration Practicum 2 | 4 SH |
| Graduate elective | 2 SH |
| **PROGRAM TOTAL CREDITS** | **31.0 SH** |

## MS in Nursing—Certified Nurse Practitioner Completion Program

### PROGRAM REQUIREMENTS*

| | |
|---|---|
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| NRSG synthesis specialization courses** | 13 SH |
| **PROGRAM TOTAL CREDITS** | **24.0 SH** |

*Prerequisite: National Certification in Advanced Practice Nursing Role (APRN) and minimum five years active practice in APRN role

**Prerequisite: Specific to each APRN specialization

## MS in Nursing—Neonatal Nurse Practitioner

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6116 Advanced Health Assessment of the Neonate and Infant | 3 SH |
| NRSG 6230 Nursing Management: Critically Ill Neonatal 1 | 3 SH |
| NRSG 6231 Nursing Management: Critically Ill Neonatal 2 | 3 SH |
| NRSG 6232 Neonatal Pharmacology | 2 SH |
| NRSG 6430 Neonatal Clinical Practicum 1 | 4 SH |
| NRSG 6431 Neonatal Clinical Practicum 2 | 4 SH |
| NRSG 6432 Neonatal Clinical Practicum 3 | 2 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MS in Nursing—Neonatal Nurse Practitioner (BSN/MS)

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6116 Advanced Health Assessment of the Neonate and Infant | 3 SH |
| NRSG 6230 Nursing Management: Critically Ill Neonatal 1 | 3 SH |
| NRSG 6231 Nursing Management: Critically Ill Neonatal 2 | 3 SH |
| NRSG 6232 Neonatal Pharmacology | 2 SH |
| NRSG 6430 Neonatal Clinical Practicum 1 | 4 SH |
| NRSG 6431 Neonatal Clinical Practicum 2 | 4 SH |
| NRSG 6432 Neonatal Clinical Practicum 3 | 2 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Qualifying electives | 18 SH |

| **PROGRAM TOTAL CREDITS** | **64.0 SH** |
|---|---|

## Certificate of Advanced Graduate Studies (CAGS)—Neonatal Nurse Practitioner

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6116 Advanced Health Assessment of the Neonate and Infant | 3 SH |
| NRSG 6230 Nursing Management: Critically Ill Neonatal 1 | 3 SH |
| NRSG 6231 Nursing Management: Critically Ill Neonatal 2 | 3 SH |
| NRSG 6232 Neonatal Pharmacology | 2 SH |
| NRSG 6430 Neonatal Clinical Practicum 1 | 4 SH |
| NRSG 6431 Neonatal Clinical Practicum 2 | 4 SH |
| NRSG 6432 Neonatal Clinical Practicum 3 | 2 SH |

| **PROGRAM TOTAL CREDITS** | **26.0 SH** |
|---|---|

## MS in Nursing—Pediatric Nurse Practitioner, Primary Care

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |

| | |
|---|---|
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6275 Urban Families at Risk: A Primary Care Approach | 4 SH |
| NRSG 6460 Care of Well Child/Adolescent Health Promotion Practicum | 4 SH |
| NRSG 6461 Child/Adolescent Health Problems Practicum | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |

| **PROGRAM TOTAL CREDITS** | **41.0 SH** |
|---|---|

## MS in Nursing—Pediatric Nurse Practitioner, Primary Care (BSN/MS)

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6275 Urban Families at Risk: A Primary Care Approach | 4 SH |
| NRSG 6460 Care of Well Child/Adolescent Health Promotion Practicum | 4 SH |
| NRSG 6461 Child/Adolescent Health Problems Practicum | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Graduate electives | 12 SH |

| **PROGRAM TOTAL CREDITS** | **67.0 SH** |
|---|---|

## Certificate of Advanced Graduate Studies (CAGS)— Pediatric Nurse Practitioner, Primary Care

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6275 Urban Families at Risk: A Primary Care Approach | 4 SH |
| NRSG 6460 Care of Well Child/Adolescent Health Promotion Practicum | 4 SH |
| NRSG 6461 Child/Adolescent Health Problems Practicum | 4 SH |
| Graduate elective | 2 SH |

**PROGRAM TOTAL CREDITS**     **32.0 SH**

## MS in Nursing—Pediatric Nurse Practitioner, Acute and Primary Care

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| CAEP 5151 Early Intervention: Infant and Toddler Development, Risk, and Disability | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6267 Care of the Critically Ill Child | 4 SH |
| NRSG 6275 Urban Families at Risk: A Primary Care Approach | 4 SH |
| NRSG 6460 Care of Well Child/Adolescent Health Promotion Practicum | 4 SH |
| NRSG 6461 Child/Adolescent Health Problems Practicum | 4 SH |
| NRSG 6463 Care of the Critically Ill Child Practicum | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |

**PROGRAM TOTAL CREDITS**     **52.0 SH**

## MS in Nursing—Pediatric Nurse Practitioner, Acute and Primary Care (BSN/MS)

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| CAEP 5151 Early Intervention: Infant and Toddler Development, Risk, and Disability | 3 SH |
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6267 Care of the Critically Ill Child | 4 SH |
| NRSG 6275 Urban Families at Risk: A Primary Care Approach | 4 SH |
| NRSG 6460 Care of Well Child/Adolescent Health Promotion Practicum | 4 SH |
| NRSG 6461 Child/Adolescent Health Problems Practicum | 4 SH |
| NRSG 6463 Care of the Critically Ill Child Practicum | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Graduate electives | 12 SH |

**PROGRAM TOTAL CREDITS**     **78.0 SH**

## Certificate of Advanced Graduate Studies (CAGS)— Pediatric Nurse Practitioner, Acute and Primary Care

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| CAEP 5151 Early Intervention: Infant and Toddler Development, Risk, and Disability | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6267 Care of the Critically Ill Child | 4 SH |
| NRSG 6275 Urban Families at Risk: A Primary Care Approach | 4 SH |
| NRSG 6460 Care of Well Child/Adolescent Health Promotion Practicum | 4 SH |

| | |
|---|---|
| NRSG 6461 Child/Adolescent Health Problems Practicum | 4 SH |
| NRSG 6463 Care of the Critically Ill Child Practicum | 4 SH |
| **PROGRAM TOTAL CREDITS** | **41.0 SH** |

## Certificate of Advanced Graduate Studies (CAGS)— Pediatric Nurse Practitioner, Acute Care

### PROGRAM REQUIREMENTS

| | |
|---|---|
| CAEP 5151 Early Intervention: Infant and Toddler Development, Risk, and Disability | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6267 Care of the Critically Ill Child | 4 SH |
| NRSG 6461 Child/Adolescent Health Problems Practicum | 4 SH |
| NRSG 6463 Care of the Critically Ill Child Practicum | 4 SH |
| Graduate elective | 2 SH |
| **PROGRAM TOTAL CREDITS** | **23.0 SH** |

## MS in Nursing—Family Nurse Practitioner

### CLINICAL HOUR REQUIREMENT

780 clinical hours required

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6222 Pharmacology of Adults and Older Adults | 2 SH |
| NRSG 6249 Health Promotion of Adult/Older Adult *Coreq.* NRSG 6449 | 3 SH |
| NRSG 6253 Primary Care of Adult/Older Adult Health Problems | 4 SH |
| NRSG 6255 Family Nurse Practitioner Practicum 1 | 3 SH |
| NRSG 6256 Family Nurse Practitioner Practicum 2 | 3 SH |
| NRSG 6257 Family Nurse Practitioner Practicum 3 | 3 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6266 Family Theory and Primary Care in the Childbearing Years | 4 SH |
| NRSG 6449 Health Promotion of Adult/Older Adult Practicum *Coreq.* NRSG 6249 | 1 SH |
| NRSG 6450 Adult/Older Adult Practicum 1 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| **PROGRAM TOTAL CREDITS** | **54.0 SH** |

## MS in Nursing—Family Nurse Practitioner (BSN/MS)

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6222 Pharmacology of Adults and Older Adults | 2 SH |
| NRSG 6249 Health Promotion of Adult/Older Adult *Coreq.* NRSG 6449 | 3 SH |
| NRSG 6253 Primary Care of Adult/Older Adult Health Problems | 4 SH |
| NRSG 6255 Family Nurse Practitioner Practicum 1 | 3 SH |
| NRSG 6256 Family Nurse Practitioner Practicum 2 | 3 SH |
| NRSG 6257 Family Nurse Practitioner Practicum 3 | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6266 Family Theory and Primary Care in the Childbearing Years | 4 SH |
| NRSG 6449 Health Promotion of Adult/Older Adult Practicum *Coreq.* NRSG 6249 | 1 SH |
| NRSG 6450 Adult/Older Adult Practicum 1 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Qualified electives | 17 SH |
| **PROGRAM TOTAL CREDITS** | **87.0 SH** |

## Certificate of Advanced Graduate Studies (CAGS)— Primary Care, Family Nurse Practitioner Specialization

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6222 Pharmacology of Adults and Older Adults | 2 SH |
| NRSG 6249 Health Promotion of Adult/Older Adult *Coreq.* NRSG 6449 | 3 SH |
| NRSG 6253 Primary Care of Adult/Older Adult Health Problems | 4 SH |
| NRSG 6255 Family Nurse Practitioner Practicum 1 | 3 SH |
| NRSG 6256 Family Nurse Practitioner Practicum 2 | 3 SH |

| | |
|---|---|
| NRSG 6257 Family Nurse Practitioner Practicum 3 | 3 SH |
| NRSG 6262 Pediatric Pharmacology | 2 SH |
| NRSG 6264 Care of Well Child/Adolescent Health Promotion | 4 SH |
| NRSG 6265 Care of Child/Adolescent Health Problems | 4 SH |
| NRSG 6266 Family Theory and Primary Care in the Childbearing Years | 4 SH |
| NRSG 6449 Health Promotion of Adult/Older Adult Practicum | 1 SH |
| *Coreq.* NRSG 6249 | |
| NRSG 6450 Adult/Older Adult Practicum 1 | 4 SH |

**PROGRAM TOTAL CREDITS**      **45.0 SH**

## Certificate of Advanced Graduate Studies (CAGS)—Primary Care, Adult Nurse Practitioner Specialization

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6222 Pharmacology of Adults and Older Adults | 2 SH |
| NRSG 6249 Health Promotion of Adult/Older Adult | 3 SH |
| *Coreq.* NRSG 6449 | |
| NRSG 6253 Primary Care of Adult/Older Adult Health Problems | 4 SH |
| NRSG 6254 Primary Care of Adult/Older Adult Complex Patients | 4 SH |
| NRSG 6449 Health Promotion of Adult/Older Adult Practicum | 1 SH |
| *Coreq.* NRSG 6249 | |
| NRSG 6450 Adult/Older Adult Practicum 1 | 4 SH |
| NRSG 6451 Adult/Older Adult Practicum 2 | 4 SH |
| Graduate elective | 2 SH |

**PROGRAM TOTAL CREDITS**      **32.0 SH**

## MS in Nursing—Nurse Practitioner, Adult-Gerontology

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5115 Health Assessment | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6222 Pharmacology of Adults and Older Adults | 2 SH |
| NRSG 6249 Health Promotion of Adult/Older Adult | 3 SH |
| *Coreq.* NRSG 6449 | |
| NRSG 6253 Primary Care of Adult/Older Adult Health Problems | 4 SH |
| NRSG 6254 Primary Care of Adult/Older Adult Complex Patients | 4 SH |

| | |
|---|---|
| NRSG 6449 Health Promotion of Adult/Older Adult Practicum | 1 SH |
| *Coreq.* NRSG 6249 | |
| NRSG 6450 Adult/Older Adult Practicum 1 | 4 SH |
| NRSG 6451 Adult/Older Adult Practicum 2 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Elective | 2 SH |

**PROGRAM TOTAL CREDITS**      **43.0 SH**

## MS in Nursing—Nurse Practitioner, Adult-Gerontology Primary Care (BSN/MS)

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6220 Nursing Management: Acute Episodic Illness | 3 SH |
| *Coreq.* NRSG 6420 | |
| NRSG 6221 Nursing Management: Critical and Chronic Illness | 3 SH |
| *Coreq.* NRSG 6421 | |
| NRSG 6222 or NRSG 6325 | 2 SH |
| NRSG 6241 Acute-Care Concepts in Nursing Practice | 3 SH |
| *Coreq.* NRSG 6422 | |
| NRSG 6420 Adult-Gerontology Acute-Care Nursing Practicum 1 | 2 SH |
| *Coreq.* NRSG 6220 | |
| NRSG 6421 Adult-Gerontology Acute-Care Nursing Practicum 2 | 4 SH |
| *Coreq.* NRSG 6221 | |
| NRSG 6422 Adult-Gerontology Acute-Care Nursing Practicum 3 | 4 SH |
| *Coreq.* NRSG 6241 | |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Qualified electives | 13 SH |

**PROGRAM TOTAL CREDITS**      **67.0 SH**

## MS in Nursing—Nurse Practitioner, Adult-Gerontology Acute Care

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6220 Nursing Management: Acute Episodic Illness<br>*Coreq.* NRSG 6420 | 3 SH |
| NRSG 6221 Nursing Management: Critical and Chronic Illness<br>*Coreq.* NRSG 6421 | 3 SH |
| NRSG 6222 or NRSG 6325 | 2 SH |
| NRSG 6241 Acute-Care Concepts in Nursing Practice<br>*Coreq.* NRSG 6422 | 3 SH |
| NRSG 6420 Adult-Gerontology Acute-Care Nursing Practicum 1<br>*Coreq.* NRSG 6220 | 2 SH |
| NRSG 6421 Adult-Gerontology Acute-Care Nursing Practicum 2<br>*Coreq.* NRSG 6221 | 4 SH |
| NRSG 6422 Adult-Gerontology Acute-Care Nursing Practicum 3<br>*Coreq.* NRSG 6241 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Graduate elective | 3 SH |

### PROGRAM TOTAL CREDITS — 43.0 SH

## MS in Nursing—Nurse Practitioner, Adult-Gerontology Acute Care (BSN/MS)

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6220 Nursing Management: Acute Episodic Illness<br>*Coreq.* NRSG 6420 | 3 SH |
| NRSG 6221 Nursing Management: Critical and Chronic Illness<br>*Coreq.* NRSG 6421 | 3 SH |
| NRSG 6222 or NRSG 6325 | 2 SH |
| NRSG 6241 Acute-Care Concepts in Nursing Practice<br>*Coreq.* NRSG 6422 | 3 SH |
| NRSG 6420 Adult-Gerontology Acute-Care Nursing Practicum 1<br>*Coreq.* NRSG 6220 | 2 SH |
| NRSG 6421 Adult-Gerontology Acute-Care Nursing Practicum 2<br>*Coreq.* NRSG 6221 | 4 SH |
| NRSG 6422 Adult-Gerontology Acute-Care Nursing Practicum 3<br>*Coreq.* NRSG 6241 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Qualified electives | 13 SH |

### PROGRAM TOTAL CREDITS — 67.0 SH

## Certificate of Advanced Graduate Studies (CAGS)—Adult-Gerontolgy Acute-Care Nurse Practitioner Specialization

### PROGRAM REQUIREMENTS

| | |
|---|---|
| NRSG 6220 Nursing Management: Acute Episodic Illness<br>*Coreq.* NRSG 6420 | 3 SH |
| NRSG 6221 Nursing Management: Critical and Chronic Illness<br>*Coreq.* NRSG 6421 | 3 SH |
| NRSG 6241 Acute-Care Concepts in Nursing Practice<br>*Coreq.* NRSG 6422 | 3 SH |
| NRSG 6420 Adult-Gerontology Acute-Care Nursing Practicum 1<br>*Coreq.* NRSG 6220 | 2 SH |
| NRSG 6421 Adult-Gerontology Acute-Care Nursing Practicum 2<br>*Coreq.* NRSG 6221 | 4 SH |
| NRSG 6422 Adult-Gerontology Acute-Care Nursing Practicum 3<br>*Coreq.* NRSG 6241 | 4 SH |
| Electives | 5 SH |

### PROGRAM TOTAL CREDITS — 24.0 SH

## MS in Nursing—Family Psychiatric NP

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6281 Dimensions of Clinical Practice | 3 SH |
| NRSG 6282 Clinical Psychopharmacology | 3 SH |
| NRSG 6283 Psychobiological Bases of Mental Disorders | 3 SH |
| NRSG 6286 Contemporary Psychotherapies—Theory and Practice | 3 SH |
| NRSG 6480 Psychiatric Practicum across the Life Span 1 | 5 SH |
| NRSG 6481 Psychiatric Practicum across the Life Span 2 | 5 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Elective | 2 SH |

**PROGRAM TOTAL CREDITS**      **43.0 SH**

## MS in Nursing—Family Psychiatric NP (BSN/MS)

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| NRSG 5100 Professional Development and Scientific Basis | 4 SH |
| NRSG 5101 Computer and Nursing Informatics | 3 SH |
| NRSG 5102 Public Health Nursing | 4 SH |
| NRSG 5103 Cultural Diversity in Nursing Practice | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6281 Dimensions of Clinical Practice | 3 SH |
| NRSG 6282 Clinical Psychopharmacology | 3 SH |
| NRSG 6283 Psychobiological Bases of Mental Disorders | 3 SH |
| NRSG 6286 Contemporary Psychotherapies—Theory and Practice | 3 SH |
| NRSG 6480 Psychiatric Practicum across the Life Span 1 | 5 SH |
| NRSG 6481 Psychiatric Practicum across the Life Span 2 | 5 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Graduate electives | 12 SH |

**PROGRAM TOTAL CREDITS**      **67.0 SH**

## Certificate of Advanced Graduate Studies (CAGS) — Family Psychiatric NP

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| NRSG 6281 Dimensions of Clinical Practice | 3 SH |
| NRSG 6282 Clinical Psychopharmacology | 3 SH |
| NRSG 6283 Psychobiological Bases of Mental Disorders | 3 SH |
| NRSG 6286 Contemporary Psychotherapies—Theory and Practice | 3 SH |
| NRSG 6480 Psychiatric Practicum across the Life Span 1 | 5 SH |
| NRSG 6481 Psychiatric Practicum across the Life Span 2 | 5 SH |
| Graduate elective | 2 SH |

**PROGRAM TOTAL CREDITS**      **24.0 SH**

## MS in Nursing with Concentration in Nurse Anesthesia

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6320 Role/Practice Issues in Nurse Anesthesia | 3 SH |
| NRSG 6321 Conceptual Basis of Nurse Anesthesia Practice 1<br>*Coreq.* NRSG 6530 | 3 SH |
| NRSG 6322 Conceptual Basis of Nurse Anesthesia Practice 2<br>*Coreq.* NRSG 6534 | 3 SH |
| NRSG 6324 Chemistry and Physics in Anesthesia | 3 SH |
| NRSG 6325 Pharmacotherapeutics in Anesthesia and Critical Care Nursing | 2 SH |
| NRSG 6333 Conceptual Basis of Nurse Anesthesia Practice 3<br>*Coreq.* NRSG 6535 | 3 SH |
| NRSG 6336 Advanced Concepts in Nurse Anesthesia Practice<br>*Coreq.* NRSG 6540 | 3 SH |
| NRSG 6530 Nurse Anesthesia Practicum 1<br>*Coreq.* NRSG 6321 | 2 SH |
| NRSG 6534 Nurse Anesthesia Practicum 2<br>*Coreq.* NRSG 6322 | 4 SH |
| NRSG 6535 Nurse Anesthesia Practicum 3<br>*Coreq.* NRSG 6333 | 4 SH |
| NRSG 6540 Advanced Clinical Experiences in Nurse Anesthesia 1<br>*Coreq.* NRSG 6336 | 1 SH |
| NRSG 6541 Advanced Clinical Experiences in Nurse Anesthesia 2 | 1 SH |

| NRSG 6542 Advanced Clinical Experiences in Nurse Anesthesia 3 | 1 SH |
|---|---|
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| Clinical elective | 2 SH |
| **PROGRAM TOTAL CREDITS** | **54.0 SH** |

## MS in Nursing with Concentration in Nurse Anesthesia (CRNA)

### YEAR 1, FALL SEMESTER

| NRSG 5170 Statistics in Nursing | 2 SH |
|---|---|
| NRSG 5174 Clinical Anatomy and Physiology 2 for Nurse Anesthesia | 5 SH |
| NRSG 5176 Theoretical and Research Applications in Nurse Anesthesia | 3 SH |
| NRSG 6374 Fundamentals of Nurse Anesthesia 1 | 6 SH |

### YEAR 1, SUMMER FULL SEMESTER

| NRSG 5172 Clinical Anatomy and Physiology 1 for Nurse Anesthesia | 6 SH |
|---|---|
| NRSG 5178 Information Systems in Advanced Nursing Practice | 2 SH |
| NRSG 5184 Biochemistry for Nurse Anesthesia | 4 SH |
| NRSG 6369 Pharmacology for Nurse Anesthesia 1 | 5 SH |

### YEAR 2, FALL SEMESTER

| NRSG 6570 Nurse Anesthesia Role Practicum 1 | 12 SH |
|---|---|

### YEAR 2, SPRING SEMESTER

| NRSG 5180 Evaluation and Application of Research in Advanced Nursing Practice | 4 SH |
|---|---|
| NRSG 5182 Physical Examination and Differential Diagnosis | 4 SH |
| NRSG 6372 Professional Aspects of Nurse Anesthesia Practice | 3 SH |
| NRSG 6377 Fundamentals of Nurse Anesthesia 2 | 6 SH |

### YEAR 2, SUMMER FULL SEMESTER

| NRSG 6371 Pharmacology for Nurse Anesthesia 2 | 4 SH |
|---|---|
| NRSG 6378 Fundamentals of Nurse Anesthesia 3 | 6 SH |

### YEAR 3, FALL SEMESTER

| NRSG 6572 Nurse Anesthesia Clinical Practicum 1 | 10 SH |
|---|---|

### YEAR 3, SPRING SEMESTER

| NRSG 6576 Nurse Anesthesia Clinical Practicum 2 | 10 SH |
|---|---|

### YEAR 3, SUMMER FULL SEMESTER

| NRSG 6574 Nurse Anesthesia Role Practicum 2 | 12 SH |
|---|---|
| **PROGRAM TOTAL CREDITS** | **104.0 SH** |

## MS in Nursing with Concentration in Nurse Anesthesia (CRNA) Completion Program

### PROGRAM REQUIREMENTS

| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
|---|---|
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6320 Role/Practice Issues in Nurse Anesthesia | 3 SH |
| NRSG 6324 Chemistry and Physics in Anesthesia | 3 SH |
| NRSG 6325 Pharmacotherapeutics in Anesthesia and Critical Care Nursing | 2 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| **PROGRAM TOTAL CREDITS** | **25.0 SH** |

## Certificate of Advanced Graduate Studies (CAGS) in Nurse Anesthesia

### PROGRAM REQUIREMENTS

| NRSG 5117 Advanced Pharmacology | 2 SH |
|---|---|
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 6115 Health Assessment | 3 SH |
| NRSG 6320 Role/Practice Issues in Nurse Anesthesia | 3 SH |
| NRSG 6321 Conceptual Basis of Nurse Anesthesia Practice 1 <br> *Coreq.* NRSG 6530 | 3 SH |
| NRSG 6322 Conceptual Basis of Nurse Anesthesia Practice 2 <br> *Coreq.* NRSG 6534 | 3 SH |
| NRSG 6324 Chemistry and Physics in Anesthesia | 3 SH |
| NRSG 6325 Pharmacotherapeutics in Anesthesia and Critical Care Nursing | 2 SH |
| NRSG 6333 Conceptual Basis of Nurse Anesthesia Practice 3 <br> *Coreq.* NRSG 6535 | 3 SH |
| NRSG 6336 Advanced Concepts in Nurse Anesthesia Practice <br> *Coreq.* NRSG 6540 | 3 SH |
| NRSG 6530 Nurse Anesthesia Practicum 1 <br> *Coreq.* NRSG 6321 | 2 SH |
| NRSG 6534 Nurse Anesthesia Practicum 2 <br> *Coreq.* NRSG 6322 | 4 SH |
| NRSG 6535 Nurse Anesthesia Practicum 3 <br> *Coreq.* NRSG 6333 | 4 SH |
| NRSG 6540 Advanced Clinical Experiences in Nurse Anesthesia 1 <br> *Coreq.* NRSG 6336 | 1 SH |
| NRSG 6541 Advanced Clinical Experiences in Nurse Anesthesia 2 | 1 SH |
| NRSG 6542 Advanced Clinical Experiences in Nurse Anesthesia 3 | 1 SH |
| **PROGRAM TOTAL CREDITS** | **41.0 SH** |

## MS/MBA in Nursing

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| ACCT 6272 Financial Statement Preparation and Analysis | 2.25 SH |
| ACCT 6273 Identifying Strategic Implications in Accounting Data | 2.25 SH |
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| FINA 6200 Value Creation through Financial Decision Making | 3 SH |
| INTB 6200 Managing the Global Enterprise | 3 SH |
| MECN 6200 Global Competition and Market Dominance | 3 SH |
| MGSC 6200 Information Analysis | 3 SH |
| MGSC 6206 Management of Service and Manufacturing Operations | 3 SH |
| MKTG 6200 Creating and Sustaining Customer Markets | 3 SH |
| NRSG 5118 Healthcare System and Professional Role Development | 3 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6301 Human Resources and Operations | 3 SH |
| NRSG 6302 Health Policy and Law | 3 SH |
| NRSG 6305 Case Management | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| NRSG 6307 Health Informatics 2 | 3 SH |
| NRSG 6500 Nursing Administration Practicum 1 | 4 SH |
| NRSG 6501 Nursing Administration Practicum 2 | 4 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7110 Evidence-Based Practice Research Application | 2 SH |
| STRT 6200 Strategic Decision Making in a Changing Environment | 3 SH |
| Business Specialization 1 | 3 SH |
| Business Specialization 2 | 1 SH |

**PROGRAM TOTAL CREDITS**    **66.5 SH**

## DNP—Doctor of Nursing Practice, Post-Master's

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 6300 Healthcare Finance and Marketing | 3 SH |
| NRSG 6302 Health Policy and Law | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| NRSG 7100 Leadership in Advanced Practice Nursing | 3 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7915 Capstone 1 | 3 SH |
| NRSG 7917 Capstone 2 | 6 SH |
| Graduate elective | 3 SH |

**PROGRAM TOTAL CREDITS**    **30.0 SH**

## DNP with Concentration in Nurse Anesthesia (CRNA)

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5170 Statistics in Nursing | 2 SH |
| NRSG 5172 Clinical Anatomy and Physiology 1 for Nurse Anesthesia | 6 SH |
| NRSG 5174 Clinical Anatomy and Physiology 2 for Nurse Anesthesia | 5 SH |
| NRSG 5182 Physical Examination and Differential Diagnosis | 4 SH |
| NRSG 5184 Biochemistry for Nurse Anesthesia | 4 SH |
| NRSG 6300 Healthcare Finance and Marketing | 3 SH |
| NRSG 6302 Health Policy and Law | 3 SH |
| NRSG 6306 Health Informatics 1 | 3 SH |
| NRSG 6369 Pharmacology for Nurse Anesthesia 1 | 5 SH |
| NRSG 6371 Pharmacology for Nurse Anesthesia 2 | 4 SH |
| NRSG 6372 Professional Aspects of Nurse Anesthesia Practice | 3 SH |
| NRSG 6374 Fundamentals of Nurse Anesthesia 1 | 6 SH |
| NRSG 6377 Fundamentals of Nurse Anesthesia 2 | 6 SH |
| NRSG 6378 Fundamentals of Nurse Anesthesia 3 | 6 SH |
| NRSG 6570 Nurse Anesthesia Role Practicum 1 | 12 SH |
| NRSG 6572 Nurse Anesthesia Clinical Practicum 1 | 10 SH |
| NRSG 6574 Nurse Anesthesia Role Practicum 2 | 12 SH |
| NRSG 6576 Nurse Anesthesia Clinical Practicum 2 | 10 SH |
| NRSG 7100 Leadership in Advanced Practice Nursing | 3 SH |
| NRSG 7105 Translating Research Evidence into Practice | 3 SH |
| NRSG 7915 Capstone 1 | 3 SH |
| NRSG 7917 Capstone 2 | 6 SH |

**PROGRAM TOTAL CREDITS**    **122.0 SH**

## PhD in Nursing—Advanced Degree Entrance

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| LPSC 7305 Research and Statistical Methods | 3 SH |
| NRSG 7700 The Science of Nursing | 3 SH |
| NRSG 7706 Design and Methods for Clinical Nursing Research | 3 SH |
| NRSG 7709 Qualitative Research Methods | 3 SH |
| NRSG 7712 Quantitative Research Methods | 3 SH |
| NRSG 7715 Measurement in Clinical Research | 3 SH |
| NRSG 7750 Healthcare of Urban Populations | 3 SH |
| NRSG 7770 Research Colloquium | 1 SH |
| NRSG 7781 Lab for NRSG 7780 | 1 SH |
| NRSG 7782 Multiple Regression Analysis in Health Sciences | 3 SH |
| NRSG 9845 Dissertation Seminar 1 | 3 SH |
| NRSG 9846 Dissertation Seminar 2 | 3 SH |
| NRSG 9990 Dissertation | 2 SH |
| Two graduate electives | 6 SH |
| Research practicum electives | 6 SH |

**PROGRAM TOTAL CREDITS**    **46.0 SH**

## PhD in Nursing—Bachelor's Degree Entrance

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| LPSC 7305 Research and Statistical Methods | 3 SH |
| NRSG 5117 Advanced Pharmacology | 2 SH |
| NRSG 5121 Epidemiology and Population Health | 3 SH |
| NRSG 5126 Pathophysiology for Advanced Practice | 3 SH |
| NRSG 7700 The Science of Nursing | 3 SH |
| NRSG 7706 Design and Methods for Clinical Nursing Research | 3 SH |
| NRSG 7709 Qualitative Research Methods | 3 SH |
| NRSG 7712 Quantitative Research Methods | 3 SH |
| NRSG 7715 Measurement in Clinical Research | 3 SH |
| NRSG 7750 Healthcare of Urban Populations | 3 SH |
| NRSG 7770 Research Colloquium (taken 4 times) | 4 SH |
| NRSG 7781 Lab for NRSG 7780 | 1 SH |
| NRSG 7782 Multiple Regression Analysis in Health Sciences | 3 SH |
| NRSG 9845 Dissertation Seminar 1 | 3 SH |
| NRSG 9846 Dissertation Seminar 2 | 3 SH |
| NRSG 9990 Dissertation | 2 SH |
| Five graduate electives | 15 SH |
| Three clinical cognate courses | 9 SH |
| **PROGRAM TOTAL CREDITS** | **69.0 SH** |

## SCHOOL OF PHARMACY (PHARMACEUTICAL SCIENCES)

**www.northeastern.edu/bouve/pharmacy**

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Pharmaceutical science is a problem-solving discipline concerned with the discovery, design, and use of drugs. Pharmaceutical scientists find new targets for drug development; research how drugs work at a molecular level; and determine how drugs' properties, dosages, and delivery systems affect their performance. Northeastern has a well-deserved reputation among students, researchers, and other universities. Our department has five interlinked Centers of Research Excellence that pursue specific areas of pharmaceutical and chemical research: the Center for Drug Discovery, the New England Inflammation and Tissue Protection Institute, the Center for Pharmaceutical Biotechnology and Nanomedicine, the Center for Translational Imaging, and the Environmental Cancer Research Program. Northeastern offers many of its classes in the evening to accommodate the needs of the working community. Many students in the pharmaceutical science MS program complete their degree on a part-time basis. For those interested in discovery, problem solving, and cutting-edge research in one of the world's foremost scientific and medical environments, Northeastern University's School of Pharmacy in the Bouvé College of Health Sciences is the place to study pharmaceutical science.

Pharmaceutical science is inherently interdisciplinary, and this is reflected in the availability of several options at both the MS and PhD levels. The main options are pharmaceutics and drug delivery, pharmacology, and medicinal chemistry. The curriculum for each of these options allows a degree of flexibility in terms of specific courses taken, and the examples below are not absolute but reflect students' most common choices made with the advice of faculty members. Even more flexibility is possible with the MS in Pharmaceutical Sciences (interdisciplinary concentration).

# MS in Pharmaceutical Sciences

*Note:* Curriculum substitutions are made as recommended by the department.

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| BIOL 6300 Biochemistry | 4 SH |
| PHSC 5100 Concepts in Pharmaceutical Science | 2 SH |
| PHSC 6216 Human Physiology and Pathophysiology | 2 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| BIOL 6301 Molecular Cell Biology | 4 SH |
| PHSC 7010 Pharmaceutical Sciences Laboratory | 4 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| NNMD 7270 Introduction to Nanomedicine Science and Technology | 3 SH |
| PHSC 6210 Drug Design, Evaluation, and Development | 2 SH |
| PHSC 6214 Experimental Design and Biometrics | 2 SH |
| PMST 6254 Advanced Drug Delivery System | 3 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| BIOL 6381 Ethics in Biological Research | 2 SH |
| PMST 6250 Advanced Physical Pharmacy | 2 SH |
| PMST 6252 Pharmacokinetics and Drug Metabolism | 3 SH |

**PROGRAM TOTAL CREDITS**    **33.0 SH**

# MS in Pharmacology

*Note:* Curriculum substitutions are made as recommended by the department.

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| BIOL 6300 Biochemistry | 4 SH |
| PHSC 5100 Concepts in Pharmaceutical Science | 2 SH |
| PHSC 6216 Human Physiology and Pathophysiology | 2 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| BIOL 6301 Molecular Cell Biology | 4 SH |
| PHSC 7010 Pharmaceutical Sciences Laboratory | 4 SH |
| PMCL 6261 Pharmacology 2 | 2 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| BIOL 6381 Ethics in Biological Research | 2 SH |
| PHSC 6210 Drug Design, Evaluation, and Development | 2 SH |
| PHSC 6214 Experimental Design and Biometrics | 2 SH |
| PHSC 6990 Thesis | 2 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| NRSG 6800 Introduction to Industry Research Guidelines | 3 SH |
| PMCL 6260 Pharmacology 1 | 2 SH |
| PMCL 6262 Receptor Pharmacology | 2 SH |

**PROGRAM TOTAL CREDITS**    **33.0 SH**

# MS in Medicinal Chemistry

*Note:* Curriculum substitutions are made as recommended by the department.

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| BIOL 6300 Biochemistry | 4 SH |
| PHSC 5100 Concepts in Pharmaceutical Science | 2 SH |
| PHSC 6210 Drug Design, Evaluation, and Development | 2 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| BIOL 6381 Ethics in Biological Research | 2 SH |
| CHEM 5626 Organic Synthesis 1 | 3 SH |
| CHEM 5676 Bioorganic Chemistry | 3 SH |

**YEAR 1, SUMMER FULL SEMESTER**

| | |
|---|---|
| PHSC 6212 Research Skills and Ethics | 1 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| CHEM 5612 Principles of Mass Spectrometry | 3 SH |
| CHEM 5626 Organic Synthesis 1 | 3 SH |
| PHSC 6222 The Chemistry and Biology of Drugs of Abuse | 2 SH |
| PHSC 6990 Thesis | 2 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| CHEM 5628 Spectroscopy of Organic Compounds | 3 SH |
| CHEM 5672 Organic Synthesis 2 | 3 SH |
| PHSC 6996 Thesis Continuation | 0 SH |

**PROGRAM TOTAL CREDITS**    **33.0 SH**

# MS in Biomedical Nanotechnology

This MS program in biomedical nanotechnology incorporates aspects of the pharmaceutical sciences curriculum with courses in nanotechnology, entrepreneurship, and law. The combination of these fields results in a unique curriculum that offers students an opportunity to obtain skills not only in the relevant science but also in leadership, business, and intellectual property law. Furthermore, the program directly addresses a core mission of the university: the provision of practice-oriented educational programs in major scientific disciplines.

Prerequisites: calculus, organic chemistry, biochemistry, and physiology.

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| NNMD 7270 Introduction to Nanomedicine Science and Technology | 3 SH |
| PHSC 5100 Concepts in Pharmaceutical Science | 2 SH |
| PHSC 5300 Pharmaceutical Biochemistry | 2 SH |
| PHSC 6300 Pharmaceutical Science Seminar | 1 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| NNMD 7370 Nanosystems Design for Biology and Medicine | 2 SH |
| PHSC 6210 Drug Design, Evaluation, and Development | 2 SH |
| PHSC 7010 Pharmaceutical Sciences Laboratory | 4 SH |

**YEAR 1, SUMMER FULL SEMESTER**

| | |
|---|---|
| PHSC 6212 Research Skills and Ethics | 1 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| ENTR 6200 Enterprise Growth and Innovation | 3 SH |
| LAW 7369 Intellectual Property Law | 2 SH |
| PMST 6254 Advanced Drug Delivery System | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| EECE 5698 Special Topics in Electrical and Computer Engineering | 4 SH |
| ENTR 6212 Business Planning for New Ventures | 3 SH |
| TBD Special Topics Course in Nanotechnology and Law | 1 SH |

### YEAR 2, SUMMER FULL SEMESTER

| | |
|---|---|
| PHSC 6401 Pharmaceutical Science Internship | 1 SH |
| **PROGRAM TOTAL CREDITS** | **34.0 SH** |

## MS in Biomedical Science

### PROGRAM REQUIREMENTS

| | |
|---|---|
| Required MS core | 5 to 7 SH |
| Interdisciplinary core requirement | 16 to 20 SH |
| General elective core | 4 to 6 SH |
| **CREDIT REQUIREMENT** | **33.0 SH** |

## PhD in Biomedical Science

### PROGRAM REQUIREMENTS

| | |
|---|---|
| Required PhD core | 5 to 6 SH |
| Required specialization | 22 SH |
| General elective core | 4 to 6 SH |
| PhD core courses | 12 SH |
| **CREDIT REQUIREMENT** | **45.0 SH** |

## PhD in Pharmacology

### PROGRAM REQUIREMENTS

| | |
|---|---|
| Required core | 5 to 6 SH |
| Required specialization core | 18 SH |
| Program electives | 10 to 12 SH |
| PhD core courses | 12 SH |
| **CREDIT REQUIREMENT** | **45.0 SH** |

## PhD in Medicinal Chemistry

### PROGRAM REQUIREMENTS

| | |
|---|---|
| Required MEDC core | 5 to 7 SH |
| Required specialization core courses | 9 SH |
| Approved general electives | 19 to 21 SH |
| PhD core courses | 12 SH |
| **CREDIT REQUIREMENT** | **45.0 SH** |

## PhD in Pharmaceutical Sciences

### PROGRAM REQUIREMENTS

| | |
|---|---|
| Required core | 5 to 6 SH |
| Required specialization | 22 SH |
| General elective core | 4 to 6 SH |
| PhD core courses | 12 SH |
| **CREDIT REQUIREMENT** | **45.0 SH** |

## PharmD—Doctor of Pharmacy—Direct Entry

### ADMISSIONS CRITERIA

BS or BA fron an accredited college
Grade-point average of 3.000

### PREREQUISITE COURSES AND CREDITS

| | |
|---|---|
| Chemistry 1 with lab | 4 |
| Chemistry 2 with lab | 4 |
| General biology 1 with lab | 4 |
| General biology 2 with lab | 4 |
| Calculus | 4 |
| Organic chemistry 1 with lab | 4 |
| Organic chemistry 2 with lab | 4 |
| Biochemistry | 4 |
| General psychology | 4 |
| English—intensive writing course | 4 |
| Human physiology 1 with lab | 4 |
| Human physiology 2 with lab | 4 |
| Physics with lab | 4 |
| Arts or humanities elective | 4 |
| General electives | 12 |

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| ENGL 3306 Advanced Writing in the Health Professions | 4 SH |
| PHMD 1201 Introduction to Pharmacy Practice *Coreq.* PHMD 1202 | 2.5 SH |
| PHMD 1202 Lab for PHMD 1201 *Coreq.* PHMD 1201 | 0.5 SH |
| PHSC 3411 Pharmaceutics 1 | 4 SH |
| PHSC 4501 Pharmacology/Medicinal Chemistry 1 | 5 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| Introductory Pharmacy Practice Experience | 0 SH |

### YEAR 1, SUMMER FULL SEMESTER

| | |
|---|---|
| PHMD 2310 Educational and Behavioral Interventions in Pharmacy Practice *Coreq.* PHMD 2311 | 2 SH |
| PHMD 2311 Lab for PHMD 2310 *Coreq.* PHMD 2310 | 0.5 SH |
| PHMD 2350 Healthcare Systems | 3 SH |
| PHSC 3412 Pharmaceutics 2 | 4 SH |
| PHSC 3419 Pharmaceutics Laboratory | 1 SH |
| PHSC 4502 Pharmacology/Medicinal Chemistry 2 | 5 SH |

**YEAR 2, FALL SEMESTER**

Introductory Pharmacy Practice Experience                0 SH

**YEAR 2, SPRING SEMESTER**

PHMD 3450 Research Methodology and Biostatistics         3 SH

PHMD 4611 Comprehensive Disease Management 1             6 SH
   *Coreq.* PHMD 4612

PHMD 4612 Comprehensive Disease                          1 SH
   Management 1 Seminar
   *Coreq.* PHMD 4611

PHSC 2330 Immunology                                     3 SH

PHSC 3430 Pharmacokinetics and Biopharmaceutics          3 SH

Capstone/elective                                        0 to 4 SH

**YEAR 2, SUMMER FULL SEMESTER**

PHMD 4621 Comprehensive Disease Management 2             6 SH
   *Coreq.* PHMD 4622 and PHMD 4623

PHMD 4622 Comprehensive Disease                          1 SH
   Management 2 Seminar
   *Coreq.* PHMD 4621 and PHMD 4623

PHMD 4623 Comprehensive Disease                          0.5 SH
   Management 2 Skills Lab
   *Coreq.* PHMD 4621 and PHMD 4622

PHMD 6223 Drug Information and Evaluation                3 SH

PHMD 6330 Jurisprudence                                  3 SH

PHSC 5360 Anti-Infectives                                4 SH

Capstone/elective                                        0 to 4 SH

**YEAR 3, FALL SEMESTER**

PHMD 4631 Comprehensive Disease Management 3             6 SH
   *Coreq.* PHMD 4632 and PHMD 4633

PHMD 4632 Comprehensive Disease                          1 SH
   Management 3 Seminar
   *Coreq.* PHMD 4631 and PHMD 4633

PHMD 4633 Comprehensive Disease                          0.5 SH
   Management 3 Skills Lab
   *Coreq.* PHMD 4631 and PHMD 4632

PHMD 6250 Pharmacy Care Management                       3 SH

PHMD 6438 Advanced Pharmacy Practice Experience          0.5 SH
   Preparatory Seminar 1

Elective/capstone                                        2 to 4 SH

Capstone/elective                                        0 to 4 SH

**YEAR 3, SPRING SEMESTER**

PHMD 4641 Comprehensive Disease Management 4             6 SH
   *Coreq.* PHMD 4642 and PHMD 4643

PHMD 4642 Comprehensive Disease                          1 SH
   Management 4 Seminar
   *Coreq.* PHMD 4641 and PHMD 4643

PHMD 4643 Comprehensive Disease                          0.5 SH
   Management 4 Skills Lab
   *Coreq.* PHMD 4641 and PHMD 4642

PHMD 6270 Economic Evaluation of Pharmaceuticals         4 SH
   and Pharmacy Practice

PHMD 6439 Advanced Pharmacy Practice Experience          0.5 SH
   Preparatory Seminar 2

Elective/capstone                                        2 to 4 SH

Capstone/elective                                        0 to 4 SH

**YEAR 3, SUMMER FULL SEMESTER**

PHMD 6440– 6474 Advanced Pharmacy                        12 SH
   Practice Experience

**YEAR 4, FALL SEMESTER**

PHMD 6440– 6474 Advanced Pharmacy                        12 SH
   Practice Experience

**YEAR 4, SPRING SEMESTER**

PHMD 6440– 6474 Advanced Pharmacy                        12 SH
   Practice Experience

**PROGRAM TOTAL CREDITS          133.0 TO 142.0 SH**

<div style="background:red;color:white;">PHYSICAL THERAPY</div>

**www.northeastern.edu/bouve/pt**

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Northeastern University physical therapy (PT) graduates are innovative, global leaders who excel in clinical practice, research, and community service. As one of the longest-accredited physical therapy programs in the United States, and the only program with cooperative education, we seek to graduate our students with exceptional clinical decision-making skills and experience in the field of physical therapy.

We offer three entry points in the Doctor of Physical Therapy:

- The postbaccalaureate direct-entry DPT is for applicants who hold a baccalaureate or master's degree in a field other than physical therapy.
- The transitional Doctor of Physical Therapy (DPT) is for applicants who hold a baccalaureate or master's degree in physical therapy and a U.S. license in physical therapy.
- The entry-level DPT is for applicants applying as freshmen students.

Our Doctor of Physical Therapy program builds on the university's core values of interdisciplinary education, urban engagement, international knowledge, and cutting-edge research. Our exceptional faculty are dedicated to promoting excellence in practice, education, scholarship, and community service. Faculty are active in the American Physical Therapy Association and engaged in active clinical research and practice. A hallmark of our program is the integration of experiential learning and didactic education whether through use of standardized patients, communication and interaction with community consultants, participation in service-learning projects, or engagement in research with our faculty.

## Unique Program Features

### INTERPROFESSIONAL OPPORTUNITIES

Bouvé van provides community access to healthcare offered in conjunction with the nursing, pharmacy, speech-language pathology, and public health programs.

### GLOBAL

Beyond the traditional semester abroad, we offer multiple global academic and service-oriented experiences such as Global Dialogues (30 days in-country), PT academic exchange programs, and global service PT programs to Mexico and Ecuador.

### CONCENTRATIONS

- Early intervention—working with children with disabilities or at risk for developmental delays. This program is offered in conjunction with the Department of Counseling Psychology.
- Sports conditioning and management of the athlete.
- Psychology, business, foreign language.

### RESEARCH OPPORTUNITIES

- Biomotion Lab
- Cadaver Lab
- Cancer Survivorship Center
- Ergonomics Lab
- Neurocognitive Rehabilitation Research Lab
- Neurorehabilitation Laboratory
- Neuroscience Wet Lab
- Rehabilitation and Epidemiology Trainee Program
- Robotics Lab
- Teaching and Learning Innovation

### CLINICAL EDUCATION

- Throughout the United States, including Division I athletic programs
- Thirty-six weeks of internship plus six months of paid clinical experience through our unique cooperative education program

## DPT—Doctor of Physical Therapy

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| HLTH 5450 Healthcare Research | 4 SH |
| HLTH 5451 Recitation for HLTH 5450 | 0 SH |
| PT 5101 Foundations of Physical Therapy | 3 SH |
|    *Coreq.* PT 5102 | |
| PT 5102 Lab for PT 5101 | 1 SH |
|    *Coreq.* PT 5101 | |
| PT 5131 Gross Anatomy | 4 SH |
|    *Coreq.* PT 5132 | |
| PT 5132 Lab for PT 5131 | 1 SH |
|    *Coreq.* PT 5131 | |
| PT 5160 Psychosocial Aspects of Healthcare | 3 SH |
|    *Coreq.* PT 5161 | |
| PT 5161 Psychosocial Aspects of Healthcare Seminar | 1 SH |
|    *Coreq.* PT 5160 | |

### YEAR 1, SUMMER FULL SEMESTER

| | |
|---|---|
| PT 5133 Kinesiology | 3 SH |
| *Coreq.* PT 5134 | |
| PT 5134 Lab for PT 5133 | 1 SH |
| *Coreq.* PT 5133 | |
| PT 5138 Neuroscience | 4 SH |
| *Coreq.* PT 5139 | |
| PT 5139 Lab for PT 5138 | 1 SH |
| *Coreq.* PT 5138 | |
| PT 5140 Pathology | 4 SH |
| *Coreq.* PT 5141 | |
| PT 5141 Recitation for PT 5140 | 0 SH |
| *Coreq.* PT 5140 | |
| PT 5145 Introduction to the Healthcare System | 2 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| PHSC 4340 Pharmacology for the Health Professions | 4 SH |
| PT 5111 Professional Development for Bouvé Graduate Co-op | 1 SH |
| PT 5150 Motor Control, Development, and Learning | 4 SH |
| *Coreq.* PT 5151 | |
| PT 5151 Lab for PT 5150 | 1 SH |
| *Coreq.* PT 5150 | |
| PT 5503 Cardiovascular and Pulmonary Management | 4 SH |
| *Coreq.* PT 5504 | |
| PT 5504 Lab for PT 5503 | 1 SH |
| *Coreq.* PT 5503 | |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| PT 6964 Co-op Work Experience | 0 SH |

### YEAR 2, SUMMER 1 SEMESTER

| | |
|---|---|
| PT 6964 Co-op Work Experience | 0 SH |

### YEAR 2, SUMMER 2 SEMESTER

| | |
|---|---|
| PT 5515 Integumentary Systems and Advanced Modalities | 2 SH |
| *Coreq.* PT 5516 | |
| PT 5516 Lab for PT 5515 | 1 SH |
| *Coreq.* PT 5515 | |
| PT 5540 Clinical Integration 1: Evidence and Practice | 2 SH |
| PT 6243 Health Assessment and Wellness | 3 SH |
| *Coreq.* PT 6244 | |
| PT 6244 Recitation for PT 6243 | 0 SH |
| *Coreq.* PT 6243 | |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| PT 5209 Neurological Rehabilitation 1 | 4 SH |
| *Coreq.* PT 5210 | |
| PT 5210 Lab for PT 5209 | 1 SH |
| *Coreq.* PT 5209 | |
| PT 5227 Physical Therapy Project 1 | 3 SH |
| PT 5505 Musculoskeletal Management 1 | 4 SH |
| *Coreq.* PT 5506 | |
| PT 5506 Lab for PT 5505 | 1 SH |
| *Coreq.* PT 5505 | |

| | |
|---|---|
| PT 6000 Leadership, Administration, and Management | 2 SH |
| PT 6241 Screening for Medical Conditions in Physical Therapy Practice | 4 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| PT 5226 Physical Therapy Professional Seminar 2 | 2 SH |
| PT 5229 Physical Therapy Project 2 | 2 SH |
| PT 5230 Pediatric and Geriatric Aspects of Life Span Management | 3 SH |
| PT 6221 Neurological Rehabilitation 2 | 4 SH |
| *Coreq.* PT 6222 | |
| PT 6222 Lab for PT 6221 | 1 SH |
| *Coreq.* PT 6221 | |
| PT 6223 Musculoskeletal Management 2 | 4 SH |
| *Coreq.* PT 6224 | |
| PT 6224 Lab for PT 6223 | 1 SH |
| *Coreq.* PT 6223 | |

### YEAR 3, SUMMER 1 SEMESTER

| | |
|---|---|
| PT 6441 Clinical Education 1 | 6 SH |

### YEAR 3, SUMMER 2 SEMESTER

| | |
|---|---|
| PT 6215 Assistive Technology | 3 SH |
| *Coreq.* PT 6216 | |
| PT 6216 Lab for PT 6215 | 1 SH |
| *Coreq.* PT 6215 | |
| PT 6250 Clinical Integration 2: Evidence and Practice | 2 SH |
| Elective course PT 6231 through 6237 | 2 SH |

### YEAR 4, FALL SEMESTER

| | |
|---|---|
| PT 6251 Diagnostic Imaging | 3 SH |
| PT 6442 Clinical Education 2 | 6 SH |

### YEAR 4, SPRING SEMESTER

| | |
|---|---|
| PT 6448 Clinical Education 3 | 9 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **123.0 SH** |

## MS in Occupational Ergonomics and Health

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| HINF 6201 Organizational Behavior, Work Flow Design, and Change Management | 3 SH |
| PHTH 5210 Biostatistics in Public Health | 3 SH |
| PT 6400 Ergonomics (pending approval) | 3 SH |
| Complete two elective courses | 6 to 8 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| PHTH 5202 Epidemiology | 3 SH |
| PHTH 5214 Environmental Health | 3 SH |
| PT 6410 Work Place Wellness (pending approval) | 3 SH |
| Complete two elective courses | 6 to 8 SH |

### YEAR 1, SUMMER FULL SEMESTER

| | |
|---|---|
| PT 6978 Independent Study/Capstone Project | 3 to 4 SH |

| | |
|---|---|
| **CREDIT REQUIREMENT** | **32.0 SH** |

www.northeastern.edu/bouve/pa

ROBIN REED, MD
*Interim Program Director*

202 Robinson Hall
617.373.3195
paprogram@neu.edu

Established in 1971, the physician assistant (PA) program has a long-standing history of, and expertise in, the education and training of physician assistants. The PA program is located in close proximity to Boston's major academic medical centers and was the first generalist PA training program in the nation to offer a master's degree in 1985.

   This rigorous, highly integrated curriculum offers our students the opportunity to obtain broad generalist training that prepares them for successful employment in all fields of clinical practice. Our instructional faculty members are practicing clinicians from throughout New England, and most have been teaching with the program for many years. The clinical year is designed to provide students with experience in diverse healthcare settings in our well-established network of clinical rotation sites.

   Northeastern's PA program graduates are employed in positions across the United States, and some have worked internationally. In addition to clinical practice, our graduates are employed in research, administration, and education.

## MS in Physician Assistant Studies

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| PA 6200 Anatomy and Physiology 1 | 3 SH |
| PA 6203 Physical Diagnosis and Patient Evaluation 1 | 3 SH |
| PA 6205 Pharmacology 1 | 2 SH |
| PA 6208 Professional Issues for Physician Assistants | 2 SH |
| PA 6311 Principles of Medicine 1 | 4 SH |
| PA 6325 Principles of Psychiatry | 2 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| PA 6201 Anatomy and Physiology 2 | 3 SH |
| PA 6204 Physical Diagnosis and Patient Evaluation 2 | 3 SH |
| PA 6206 Pharmacology 2 | 2 SH |
| PA 6207 Clinical Laboratory and Diagnostic Methods | 4 SH |
| PA 6312 Principles of Medicine 2 | 4 SH |
| PA 6321 Principles of Surgery | 2 SH |
| PA 6323 Clinical Neurology | 2 SH |
| PA 6324 Principles of Pediatrics | 2 SH |
| PA 6329 Healthcare Delivery | 2 SH |

### YEAR 1, SUMMER FULL SEMESTER

| | |
|---|---|
| PA 6313 Principles of Medicine 3 | 4 SH |
| PA 6320 Principles of Obstetrics and Gynecology | 2 SH |
| PA 6322 Principles of Orthopedics | 2 SH |
| PA 6326 Aspects of Primary Care | 4 SH |
| PA 6327 Emergency Medicine and Critical Care | 2 SH |
| PA 6328 Aging and Rehabilitation Medicine | 2 SH |
| PA 6330 Research Design | 2 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Clinical course PA 6400 through 6408 | 15 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Clinical course PA 6400 through 6408 | 15 SH |

### YEAR 2, SUMMER FULL SEMESTER

| | |
|---|---|
| Clinical course PA 6400 through 6408 | 15 SH |

**PROGRAM TOTAL CREDITS**            **103.0 SH**

**www.northeastern.edu/bouve/slpa**

ENNIO MINGOLLA, PHD
*Professor and Chair*
THERESE O'NEIL-PIROZZI, ScD, CCC-SLP
*Associate Professor and SLP Program Director*
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*MS in Speech Language Pathology Program*
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*Doctor of Audiology Program*
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We are a learning community in which faculty and students support each other's learning across the life span. Our department mission is to educate students to the highest levels of professionalism, consistent with American Speech-Language-Hearing Association (ASHA) and Northeastern University accreditation standards and Massachusetts licensure requirements; to provide them with a multidisciplinary and practice-oriented education in our urban university environment; to provide them with research experiences based on the highest standards of scientific knowledge; to provide them with clinical experiences with clients and families from a diverse population base using an evidence-informed practice approach; to evaluate their progress using both formative and summative assessment measures.

Our faculty engage in continuous learning both inside and outside the department to be current in recent research and to contribute to that knowledge base. They use, develop, and address in their teaching technology that improves the hearing, communication, respiration, and swallowing skills of individuals at a variety of age and skill levels.

## MS in Speech-Language Pathology

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| SLPA 5109 Neurology of Communication | 3 SH |
| SLPA 5201 Diagnostic Testing in Speech-Language Pathology | 1 SH |
| SLPA 6305 or SLPA 6308 | 3 SH |
| SLPA 6306 Speech-Language Disorders in Children | 3 SH |
| SLPA 6415 Speech-Language Pathology Advanced Clinical Practicum 1 | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| SLPA 6211 Research and Evidence-Based Practice | 3 SH |
| SLPA 6301 Speech Science | 3 SH |
| SLPA 6309 Speech-Language Disorders in Adults | 3 SH |
| SLPA 6416 Speech-Language Pathology Advanced Clinical Practicum 2 (may be taken in full summer semester of year 1) | 2 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| SLPA 6420 Practical Statistics for Speech-Language Pathology and Audiology | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| SLPA 6219 or elective course | 3 SH |
| SLPA 6305 or SLPA 6308 | 3 SH |
| SLPA 6307 Voice Disorders | 3 SH |
| SLPA 6417 Speech-Language Pathology Advanced Clinical Practicum 3 | 2 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| SLPA 6303 Stuttering | 3 SH |
| SLPA 6304 Augmentative and Alternative Communication | 3 SH |
| SLPA 6321 Motor Speech Disorders | 3 SH |
| SLPA 6322 Language Literacy | 3 SH |
| SLPA 6418 Speech-Language Pathology Advanced Clinical Practicum 4 | 2 SH |

**PROGRAM TOTAL CREDITS**   **52.0 SH**

## AuD—Doctor of Audiology

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| SLPA 5100 Diagnostic Audiometry | 3 SH |
| SLPA 5111 Anatomy and Physiology of the Auditory System | 3 SH |
| SLPA 6210 Psychosocial Aspects of Communication Disorders | 2 SH |
| SLPA 6221 Hearing Science | 3 SH |
| SLPA 6751 Advanced Audiology Clinic 1 | 2 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| SLPA 5104 Differential Diagnosis in Audiology | 3 SH |
| SLPA 5105 Auditory Pathologies | 3 SH |
| SLPA 6336 Instrumentation and Electronics for Audiologists | 3 SH |
| SLPA 6715 Amplification 1 | 3 SH |
| SLPA 6752 Advanced Audiology Clinic 2 | 2 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| SLPA 6420 Practical Statistics for Speech-Language Pathology and Audiology | 3 SH |
| SLPA 6722 or SLPA 5108 | 3 SH |

### YEAR 1, SUMMER FULL SEMESTER

| | |
|---|---|
| SLPA 6753 Advanced Audiology Clinic 3 | 2 SH |

## YEAR 2, FALL SEMESTER

| | |
|---|---|
| SLPA 5109 Neurology of Communication | 3 SH |
| SLPA 6208 Pediatric Audiology | 2 SH |
| SLPA 6214 Noise and Hearing | 2 SH |
| SLPA 6716 Amplification 2 | 3 SH |
| SLPA 6754 Advanced Audiology Clinic 4 | 2 SH |

## YEAR 2, SPRING SEMESTER

| | |
|---|---|
| SLPA 6209 Psychoacoustics | 2 SH |
| SLPA 6737 Advanced Evoked Potential Measures | 3 SH |
| SLPA 6741 Pharmacology for Audiologists | 2 SH |
| SLPA 6747 Implantable Hearing Devices | 3 SH |
| SLPA 6755 Advanced Audiology Clinic 5 | 2 SH |

## YEAR 2, SUMMER 1 SEMESTER

| | |
|---|---|
| Counseling elective or other elective | 3 SH |
| SLPA 6722 or SLPA 5108 | 3 SH |

## YEAR 2, SUMMER FULL SEMESTER

| | |
|---|---|
| SLPA 6756 Advanced Audiology Clinic 6 | 2 SH |

## YEAR 3, FALL SEMESTER

| | |
|---|---|
| SLPA 5110 Language Disorders across the Life Span | 3 SH |
| SLPA 6211 Research and Evidence-Based Practice | 3 SH |
| SLPA 6711 Scope of Practice in Audiology | 2 SH |
| SLPA 6757 Advanced Audiology Clinic 7 | 3 SH |
| SLPA 6773 Topics Seminar | 3 SH |

## YEAR 3, SPRING SEMESTER

| | |
|---|---|
| SLPA 6314 Professional Practice | 2 SH |
| SLPA 6758 Advanced Audiology Clinic 8 | 3 SH |

## YEAR 3, SUMMER FULL SEMESTER

| | |
|---|---|
| SLPA 6791 AuD Clinic Internship 1 | 3 SH |

## YEAR 4, FALL SEMESTER

| | |
|---|---|
| SLPA 6792 AuD Clinic Internship 2 | 3 SH |

## YEAR 4, SPRING SEMESTER

| | |
|---|---|
| SLPA 6793 AuD Clinic Internship 3 | 3 SH |

**PROGRAM TOTAL CREDITS         95.0 SH**

## INTERDISCIPLINARY

**www.northeastern.edu/bouve/id**

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*Academic Director, Biotechnology Program*
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*Program Director, Health Informatics Program*

*Biotechnology Program*
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Students in Northeastern University's graduate biotechnology program attain a common core knowledge of biotechnology with particular emphasis on the ability to integrate knowledge across disciplinary boundaries. Track objectives are to provide students with didactic and practical knowledge in protein analytical approaches and methodologies for activities and functions of biopharmaceuticals (biopharmaceutical analytical sciences); in formulation development and drug product manufacturing of biopharmaceuticals (pharmaceutical technologies); and in development and optimization of drug substance manufacturing of biopharmaceuticals (process sciences).

With Northeastern University's interdisciplinary graduate programs in health informatics, you have an opportunity to gain the knowledge and skills needed to use information technology to improve healthcare delivery and outcomes—and to advance your career in a growing field. We seek to educate the leaders who use technology to improve healthcare for the future.

## MS in Biotechnology—Biopharmaceutical Analytical Sciences Track

Part-time students go at their own pace.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| BIOT 5120 Introduction to Biotechnology | 3 SH |
| BIOT 5145 Basic Biotechnology Lab Skills | 1 SH |
| BIOT 5219 The Biotechnology Enterprise | 2 SH |
| BIOT 5560 Bioprocess Fundamentals | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| BIOL 6299 Molecular Cell Biology for Biotechnology | 3 SH |
| CHEM 5620 Protein Chemistry | 3 SH |
| PHSC 6214 Experimental Design and Biometrics | 2 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| BIOT 5130 Team Skills in Biotechnology | 2 SH |
| BIOT 6500 Professional Development for Co-op | 0 SH |
| CHEM 5550 Introduction to Glycobiology and Glycoprotein Analysis | 3 SH |
| Graduate Elective | 3 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| BIOT 6964 Co-op Work Experience | 0 SH |
| BIOT 7245 Biotechnology Applications Laboratory | 3 SH |
| CHEM 5616 Protein Mass Spectrometry | 3 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH |
| **PROGRAM TOTAL CREDITS** | **34.0 SH** |

## MS in Biotechnology—Pharmaceutical Technologies Track

Part-time students go at their own pace.

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| BIOT 5120 Introduction to Biotechnology | 3 SH |
| BIOT 5145 Basic Biotechnology Lab Skills | 1 SH |
| BIOT 5219 The Biotechnology Enterprise | 2 SH |
| BIOT 5560 Bioprocess Fundamentals | 3 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| BIOL 6299 Molecular Cell Biology for Biotechnology | 3 SH |
| CHEM 5620 Protein Chemistry | 3 SH |
| PHSC 6214 Experimental Design and Biometrics | 2 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| BIOT 5130 Team Skills in Biotechnology | 2 SH |
| BIOT 5700 Molecular Interactions of Proteins in Biopharmaceutical Formulations | 3 SH |
| BIOT 6500 Professional Development for Co-op | 0 SH |
| Graduate Elective | 3 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| BIOT 5640 Drug Product Processes for Biopharmaceuticals | 3 SH |
| BIOT 6964 Co-op Work Experience | 0 SH |
| BIOT 7245 Biotechnology Applications Laboratory | 3 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH |
| **PROGRAM TOTAL CREDITS** | **34.0 SH** |

## MS in Biotechnology—Process Sciences Track

Part-time students go at their own pace.

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| BIOT 5120 Introduction to Biotechnology | 3 SH |
| BIOT 5145 Basic Biotechnology Lab Skills | 1 SH |
| BIOT 5219 The Biotechnology Enterprise | 2 SH |
| BIOT 5560 Bioprocess Fundamentals | 3 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| BIOL 6299 Molecular Cell Biology for Biotechnology | 3 SH |
| BIOT 6214 Experimental Design and Biometrics | 2 SH |
| CHEM 5620 Protein Chemistry | 3 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| BIOT 5130 Team Skills in Biotechnology | 2 SH |
| Choose two courses from BIOT 5631, BIOT 5635 or BIOT 5640, or approved graduate elective | 6 SH |
| BIOT 6500 Professional Development for Co-op | 0 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| BIOT 5640 or approved graduate elective | 3 SH |
| BIOT 6964 Co-op Work Experience | 0 SH |
| BIOT 7245 Biotechnology Applications Laboratory | 3 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH |
| **PROGRAM TOTAL CREDITS** | **34.0 SH** |

## MS in Health Informatics

**PROGRAM REQUIREMENTS**

| | |
|---|---|
| HINF 5101 Introduction to Health Informatics and Health Information Systems | 3 SH |
| HINF 5105 The American Healthcare System | 3 SH |
| HINF 7701 Health Informatics Capstone Project | 3 SH |
| Complete two courses from Business Management Core | 6 SH |
| Complete two courses from Elective Core | 6 SH |
| Complete two courses from Health Informatics Core | 6 SH |
| Complete two courses from Technical Core | 6 SH |
| **PROGRAM TOTAL CREDITS** | **33.0 SH** |

**BUSINESS MANAGEMENT CORE**

| | |
|---|---|
| HINF 6201 Organizational Behavior, Work Flow Design, and Change Management | 3 SH |
| HINF 6215 Project Management | 3 SH |
| HINF 6335 Management Issues in Healthcare Information Technology | 3 SH |

**ELECTIVE CORE**

| | |
|---|---|
| HINF 6325 Legal and Social Issues in Health Informatics | 3 SH |
| HINF 6330 Emerging Technologies in Healthcare | 3 SH |
| HINF 6340 Introduction to Genomics and Bioinformatics | 3 SH |
| HINF 6345 Design for Usability in Healthcare | 3 SH |
| HINF 6350 Public Health Surveillance and Informatics | 3 SH |

**HEALTH INFORMATICS**

| | |
|---|---|
| HINF 6202 Business of Healthcare Informatics | 3 SH |
| HINF 6205 Creation and Application of Medical Knowledge | 3 SH |
| HINF 6225 Health Systems Lab | 3 SH |

## TECHNICAL CORE

| | |
|---|---|
| HINF 5102 Data Management in Healthcare | 3 SH |
| HINF 6220 Database Design, Access, Modeling, and Security | 3 SH |
| HINF 6230 Strategic Topics in Programming For Health Professionals | 3 SH |
| HINF 6355 Key Standards in Health Informatics Systems | 3 SH |

## MS in Health Informatics—Align Program

### PROGRAM REQUIREMENTS

| | |
|---|---|
| HINF 0200 Health and Medicine for Nonclinicians | 3 SH |
| HINF 5101 Introduction to Health Informatics and Health Information Systems | 3 SH |
| HINF 5105 The American Healthcare System | 3 SH |
| HINF 7701 Health Informatics Capstone Project | 3 SH |
| IA 5001 Cyberspace Technology and Applications | 3 SH |
| Complete two courses from Business Management Core | 6 SH |
| Complete two courses from Elective Core | 6 SH |
| Complete two courses from Health Informatics Core | 6 SH |
| Complete two courses from Technical Core | 6 SH |
| **PROGRAM TOTAL CREDITS** | **39.0 SH** |

### BUSINESS MANAGEMENT CORE

| | |
|---|---|
| HINF 6201 Organizational Behavior, Work Flow Design, and Change Management | 3 SH |
| HINF 6215 Project Management | 3 SH |
| HINF 6335 Management Issues in Healthcare Information Technology | 3 SH |

### ELECTIVE CORE

| | |
|---|---|
| HINF 6325 Legal and Social Issues in Health Informatics | 3 SH |
| HINF 6330 Emerging Technologies in Healthcare | 3 SH |
| HINF 6340 Introduction to Genomics and Bioinformatics | 3 SH |
| HINF 6345 Design for Usability in Healthcare | 3 SH |
| HINF 6350 Public Health Surveillance and Informatics | 3 SH |

### HEALTH INFORMATICS

| | |
|---|---|
| HINF 6202 Business of Healthcare Informatics | 3 SH |
| HINF 6205 Creation and Application of Medical Knowledge | 3 SH |
| HINF 6225 Health Systems Lab | 3 SH |

### TECHNICAL CORE

| | |
|---|---|
| HINF 5102 Data Management in Healthcare | 3 SH |
| HINF 6220 Database Design, Access, Modeling, and Security | 3 SH |
| HINF 6230 Strategic Topics in Programming For Health Professionals | 3 SH |
| HINF 6355 Key Standards in Health Informatics Systems | 3 SH |

## PhD in Personal Health Informatics

See College of Computer and Information Science, page 67, for curriculum information.

## Certificates in Health Informatics

Northeastern's graduate certificate programs provide high-quality, specialized training in health informatics and the opportunity to acquire and apply your knowledge quickly. In eight months, you can prepare for a key role in areas of the field offering ample career opportunities.

Three certificate programs enable you to choose the one that addresses your specific goals:

- Graduate Certificate in Health Informatics Management and Exchange
- Graduate Certificate in Health Informatics Privacy and Security
- Graduate Certificate in Health Informatics Software Engineering

Courses in the certificate program also apply toward master's degree requirements. This gives you the flexibility to complete a certificate and be well on your way to earning a degree if you decide later to continue your education.

## Graduate Certificate in Health Informatics Management and Exchange

- Eight-month program
- Five courses, 15 semester hours

The certificate program in health informatics management and exchange offers you the knowledge needed to support the collection, management, retrieval, and exchange of electronic health data. It is designed to prepare you for a position as a specialist in data management, interoperability standards, and health database design.

### SAMPLE COURSE SCHEDULE

Fall semester: three courses
Spring semester: two courses

### PROGRAM REQUIREMENTS

| | |
|---|---|
| HINF 5101 Introduction to Health Informatics and Health Information Systems | 3 SH |
| HINF 5102 Data Management in Healthcare | 3 SH |
| HINF 6205 Creation and Application of Medical Knowledge | 3 SH |
| HINF 6220 Database Design, Access, Modeling, and Security | 3 SH |
| HINF 6355 Key Standards in Health Informatics Systems | 3 SH |
| **PROGRAM TOTAL CREDITS** | **15.0 SH** |

## Graduate Certificate Program in Health Informatics Privacy and Security

- Eight-month program
- Five courses, 15 semester hours

The certificate program in health informatics privacy and security combines knowledge of health informatics with a strong foundation in important information security issues. Northeastern's status as a National Security Agency Center of Excellence for Information Security Education and Research ensures the program is both relevant and of high academic quality.

### SAMPLE COURSE SCHEDULE

Fall semester: three courses
Spring semester: two courses

### PROGRAM REQUIREMENTS

| | |
|---|---|
| HINF 5101 Introduction to Health Informatics and Health Information Systems | 3 SH |
| HINF 5102 Data Management in Healthcare | 3 SH |
| IA 5130 Computer System Security | 4 SH |
| *Coreq.* IA 5131 | |
| IA 5150 Network Security Practices | 4 SH |
| *Coreq.* IA 5151 | |
| IA 5200 Security Risk Management and Assessment | 4 SH |

### PROGRAM TOTAL CREDITS    18.0 SH

## Graduate Certificate in Health Informatics Software Engineering

- Eight-month program
- Five courses, 15 semester hours

This certificate program offers software engineers the background in health informatics as well as interchange and interoperability standards needed to better understand the context in which they work and perform effectively in a health-related organization. Program design is flexible to allow completion on a rapid schedule or a slower pace that is more compatible with full-time workers.

### SAMPLE COURSE SCHEDULE

Fall semester: three courses
Spring semester: two courses

### PROGRAM REQUIREMENTS

| | |
|---|---|
| HINF 5101 Introduction to Health Informatics and Health Information Systems | 3 SH |
| HINF 5102 Data Management in Healthcare | 3 SH |
| HINF 6205 Creation and Application of Medical Knowledge | 3 SH |
| HINF 6345 Design for Usability in Healthcare | 3 SH |
| HINF 6355 Key Standards in Health Informatics Systems | 3 SH |

### PROGRAM TOTAL CREDITS    15.0 SH

## Interprofessional Certificate in Aging

### PROGRAM REQUIREMENTS

| | |
|---|---|
| Introduction to Health and Aging | 3 SH |
| Health and Aging: Special Considerations | 3 SH |
| Health Assessment in Older Adults | 3 SH |
| Seminar and Capstone Project in Contemporary Issues in Aging | 3 SH |

### PROGRAM TOTAL CREDITS    12.0 SH

# *School of Law*

**JEREMY R. PAUL, JD,** *Dean and Professor of Law*

**Dan Danielsen, JD,** *Associate Dean for Academic Affairs*
**James R. Hackney, JD,** *Associate Dean for Entrepreneurial Programs and Research Support*
**Gregory Tilley, MBA,** *Associate Dean for Finance and Administration*

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## MASTER OF LEGAL STUDIES DEGREE—ONLINE

## Overview

This degree is designed for the professional who wants general exposure to law and legal concepts. Such professionals may be found in nonprofit organizations, foundations, financial services firms, pharmaceutical companies, insurance firms, compliance departments, or a host of other commercial and noncommercial settings. Examples of the professionals who would be interested in this degree are a human resource professional, a claims representative at an insurance company, professionals in large healthcare organizations, a loan officer at a bank, a real estate broker managing a local office, a risk manager, a management consultant advising organizations, a development officer working on planned giving, or a software entrepreneur. They desire to know more about the law and deal more effectively with the lawyers with whom they interact during their professional lives. The degree will include concentrations in global law, business transactions, healthcare, and intellectual property.

## Program Plan

Students will take one 3-semester-hour course per term. A term will be approximately seven weeks, and there will be two terms in each of three semesters (fall, spring, and summer). The semesters will be broken into two parts: A/B. The course work will be spread over ten terms or five semesters. Every student in their first semester will take two introduction to legal studies foundation courses. (These two courses are the only prerequisites.) Students then take five core courses and three specialization courses in one of the four concentrations. Students pursuing the general track can take any three specialization courses of their choosing.

## Program Features

### TOTAL DEGREE CREDIT REQUIRED
The program requires 30 semester hours.

### COURSE ORGANIZATION
The program comprises ten courses:
- Each course is seven weeks.
- Two courses are taken per semester.
- Each course is 3 semester hours.
- Course types:
  - Two foundation courses
  - Five core courses
  - Three elective courses

### CONCENTRATIONS
The program includes four concentrations plus a general track.
The concentrations are:
- BusinessTransactions
- Intellectual Property
- Healthcare Law
- Global Law

### ACADEMIC STRUCTURE
- Six seven-week sessions per calendar year:
  - Spring A
  - Spring B
  - Summer A
  - Summer B
  - Fall A
  - Fall B
- Two seven-week courses (3 semester hours each) back-to-back in each fourteen-week semester
- Total of ten courses needed to graduate

### TIME TO DEGREE COMPLETION
Normal completion time is twenty months (five semesters) of part-time study.

### ADMISSION CYCLES
- Fall 1 session
- Spring 1 session
- Summer 1 session

### ADMISSION REQUIREMENTS
- Bachelor's degree from regionally accredited institution
- Online application
- Application fee—none
- Personal statement with designated questions to be answered
- Two letters of recommendation
- TOEFL for international students

## Master of Legal Studies

**GENERAL REQUIREMENTS**

| | |
|---|---|
| LS 6101 Introduction to Legal Studies 1 | 3 SH |
| LS 6102 Introduction to Legal Studies 2 | 3 SH |
| LS 6110 Law of Information and Records | 3 SH |
| LS 6120 Law and Strategy | 3 SH |
| LS 6130 Negotiation and Advocacy | 3 SH |
| LS 6140 Regulation and Compliance | 3 SH |
| LS 6150 Law and Organizational Management | 3 SH |
| Complete three specialization courses | 9 SH |

**CREDIT REQUIREMENT**          **30.0 SH**

**SPECIALIZATION COURSES**

LS 6210 (pending approval)
LS 6220 (pending approval)
LS 6230 (pending approval)
LS 6310 (pending approval)
LS 6320 (pending approval)
LS 6330 (pending approval)
LS 6410 (pending approval)
LS 6420 (pending approval)
LS 6510 (pending approval)
LS 6520 (pending approval)

# *College of Professional Studies*

## www.cps.neu.edu/degree-programs/graduate

**JOHN LABRIE, EDD,** *Dean of the College of Professional Studies and Vice President of Professional Education*

**John Caron, EdD,** *Senior Associate Dean of Faculty and Academic Affairs*

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50 Nightingale Hall
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## Master's Degree Admission Requirements

Please note that all master's degrees offered through the College of Professional Studies (CPS) have the following admission requirements.

- Online application
- Statement of purpose (500–1,000 words)
- Professional resumé
- Official undergraduate transcript(s) noting conferral of a bachelor's degree
- Two letters of recommendation
- English-language proficiency proof (for non-native English-language speakers)
- TOEFL, IELTS, or TOEIC scores

Some programs have additional requirements.

## Transfer Credit Policies

All graduate transfer credit awards are made on a case-by-case basis. Transfer credit awards are made for eligible courses successfully completed at regionally and programmatically accredited institutions. The Council for Higher Education Accreditation provides information about the organizations responsible for these two forms of accreditation. Official transcripts from all institutions should be sent directly to the College of Professional Studies Office of Admissions at the time of application.

Students seeking transfer credits earned at institutions outside the United States should submit an official English evaluation completed by an approved credential evaluator. Course descriptions and/or syllabi also should be translated into English and submitted to the College of Professional Studies Office of Admissions.

A maximum of 8 quarter hours or two courses obtained at another institution may be accepted as transfer toward the degree, provided the credits consist of work taken at the graduate level for graduate credit, carry minimum grades of B (or 3.000 on a 4.000 scale), have been earned at an accredited institution or equivalent, and have not been used toward any baccalaureate or advanced degree or certificate of advanced studies at another institution.

Transfer credits must be no more than seven academic years old at the time the student is admitted to graduate study. Courses older than seven years will be accepted only in rare circumstances.

### GRADUATE CERTIFICATE TRANSFER CREDIT POLICIES
- A maximum of 4 quarter hours (one course) of transfer credit

### MASTER DEGREE TRANSFER CREDIT POLICIES
- A maximum of 8 quarter hours of transfer credit

### DOCTORAL DEGREE TRANSFER CREDIT POLICIES
- A maximum of 9 quarter hours of transfer credit for Doctor of Education students
- A maximum of 8 quarter hours of transfer credit for Transitional Doctor of Physical Therapy students
- No transfer credit is awarded for students in the Doctor of Law and Policy program

## Special Student Status

Graduate applicants to the College of Professional Studies may be eligible to take up to two graduate (nondoctoral) courses toward their program while completing the formal application process by seeking special student status (www.cps.neu.edu/admissions/graduate/special-students.php).

- Students taking courses under special student status are expected to satisfy applicable course prerequisites before enrolling in a course.
- Students taking courses under special student status are not eligible for financial aid.
- Special student status does not guarantee acceptance.
- The maximum number of courses students may take under special student status is two. After completing two courses, students will be blocked from further course registration until they have been officially accepted into a program.

The following programs are not available for special student status: Master of Arts in Teaching (MAT); Master of Education, Special Education Concentration; Doctor of Education; Doctor of Law and Policy.

## Personal Professional Enrichment (PPE)

Students interested in taking graduate-level (nondoctoral) courses for personal professional enrichment (PPE) need to complete an online application as a PPE student (www.cps.neu.edu/admissions/graduate). Once approved, students will be able to register through their myNEU account.

- Students on PPE status are expected to satisfy applicable course prerequisites before enrolling in a course.
- Students taking courses while on PPE status may elect to apply to a graduate certificate or degree program by completing the formal application process. Up to two qualifying courses (or 8 credits) completed while on PPE status may be applied to the intended program of study. To be eligible, the minimum earned grade for the course(s) must be B.
- Students taking courses under PPE status are not eligible for financial aid.

## NEW STUDENT ORIENTATION (ON-GROUND AND ONLINE)

All newly accepted College of Professional Studies students are expected to attend the on-ground orientation or participate in online orientation. The purpose of New Student Orientation is to provide information and tools for each student's success from the point of program entry to degree completion.

Students are encouraged to use the online orientation, accessed via NU Online, as a resource throughout their career at the College of Professional Studies.

For additional information, please visit www.cps.neu.edu/student-resources/orientation.php.

## ACADEMIC RESOURCES

### Interactive Academic Integrity Checklist (IAIC)

The Interactive Academic Integrity Checklist (IAIC) is a Flash-based tool students can use before they turn in every assignment to ensure that they have not accidentally committed any of the most common violations of the academic integrity policy. Additionally, the IAIC contains links to examples of APA- and MLA-style formatting.

- Version for desktop Internet browsers: nuonline.adobeconnect.com/academicintegritychecklist/
- Version for mobile devices: nuonline.adobeconnect.com/academicintegritychecklist_mobile/

## Global Student Success

10 Belvedere
617.373.2455
globalss@neu.edu
www.cps.neu.edu/gss

Global Student Success is committed to fostering the acculturation of international students to the Northeastern community and promoting internationalization across the institution. We support international students through cross-cultural, linguistic, and academic support services. We also partner with faculty, staff, and administrators to integrate global dimensions and cross-cultural understanding into the Northeastern experience.

### International Tutoring Center

Basement of Snell Library
617.373.2455
globalss@neu.edu
www.cps.neu.edu/gss

Tutors provide high-quality ESL writing instruction and tutoring for international students who need assistance with papers, assignments, TOEFL writing, and research projects. Students can meet one-on-one with an ESL tutor for 50-minute appointments. This is a free service for Northeastern international students.

### Smarthinking

Smarthinking is a free online tutoring service accessed through the student's NU Online account for College of Professional Studies students.

Online tutoring sessions can be synchronous or asynchronous. Many different subjects such as writing, reading, basic math through multivariate calculus, business, biology, chemistry, and physics are available.

## ATTENDANCE REQUIREMENTS

Class participation is essential to success no matter the course format or its delivery.

Attendance requirements vary. It is the student's responsibility to ascertain what each instructor requires. If a student will be absent for any reason (e.g., illness, religious beliefs, or jury duty), it is his or her responsibility to inform the instructor and to abide by the attendance requirements as explained in the course syllabus. Unexplained absence from class or failure to meet an assignment deadline may seriously affect the student's academic progress and may result in a final grade of F.

## "I Am Here" (IAH) Process

After course registration, students are required to verify their intent to enroll in College of Professional Studies class(es) through their myNEU account during the first week of each class start. This verification process is called "I Am Here." Students who fail to complete this process on time will be dropped from the class(es), which may impact their financial aid or international student visa eligibility.

Students are responsible for ensuring completion of the "I Am Here" process, which requires that they do not log out of the system early. Students who do not receive a "Successful Completion" message have not reached the end of the procedure and must start again. Sometimes it may take 24 hours before students can restart the procedure.

Students registering for the first time after the start of classes will be considered "Here" for the semester.

Students who experience difficulty with the process or have questions should contact CPSiamhere@neu.edu.

## Nonattendance

Nonattendance does not constitute official course dropping or withdrawal which means the student is fully responsible for the academic and financial consequences.

A student who registers for a course and completes the "I Am Here" process but does not officially drop the course by deadline regardless of his or her level of participation or attendance/nonattendance is responsible for paying 100 percent of the tuition charges and applicable fees and the final earned grade. A student in this situation may earn an F grade that will be part of his or her permanent academic record.

Like all grades for courses attempted and/or completed, a grade earned due to nonattendance impacts a student's academic progression; an international student's visa eligibility; a federal financial aid recipient's aid eligibility and award.

## REENTRY TO PROGRAM

Application for reentry into any academic program is required of students whose studies are interrupted voluntarily for a period of one to three years. Students who are dismissed academically must wait at least one year before applying for reinstatement.

Students are expected to meet the requirements of the program curriculum current at the time of the approved reentry. If a student does not enroll in the term in which he or she was approved for reentry, he or she must follow the curriculum requirements for the term in which he or she resumes course work with approval. If a student waits for more than one year to resume his or her studies after being approved for reentry, he or she will have to apply for reentry again.

If the program into which the student is seeking reentry is no longer offered, the student may choose to enroll in another program if he or she meets the admissions requirements for that program. Please contact the Office of Academic and Student Support Services for assistance and to complete the appropriate form.

## READMISSION TO PROGRAM

A new admission application is required of students whose studies are interrupted voluntarily for more than three years.

Students are expected to meet the requirements of the program curriculum current at the time of the approved re-admission. If the program into which the student is seeking readmission is no longer offered, the student may apply to another program and must meet the admissions requirements for that program. Please contact the Office of Admissions for assistance and to complete the admission application.

If readmitted, transfer credits that a student was previously awarded will be reevaluated following the transfer credit award rules current at the time of readmission. It is at the discretion of the academic program to determine applicability of courses previously completed.

## FULL-TIME STATUS

A graduate (nondoctoral) student is considered a full-time student if he or she is enrolled in 9 quarter hours of graduate credit for the quarter. An exception is made for students matriculated in master's degree programs that only require 4-credit courses, in which case full-time student status is attained with enrollment in 8 quarter hours of graduate credit for the quarter.

A doctoral student's full-time status is determined by the structure of the program.

Please note that full-time status may be defined differently for federal loan purposes. International students have other considerations/requirements to maintain their visa eligibility.

## Course Load

Federal financial aid recipients must be enrolled in and successfully complete a minimum number of credits each quarter to maintain eligibility. For more information, please contact your financial aid counselor.

## Course Overload

A maximum course load (not full-time status) for a graduate (non-doctoral) student is 16 credits taken across a twelve-week quarter, with no more than 8 credits per six-week session.

To be eligible for a course overload (greater than 16 credits per twelve-week quarter or greater than 8 credits per six-week session), a graduate (nondoctoral) student must:

- Have a record of successful study with 12 or more credits a term at Northeastern University
- Have a minimum cumulative grade-point average of 3.500
- Provide a rationale to support the request

Students need to complete the appropriate form and return it to their Student Success Specialist. Course overload is approved per term.

Each doctoral program has its own enrollment and course load requirements. Doctoral students who wish to seek a course overload must consult with the program director or designee.

## International Student Enrollment Requirements

In order to maintain lawful student status in the United States, international students must be mindful of the rules and regulations that govern their nonimmigrant visa classification. Numerous U.S. federal regulations make it especially important for students in the "F" (student) and "J" (exchange visitor) categories to consult regularly with an international student advisor at the International Student and Scholar Institute (ISSI) before taking any action that might impact their immigration status and educational endeavors in the United States.

All international students in F or J status must register before each quarter starts. It is strongly recommended that international students register for an appropriate full-time course load at least two weeks before the quarter starts. Any exceptions from full-time registration requirements must be preapproved by the ISSI in accordance with specified regulations.

In the College of Professional Studies, there are four quarters that make up each academic year. Each twelve-week quarter (term) is made up of Parts of Term (courses that are scheduled for less than twelve weeks). Some courses are scheduled for the entire twelve weeks of a quarter, while others are scheduled for either the first six weeks or the last six weeks. Students in F-1 and J-1 status must remain registered at all times during a quarter to remain in compliance. International students are not allowed to take courses during only one-half of an academic quarter. Restrictions on course formats apply to international student enrollment requirements.

To achieve full-time status, graduate and doctoral international students must be enrolled in 9 credits each quarter. For graduate degree programs which require only 4-credit courses in the curriculum, like the Master of Science in Regulatory Affairs for Drugs, Biologics, and Medical Devices, 8 credits is considered full-time enrollment. International students should consult with their Student Success Specialist to develop a course plan to maintain their international student status.

For a 9-credit course load, international students must take at least 6 credits of courses that are held on-campus, in the blended, or hybrid format. Students may not take classes on campus for just the first or second six weeks of a twelve-week quarter and then take only online courses during the other six weeks.

Full-time status must be maintained for F-1 visa students throughout the academic year with the following exceptions:

- A student whose first term is *not* summer does not need to be enrolled in the summer term.
  - If a student's first term of enrollment is summer, he or she must be enrolled full-time that summer. For the second and subsequent summer terms, he or she does not need to be enrolled.
- In the final academic term of a student's program of study, enrollment may be for less than 9 credits, but it must either be on-campus or a combination of on-campus and online throughout the entire term.

## ACTIVE-DUTY MILITARY PERSONNEL

As a member of the Service Member Opportunity Colleges, the College of Professional Studies' academic residency requirement is different for active-duty service members. Active-duty service members are required to complete 30 percent of the graduate certificate/degree program at the College of Professional Studies.

## REGISTRATION AND TAKING COURSES

### Course Registration

For course registration information, please visit www.cps.neu.edu/class-registration/registration-instructions.php.

Course registration procedures are as follows:

- Newly accepted and returning students add or drop courses through their myNEU account any time during the registration period.
- Certificate and degree seeking students whose studies have been interrupted voluntarily for one to three years or more need to first apply for reentry through the Office of Academic and Student Support Services before registering for course(s).
- Global program students should consult with their program to determine if they need to register on their own or if the program will register them.

All students need to be mindful of the college's course add/drop policies and deadlines to register as early as possible with the intent to secure a spot in the preferred course and to avoid being charged in full for withdrawing after the deadline.

### Auditing a Course

Graduate (nondoctoral) students are permitted to audit graduate (nondoctoral) courses, but they must complete the usual registration process and pay regular tuition fees. There is no reduction in fees for auditing.

An auditor may participate in class discussions, complete papers and projects, and take tests and examinations for informal evaluation. Regardless of the amount or quality of work completed, however, no academic credit will be granted at any time for audited courses. In addition, audited courses may not be

used in the determination of enrollment status for financial aid purposes and does not count toward program completion.

The student's decision to audit a course must be communicated in writing to the Office of the University Registrar before the fourth class meeting for twelve-week courses. For four-, six-, and eight-week courses, requests must be received by the second class meeting. No exception to this procedure may be approved without the authorization of the college's academic standing committee.

If approved, the student should inform the instructor of his or her status as auditor of the course.

## Course Selection and Planning

Students should refer to their degree audits for program curriculum information, to select courses, and to monitor their progress toward degree completion. Students may access their degree audits through their myNEU account or request an audit from their student success specialist. Degree audits are unofficial records of academic progress. Students are encouraged to consult with their student success specialist about their academic planning.

## Course Prerequisites

Course prerequisites are courses that are required to have been completed prior to enrolling in another course. Before registering for a course through their myNEU account, students, regardless of matriculation status, should read the course description to determine whether they have satisfied the course prerequisites.

## Course Corequisites

Course corequisites are courses that are required to be taken concurrently. Before registering for a course through their myNEU account, students, regardless of matriculation status, should read the course description to determine if there is a corequisite requirement and register for both courses.

## Repeating a Course

If a student wishes to improve his or her cumulative GPA by repeating a course, he or she may do so. A student may take the same course up to three times to earn a better grade. Only the grade earned in the last attempt is used to compute the GPA while all grades remain part of the student's permanent academic record. A student is required to pay the normal tuition charges for all repeated courses.

Financial aid recipients must be mindful that repeating a course could impact their aid eligibility. As per financial aid regulations, students may repeat a course only once and be eligible for aid. Students with questions about this possible impact should contact their financial aid counselor.

## Independent Study

Independent study is an opportunity for a degree student to work independently under the supervision of an instructor to undertake special research, literature review, or experimental study projects in areas related to his or her program of study that he or she cannot accomplish as part of a standard course in the curriculum. A degree student may take up to two independent studies.

To request an independent study, a student must submit a study proposal for the program director's approval. The proposal needs to include a detailed outline of the objectives and plan of study and a supporting statement from the faculty member under whose direction the study is intended to take place.

## Directed Study

Directed study is an opportunity for a degree student to enroll in a standard course that is part of his or her program of study under special instruction and arrangements. A degree student may take up to two directed studies. Typically, a directed study is requested when a student is in his or her last term of study and needs a course that is not offered.

## Course Waiver

Course waiver may be awarded to a student who has completed the equivalent course at an accredited institution other than the College of Professional Studies in the past seven years. The waiver will exempt the student from completing the required course. The student will complete another course, as approved by the program, to satisfy the number of credits required for the program.

Doctoral students must consult with their academic program to determine if course waivers are permitted.

## Course Formats and Credits

For information on College of Professional Studies course formats, please visit www.cps.neu.edu/class-registration/course-formats.php.

The College of Professional Studies operates on a quarter credit system and offers courses in a variety of formats.

One quarter credit is equivalent to 0.75 semester credits.

## Duration of Courses

Each full fall, winter, and spring terms runs for twelve weeks. Each full summer term runs for eight weeks.

Course durations are as follows:

- During the fall, winter, and spring terms, courses are scheduled for either six or twelve weeks.
- During the summer term, courses are scheduled for four, six, or week weeks.

## Course Add/Drop Policy

Please refer to the academic calendar for specific dates: www.northeastern.edu/registrar/calendars.html.

Students may add a four-week or six-week course within the first week of the course. For eight-and twelve-week courses, students may add a course within the first two weeks of the course.

Students who drop a course before the deadline will not be charged for the course and will not have a W (withdrawal) on their transcript. Thereafter, students are responsible for 100 percent of the tuition charges and applicable fees and the earned grade will be on the students' permanent academic record. All such dates are specified in the academic calendar.

Students must add/drop courses using their myNEU account.

A reduction in a student's course load could affect a student's international student visa status or financial aid eligibility.

Students who experience difficulty adding or dropping a course should promptly email the Office of the University Registrar (registrar@neu.edu). If it is determined that there is an issue with the student's myNEU account or access, he or she needs to contact the Service Desk at 617.373.4357 (HELP); help@neu.edu.

Students with holds, e.g., financial, judicial, may have restricted access to add, drop, or withdraw from a course. In such instances, students are responsible for resolving the hold immediately and to meet the established course registration deadlines.

## Course Withdrawal Policy

Please reference the academic calendar for specific dates by which students may withdraw from a course.

Students who withdraw from a course after the add/drop deadline and before the last day to withdraw will receive a W grade and will be responsible for 100 percent of the tuition charges and applicable fees. The W grade does not affect the calculation of the GPA but it does impact a student's academic progression, which may result in the student being placed on academic probation or dismissal.

Students must withdraw from courses using their myNEU account.

A reduction in a student's course load could affect a student's international student visa status or financial aid eligibility.

Students who experience difficulty withdrawing from a course should promptly contact the Service Desk at 617.373.4357 (HELP); help@neu.edu.

Students who fail to withdraw from a course by deadline, regardless of their level of class participation or attendance, are financially and academically responsible. A student's lack of participation/attendance will likely **result in a final grade of F.**

## STUDENT EVALUATION OF COURSES (EVALUATIONKIT)

Students play a critical role in the university's commitment to quality teaching and academic excellence when they participate in the evaluation of courses through EvaluationKIT, an online survey students complete anonymously. Students are expected to participate in EvaluationKIT with constructive feedback that is relevant to teaching and course content.

Students may access EvaluationKIT summary results from previous terms via their myNEU Web Portal (www.myneu.neu.edu). Courses with a response rate of less than 20 percent of enrolled students will be excluded from the results.

## ACADEMIC PROGRESSION STANDARDS

## Academic Progress/Standing

A graduate or doctoral student must maintain a minimum cumulative GPA of 3.000 on a 4.000 scale to be in good academic standing. Nonmatriculated students are required to be in good academic standing to be allowed to register for any subsequent classes.

Students are responsible for reviewing their grades and academic standing at the end of each term through their myNEU account. If there are any discrepancies, students should immediately contact the instructor(s) directly. Students who want to appeal a grade have twenty working days from the date the grade is posted to do so.

## Academic Probation and Dismissal

Notation of Academic Probation appears on a student's internal record but not on his or her permanent transcript.

## Graduate (Nondoctoral) Students

With exception as specified by the program, a graduate (nondoctoral) student is placed on academic probation for low academic performance for the first time if his or her cumulative GPA is below 3.000 after he or she attempts 6 credits. At this point, the student is strongly encouraged to consult with his or her student success specialist or academic program designee to develop an action plan to improve his or her academic standing. Attempted credits include all credits/courses for which the student registered and did not drop.

A student is placed on academic probation for the second time if his or her cumulative GPA is below 3.000 after he or she attempts 12 credits. The student is required to consult with his or her student success specialist or academic program designee to develop an individualized education plan to improve his or her academic standing. Otherwise, a registration hold may be placed on the student's account.

A student whose cumulative GPA remains below 3.000 after attempting 18 credits will be academically dismissed. A student who has been academically dismissed from the college is automatically dismissed from his or her program of study.

A student must make consistent satisfactory academic progress toward his or her program. A student who attempts but does not complete credits and earns one or more I, IP, NE, or W grades for two or more consecutive terms may be placed on academic probation, which may then result in academic dismissal.

## Doctoral Students

A doctoral student whose cumulative GPA is below 3.000 is placed on academic probation for the first time after attempting 3 credits; academic probation for the second time after attempting 6 credits; and academic dismissal after attempting 12 credits.

A doctoral student must make consistent satisfactory academic progress toward his or her program. A student who attempts but does not complete credits and earns one or more I, IP, NE, or W grades for two or more consecutive terms may be placed on academic probation, which may then result in academic dismissal.

## Dismissal Notification

A student will be notified about his or her dismissal and has the right to appeal the dismissal decision to the college's academic standing committee if he or she can provide documented evidence supporting an appeal. The notification will include the appeal deadline.

Students are responsible for checking their academic progress via their myNEU account at the end of each course and term.

## REINSTATEMENT AFTER ACADEMIC DISMISSAL

A student who is academically dismissed from the college is not eligible to register again for courses at this college until he or she is approved for reinstatement. A student may apply for reinstatement after a minimum of one academic year if he or she can provide documented evidence supporting the application (e.g., completed two courses with a grade of B or higher at another accredited college or relevant professional development opportunities during the one-plus year absence). The application must be made in writing by submitting the appropriate form and providing supporting documentation to the Office of Academic and Student Support Services.

If reinstatement to the college is approved, a student is expected to meet the most current requirements for program admissions and curriculum.

A student approved for reinstatement but who does not meet the admissions requirements for the intended program of study, or if the intended program of study is no longer available, may apply to another program.

Students reinstated must achieve good academic standing within the equivalent of the first term of reinstatement.

## COMPLETING DEGREE REQUIREMENTS

## Graduate and Doctoral Degree Programs

To earn a graduate or doctoral degree, students must complete all courses as prescribed in the curriculum; the required number of credits as per the curriculum; applicable thesis or dissertation; the residency requirement; and maintain a minimum cumulative GPA of 3.000 or as outlined by the specific program.

## Graduate Certificate Programs

To earn a graduate certificate, students must complete all courses as prescribed in the curriculum; the required number of credits as per the curriculum; the residency requirement; and maintain a minimum cumulative GPA of 3.000 or as outlined by the specific program.

## Time Limit on Courses

Graduate course credits earned in the academic program or accepted by transfer are valid for a maximum of seven years.

## Time Limit on Program Completion

- Graduate certificate students have up to three full years from the time of the first term of enrollment to complete the program.
- Master's degree students have up to seven full years from the time of the first term of enrollment to complete the program.
- Doctoral degree students, with the exception of the Transitional Doctor of Physical Therapy, have up to seven full years from the time of the first term of enrollment to complete the program.
- Transitional Doctor of Physical Therapy (tDPT) students who begin their program in the fall 2014 term or thereafter have up to four full years from the time of the first term of enrollment to complete the program.

*Please note:* The College of Professional Studies makes adjustments to its academic program offerings and curricula to stay current and to be able to offer students the most relevant courses and knowledge in the field. Examples of such changes include adding new programs, adding/adjusting course requirements, adding/adjusting courses, and adding/adjusting curriculum requirements.

When there is a change to a curriculum or program requirement, students already matriculated and actively enrolled in the program may continue to follow the program requirements at the time of matriculation or to follow the new curriculum/program requirements, unless it is otherwise specified by the academic program at the time of the announcement of said changes.

## DEGREES, MAJORS, AND CONCENTRATIONS

### Change of Major/Program of Study

A graduate (nondoctoral) student matriculated in a certificate/degree program who would like to enroll in a different graduate program, after consulting with his or her student success specialist, must apply to the intended program by submitting the following:

1. New personal statement
2. Updated resumé, if applicable
3. At least one letter of reference (for degree applicants only)

Previously awarded transfer credit awards are subject to change as a result of a program change. Students on financial aid or an international student visa are responsible for understanding the impact that results from a program change.

Doctoral students should consult with their program director or designee.

### Declare a Concentration

Graduate and doctoral students matriculated in a degree program that offers concentrations must declare one concentration. This can be done at the time of application to the program as part of the admissions process. Students also may complete the appropriate form in consultation with their student success specialist or academic program designee. Students who wish to pursue an customized specialization must seek prior approval from the academic program director.

Only university-approved concentrations are noted on students' official academic records. If a student pursues a customized specialization, no concentration will be noted on his or her official academic transcript.

Students must declare a concentration by the beginning of their last term of enrollment for degree completion.

### Academic Internship and Cooperative Education

An academic internship or cooperative education placement is an opportunity for students to engage in a short-term workplace experience that is relevant to their academic course of study. The College of Professional Studies' Cooperative Education Department makes every effort to work with students to identify experiential learning opportunities of three to six months to facilitate career exploration and transition. This program is an optional component of most degree programs. Students must qualify to participate. Please review the website (www.cps.neu.edu/degree-programs/internships-co-ops) for guidelines, academic requirements, and opportunities.

## SEEKING MORE THAN ONE CERTIFICATE OR DEGREE

A graduate (nondoctoral) student can be enrolled in only one graduate degree program at a time.

Graduate (nondoctoral) students seeking more than one certificate or degree after having completed a program should note that graduate credits earned toward:

1. A degree at any institution may not be used to satisfy the requirements of another graduate program.
2. A degree earned at the College of Professional Studies may be used to satisfy the requirements of a graduate certificate with a cap of 50 percent of the required credits of a graduate certificate, if the contents are determined to be applicable per the program director and if the credits were earned within seven years of pursuit of the certificate.
   - If the same course is required in the degree and certificate programs and the student has exceeded the maximum number of credits that can be applied in the certificate program, he or she may request a course waiver to be permitted to take another course instead of repeating the course. Please see Course Waiver section.
3. With specified exception, a certificate earned at the College of Professional Studies may be used to satisfy the requirements of a graduate degree, if the contents are determined to be applicable per the program director and if the credits were earned within seven years of pursuit of the degree.
4. A certificate earned at the College of Professional Studies may be used to satisfy the requirements of a second certificate with a cap of one course of no more than 4 credits, if the contents are determined to be applicable per the program director and if the credits were earned within seven years of pursuit of the certificate.
   - If the same course is required in both certificate programs and the student has exceeded the maximum number of credits that can be applied in the second certificate program, he or she will request a course waiver to be permitted to take another course instead of repeating the course. Please see Course Waiver section.
5. A certificate earned another accredited institution may be used to satisfy the requirements of a graduate degree with a cap of two courses (no more than 8 credits), if the contents are determined to be applicable per the program director and if the credits were earned within seven years of pursuit of the degree.

A graduate (nondoctoral) degree student who wishes to pursue a graduate certificate concurrently may seek admission in the certificate program by the end of his or her first term of matriculation in the degree program. Courses that satisfy requirements for both the degree and certificate will count for each.

• When the certificate is identical to a concentration in a degree program, only the certificate credential will be earned. The student's transcript will not indicate completion of a concentration

A doctoral student can be enrolled in only one program at a time and may not seek an additional certificate or degree.

## GRADUATION REQUIREMENTS

### Graduation Procedures

The following information is for degree-seeking students only. Certificate students should refer to the "Certificate" section.

Only students who complete the graduation application process by specified deadlines will be considered for graduation and included in the graduation ceremony program. All qualified students must submit a graduation application in order to receive their diploma.

Please note important definitions: "Degree conferral date" and "graduation ceremony date" are not the same. Degree conferral date refers to the date of the university's official recognition of degree completion. For the purposes of the graduation application that is accessed via a student's myNEU account, the "Expected Graduation Date" (EGD) is the same as the "Degree conferral date." Northeastern University confers degrees three times each academic year: winter, spring, and fall. The graduation ceremony date is the date that the College hosts the annual graduation ceremony.

To qualify for winter degree conferral, a student must satisfy all degree requirements by the end of the previous fall quarter. To qualify for spring degree conferral, a student must satisfy all degree requirements by the end of the previous winter quarter. To qualify for fall degree conferral, a student must satisfy all degree requirements by the end of the previous summer quarter.

Doctoral candidates must be mindful of additional deadlines to complete their dissertation/thesis in time to be eligible for degree conferral and participation in a doctoral hooding and a graduation ceremony.

Each fall, the Office of the Registrar sends an email notification to students who may be eligible to graduate that academic year about applying to graduate. Eligibility is based on the number of earned credits at the beginning of the fall term. This email notification informs and instructs students to complete the "Apply to Graduate" process, accessed via their myNEU account. Students are prompted to verify and provide critical information, e.g., spelling of the student's name on the diploma, intent to participate in the graduation ceremony, and mailing address.

An accurate EGD is required to gain access to the graduation application. The EGD is also used by clearinghouses to determine loan deferment schedules. If your EGD is not correct, please contact your designated student success specialist.

### Diploma

The following rules apply to the diploma.

• Information that will be printed on diplomas:
    – Major for only nonspecified degrees (Master of Arts, Master of Science).
• Changes made to a student's name after the diploma has been printed may be subject to a $50 fee and take more than one month to reprint.
• Changes made to a student's degree information and name submitted after the program deadline will not be noted in the graduation ceremony program. If a diploma was previously printed, it will need to be reprinted and can take more than one month.

### Certificate

The College of Professional Studies confers graduate certificates the same time degrees are conferred each year: winter, spring, and fall. Students must submit the appropriate form to their student success specialist in order to have their academic record audited to receive their certificate. Deadlines apply. All certificates will be mailed to the address provided on the form.

## ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability. Accommodations are provided based on an evaluation of the information provided by students and their clinicians, on a case-by-case basis. Students should provide documentation to the DRC at their earliest convenience to allow for sufficient time for review. After the documentation has been reviewed, a disability specialist will contact the student regarding appropriate next steps. For additional information on the DRC, visit their website at www.northeastern.edu/drc or contact staff at 617.373.2675.

## PERSONAL INFORMATION

### Change of Name

Report all name changes to the Office of the Registrar immediately. This is especially important when students marry and wish to use a new name on university records.

## Change of Address

Report all address changes via the myNEU Web Portal (www.myneu.neu.edu) or in person at the Office of the Registrar or Office of Student Accounts. Both the permanent home address and the local address are required. International students must also report any changes of address to the International Student and Scholar Institute within ten days in order to ensure compliance with SEVIS requirements.

## GLOBAL PARTNERSHIP PROGRAMS

Students enrolled in a College of Professional Studies' global partnership or a dual degree program are required to abide by the policies and procedures of both institutions or as specified in their program.

Dual degree candidates must apply to graduate at each institution by following each institution's policies and procedures.

## GRADUATE CAMPUS

Students enrolled in a Northeastern University graduate (regional) campus are also required to abide by the policies and procedures specific to that campus.

## ACCOUNTING

## Graduate Certificate in Forensic Accounting

News surrounding corporate corruption has had a significant impact on businesses, particularly the accounting industry. In response, the government has enacted sweeping accounting and business laws such as the Sarbanes-Oxley 2002 legislation. Additionally, many professional organizations, including the American Institute of Certified Public Accountants (AICPA) and the Association of Certified Fraud Examiners (ACFE), have made the prevention, detection, and prosecution of fraud and accounting abuse a priority.

This four-course graduate certificate in forensic accounting is designed to help students apply techniques in identifying, collecting, and examining evidence, including how to identify financial statement misrepresentation, transaction reconstruction, and tax evasion.

*Note:* Courses from this certificate may not be applied toward the Master of Science in Leadership.

### CREDIT REQUIREMENT

16 quarter hours required

### GENERAL REQUIREMENTS

Courses should be taken in the sequence below:

| | |
|---|---|
| ACC 6210 Forensic Accounting Principles | 4 QH |
| ACC 6220 Dissecting Financial Statements | 4 QH |
| ACC 6230 Investigative Accounting and Fraud Examination | 4 QH |
| ACC 6240 Litigation Support | 4 QH |

## APPLIED NUTRITION

## Master of Science in Applied Nutrition

Increased attention on disease prevention through better dietary habits has heightened the demand for skilled nutrition professionals.

To meet the demands and need in the industry, this Master of Science in Applied Nutrition degree is designed to build upon your clinical knowledge and to allow you to concentrate in one of four specialty areas. This advanced program is open to individuals who hold undergraduate degrees in health science, dietetics, or a related area.

Led by real-world practitioners, including dietitians, an exercise scientist, and a clinical psychologist, this innovative nutrition degree seeks to provide you with a solid grounding in nutrition, metabolism, disease prevention, health promotion, and clinical behavior. Complementing the core nutrition courses is the college's renowned nutrition practicum that allows you to work directly with registered dietitians, fitness specialists, as well as other health professionals.

Further differentiating this master's degree in nutrition is the option to choose from four degree concentrations: business and entrepreneurship in nutrition; nutrition education; nutrition and fitness; and obesity and nutritional health. This degree program seeks to give you the knowledge and skills you need to succeed in the field of nutrition.

### CREDIT REQUIREMENT

45–47 quarter hours required

### CORE COURSES

28 quarter hours required

Complete the following courses:

| | |
|---|---|
| NTR 6100 Advanced Nutrition and Metabolism | 4 QH |
| NTR 6110 Medical Nutrition Therapy | 4 QH |
| NTR 6112 Research Methods in Nutrition | 4 QH |
| NTR 6115 Health Promotion/Disease Prevention | 4 QH |
| NTR 6118 Clinical Health Behavior Change | 4 QH |
| NTR 6165 Food and Society | 4 QH |
| NTR 6866 Applied Research in Nutrition | 4 QH |

### CONCENTRATIONS COURSES

17–19 quarter hours required

*Concentration in Business and Entrepreneurship in Nutrition*

18 quarter hours required

REQUIRED COURSES

Complete the following courses:

| | |
|---|---|
| NTR 6130 Healthcare and Nutrition Communication | 4 QH |
| NTR 6155 Nutrition Entrepreneurship | 3 QH |
| NTR 6202 The Financing of Nutrition and Wellness | 3 QH |
| NTR 7880 Nutrition in Practice | 4 QH |
| PJM 5900 Foundations of Project Management | 4 QH |

*Concentration in Nutrition Education*

19 quarter hours required

REQUIRED COURSES

Complete the following courses:

| | |
|---|---|
| NTR 6130 Healthcare and Nutrition Communication | 4 QH |
| NTR 6200 Nutrition Education | 4 QH |
| NTR 6201 Commercialization of Nutrition and Nutritional Information | 3 QH |
| NTR 7880 Nutrition in Practice | 4 QH |

ELECTIVE

Complete one of the following courses:

| | |
|---|---|
| NTR 6101 Nutrition Program Planning | 4 QH |
| NTR 6119 Pediatric Nutrition | 4 QH |
| NTR 6120 Healthy Aging: Nutrition Strategies for Optimal Longevity | 4 QH |

*Concentration in Nutrition and Fitness*

17 quarter hours required

REQUIRED COURSES

Complete the following courses:

| | |
|---|---|
| NTR 6148 Exercise Physiology | 3 QH |
| NTR 6150 Sports Psychology | 3 QH |
| NTR 7147 Sports and Fitness Nutrition | 3 QH |
| NTR 7880 Nutrition in Practice | 4 QH |

ELECTIVE

Complete one of the following courses:

| | |
|---|---|
| NTR 6101 Nutrition Program Planning | 4 QH |
| NTR 6120 Healthy Aging: Nutrition Strategies for Optimal Longevity | 4 QH |

*Concentration in Obesity and Nutritional Health*

19 quarter hours required

REQUIRED COURSES

Complete the following courses:

| | |
|---|---|
| NTR 6201 Commercialization of Nutrition and Nutritional Information | 3 QH |
| NTR 7130 Overweight and Obesity 1 | 4 QH |
| NTR 7132 Overweight and Obesity 2 | 4 QH |
| NTR 7880 Nutrition in Practice | 4 QH |

ELECTIVE

Complete one of the following courses:

| | |
|---|---|
| NTR 7135 Eating Disorders in Children and Adults | 4 QH |
| NTR 7140 Wellness and Nutrition | 4 QH |

## COMMERCE AND ECONOMIC DEVELOPMENT

## Master of Science in Commerce and Economic Development

Globalization has created a borderless economy with a host of new opportunities and challenges for those engaged in commerce and economic development. While global markets offer exciting growth prospects, navigating the world stage requires in-depth knowledge of the financial, regulatory, and economic environments and institutions that affect the global economy and international trade. To meet the need for both insight and skills development, Northeastern University's College of Professional Studies—in collaboration with Northeastern University's College of Social Sciences and Humanities—offers the online Master of Science in Commerce and Economic Development.

This graduate-level program integrates economics, leadership, institutional organization, technology, and public policy into a unique and focused educational experience designed to help guide and advance a rewarding career in the private or public sectors.

### CREDIT REQUIREMENT

45 quarter hours required

### REQUIRED CORE COURSES

25 quarter hours required
Complete the following courses:

| | |
|---|---|
| CED 6010 Applied Microeconomic Theory | 4 QH |
| CED 6020 Applied Macroeconomic Theory | 4 QH |
| CED 6030 Applied Mathematics and Statistics for Economics | 4 QH |
| CED 6040 Applied Econometrics | 4 QH |
| CED 6050 Commerce and Economic Development | 4 QH |
| CED 6910 Capstone: Master's Project | 5 QH |

### ELECTIVE COURSES

20 quarter hours required
Complete five of the following courses:

| | |
|---|---|
| CED 6070 Economics of Human Capital | 4 QH |
| CED 6080 Commerce, Institutions, and Innovation | 4 QH |
| CED 6090 Cultural Economic Development | 4 QH |
| CED 6110 Law and Economics | 4 QH |
| CED 6120 Environmental Economics | 4 QH |
| CED 6130 Sustainable Economic Development | 4 QH |
| CED 6140 Economics of E-Commerce | 4 QH |

## CONSTRUCTION MANAGEMENT

## Graduate Certificate in Construction Management

Over the last two decades, construction in both the public and private sector has become increasingly complex, requiring construction and project managers to have a stronger skill base to be successful in acquiring and executing projects.

The Construction Management Graduate Certificate is intended to serve owners' representatives, consulting engineers, architects, design engineers, contractors, and subcontractors. Individuals who have a bachelor's degree, but not necessarily in construction, and who have been identified by their companies as having high potential for advancement are also good candidates for this program.

Courses from this certificate may be applied toward the Master of Science in Project Management.

### CREDIT REQUIREMENT

16 quarter hours required

### GENERAL REQUIREMENTS

Complete the following courses:

| | |
|---|---|
| CMG 6400 Introduction to Construction Management | 4 QH |
| CMG 6402 Alternative Project Delivery Methods and Project Controls | 4 QH |
| CMG 6403 Safety, Project Risk, and Quality Management | 4 QH |
| CMG 6405 Construction Law | 4 QH |

## CRIMINAL JUSTICE

# Master of Science in Criminal Justice

Criminal justice and security agencies are under increased scrutiny—challenged to provide efficient and effective services; be transparent in their interactions with the public; and respond to changing local, national, and world conditions. To be successful, justice system leaders need to think strategically, communicate locally, and act ethically while developing comprehensive (and often multijurisdictional) solutions to crime and terrorism problems.

In response, Northeastern University's College of Professional Studies—in collaboration with the School of Criminology and Criminal Justice—offers the Master of Science in Criminal Justice**.** This innovative online master's degree provides a path to excellence for leaders in law enforcement, courts, private security, and corrections organizations. Academically distinctive, graduate courses in this program emphasize leadership, communication, and ethics—themes that are designed to enhance your leadership capacity and improve your career prospects.

## CREDIT REQUIREMENT

45 quarter hours required

## FOUNDATION COURSES

15 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| CJS 6020 Contemporary Issues in Criminal Justice Policy | 3 QH |
| CJS 6400 Administration of Justice | 3 QH |
| CJS 6405 Criminological Theory for Criminal Justice Leaders | 3 QH |
| CJS 6415 Legal Decision Making and Leadership | 3 QH |
| CJS 6470 Criminal Justice Capstone | 3 QH |

## OPERATIONS COURSES

 12 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| CJS 6425 Research Methods | 3 QH |
| CJS 6435 Program Evaluations | 3 QH |
| CJS 6440 GIS, Evidence-Based Learning, and Policy | 3 QH |
| CMN 6050 Crisis Communication | 3 QH |

## CONCENTRATIONS COURSES

18 quarter hours required
Option 1: Choose one concentration and 3 QH of open elective course work from the concentration courses.
Option 2: Choose a combination of six courses from the concentrations below.

### *Community and Family Justice Concentration*

15 quarter hours required

REQUIRED COURSES
Complete the following courses:

| | |
|---|---|
| CJS 6135 Intimate Partner Violence | 3 QH |
| CJS 6300 Communities and Crime | 3 QH |
| CJS 6305 Criminal Behavior and the Family | 3 QH |
| CJS 6330 Youth Justice and Crime | 3 QH |
| CJS 6340 Substance Abuse and Addictions | 3 QH |

### *Corrections Concentration*

15 quarter hours required

REQUIRED COURSES
Complete five of the following courses:

| | |
|---|---|
| CJS 6145 Correctional Rehabilitation | 3 QH |
| CJS 6300 Communities and Crime | 3 QH |
| CJS 6315 Administration of the Adult and Juvenile Correction Systems | 3 QH |
| CJS 6320 Community Corrections | 3 QH |
| CJS 6325 Probation and Parole | 3 QH |
| CJS 6340 Substance Abuse and Addictions | 3 QH |

### *Global Criminal Justice Concentration*

15 quarter hours required

REQUIRED COURSES
Complete five of the following courses:

| | |
|---|---|
| CJS 6025 Genocide and War Crimes | 3 QH |
| CJS 6030 Organized Crime | 3 QH |
| CJS 6035 Corruption, Integrity, and Accountability | 3 QH |
| CJS 6040 Human Trafficking and Exploitation | 3 QH |
| CJS 6045 Policing Issues around the Globe | 3 QH |
| CJS 6105 Domestic and International Terrorism | 3 QH |
| CJS 6125 Issues in National Security | 3 QH |
| GST 6300 Security and Terrorism | 4 QH |

### *Leadership Concentration*

15 quarter hours required

REQUIRED COURSES
Complete the following courses:

| | |
|---|---|
| LDR 6110 Leading Teams | 3 QH |
| LDR 6120 Creating Leadership Capacity: Developing Bench Strength | 3 QH |
| LDR 6125 Managing Organizational Culture | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |
| LDR 6360 Dynamics of Change at the Community and Social Level | 3 QH |

*Policing Concentration*

15 quarter hours required

REQUIRED COURSES

Complete five of the following courses:

| | |
|---|---|
| CJS 6035 Corruption, Integrity, and Accountability | 3 QH |
| CJS 6045 Policing Issues around the Globe | 3 QH |
| CJS 6050 Models of Intelligence-Led Policing | 3 QH |
| CJS 6205 Law Enforcement Management and Planning | 3 QH |
| CJS 6300 Communities and Crime | 3 QH |
| CJS 6420 U.S. Policing in the Twenty-First Century | 3 QH |

*Security Concentration*

15 quarter hours required

REQUIRED COURSES

Complete five of the following courses:

| | |
|---|---|
| CJS 6005 Legal and Regulatory Issues for Security Management | 3 QH |
| CJS 6010 Advanced Principles of Security Management and Threat Assessment | 3 QH |
| CJS 6035 Corruption, Integrity, and Accountability | 3 QH |
| CJS 6045 Policing Issues around the Globe | 3 QH |
| CJS 6105 Domestic and International Terrorism | 3 QH |
| CJS 6125 Issues in National Security | 3 QH |
| GST 6300 Security and Terrorism | 4 QH |

**OPEN ELECTIVE**

3 quarter hours

| | |
|---|---|
| INT 6943 Integrative Experiential Learning | 3 QH |

## Graduate Certificate in 3-D Animation

Three-D animation is not only a major component in the film and broadcast industries, it is also a crucial element in online entertainment and a driving force for the gaming industry. Companies use animation in advertisements, websites, and training programs. The growing use of gaming technologies in education and industry (often referred to as Serious Games) has given rise to a need for skilled animators who can work closely with business and academic institutions.

The Graduate Certificate in 3-D Animation offers a practice-oriented approach to the art and science of animation, with a particular emphasis on the special requirements of 3-D modeling and animating for the gaming industry. Course work is designed to develop students' powers of visualization as well as provide a conceptual basis for visual narrative. The program seeks to produce graduates who are skilled in the use of industry-standard animation applications; understand visual principles of lighting, modeling, and surfacing; and are conversant with motion and special effects compositing.

**CREDIT REQUIREMENT**

22 quarter hours required

**REQUIRED CORE COURSE**

4 quarter hours required

Complete the following course:

| | |
|---|---|
| DGM 6105* Visual Communications Foundation | 4 QH |

*For students with a portfolio waiver, DGM 6450 Animation Basics (4 QH) is the core course.

**GENERAL REQUIREMENTS**

18 quarter hours required

Complete the following courses:

| | |
|---|---|
| DGM 6122 Foundations of Digital Storytelling | 4 QH |
| DGM 6510 3-D Modeling | 4 QH |
| DGM 6530 Character Animation | 4 QH |
| DGM 6540 Compositing | 4 QH |
| DGM 6882 Animation Reel | 2 QH |

## Graduate Certificate in Digital Video

With the quality and ease-of-use of digital video camcorders, anyone can capture moving images, but the result is like a Stradivarius violin: It takes training to make music. The Graduate Certificate in Digital Video is a hands-on introduction to digital video technologies, as well as an examination of the social, cultural, and political implications of moving-image production in the digital age. Students have an opportunity to gain competency in digital production and postproduction while exploring various formal, conceptual, and structural strategies. Students will also have an opportunity to learn to generate digital video that communicates effectively and inventively, in preparation for

positions in the creative industries of gaming, design, and media production.

The courses in this program also serve as a concentration in the Master of Professional Studies in Digital Media.

### CREDIT REQUIREMENT

18 quarter hours required

### REQUIRED CORE COURSES

10 quarter hours required
Complete the following courses:

| | |
|---|---|
| DGM 6105 Visual Communications Foundation | 4 QH |
| DGM 6122 Foundations of Digital Storytelling | 4 QH |
| DGM 6880 Portfolio | 2 QH |

### ELECTIVE COURSES

8 quarter hours required
Complete two of the following courses:

| | |
|---|---|
| DGM 6435 Digital Video Production | 4 QH |
| DGM 6440 Editing in the Digital Studio | 4 QH |
| DGM 6520 Lighting for the Camera | 4 QH |

## Graduate Certificate in Game Design

Game design is one of the fastest-growing fields in entertainment, business, and education. From healthcare to political science, companies use games to educate their constituents and enhance employee skills.

The Graduate Certificate in Game Design offers a practice-oriented approach to the art and science of game making. The program emphasizes visual design and programming for video games and fosters conceptual understanding of the principles of game design for all varieties of games—from educational board games to iPhone games.

Courses in this program also serve as a concentration in the Master of Professional Studies in Digital Media.

### CREDIT REQUIREMENT

20 quarter hours required

### REQUIRED CORE COURSES

16 quarter hours required
Complete the following courses:

| | |
|---|---|
| DGM 6122 Foundations of Digital Storytelling | 4 QH |
| DGM 6308 Intermediate Programming for Digital Media | 4 QH |
| DGM 6400 Game Design Fundamentals | 4 QH |
| DGM 6405 Game Development | 4 QH |

### ELECTIVE COURSES

4 quarter hours required
Complete one of the following courses:

| | |
|---|---|
| DGM 6408 Game Design Algorithms and Data Structures | 4 QH |
| DGM 6410 Game Design Technology Lab | 4 QH |

## Graduate Certificate in Interactive Design

Digital media plays an increasingly significant role in the global culture and economy. The Graduate Certificate in Interactive Design offers an overview of courses in the creative process of storytelling and communicating through visuals and sound. Students have an opportunity to gain expertise in time-based design and interface and experience design through a practice-oriented problem-solving approach.

The courses in this program also serve as a concentration in the Master of Professional Studies in Digital Media.

### CREDIT REQUIREMENT

22 quarter hours required

### REQUIRED CORE COURSES

Complete the following courses:

| | |
|---|---|
| DGM 6105 Visual Communications Foundation | 4 QH |
| DGM 6108 Programming Foundations for Digital Media | 4 QH |
| DGM 6168 Usability and Human Interaction | 4 QH |
| DGM 6217 Typography for Interactivity | 4 QH |
| DGM 6461 Interactive Information Design 1 | 4 QH |
| DGM 6880 Portfolio | 2 QH |

## Master of Professional Studies in Digital Media

New innovations, breakthrough technologies, and changing consumer habits are redefining the media landscape—fueling demand for media professionals who can apply the latest tools and techniques to create compelling digital content.

In response, the Master of Professional Studies in Digital Media provides state-of-the-art digital media courses in moving image, information design, and narrative structure—elements that are critical to producing and developing content-rich and interactive experiences. Complementing the degree's core curriculum are seven distinctive concentrations in 3-D animation, game design, interactive design, digital photography, digital video, digital media management, or social media.

Differentiating this digital media master's degree is its cohort format, a team-based structure that allows you to complete your degree with the same group of students. Designed to strengthen your project management and leadership skills, cohorts enable you to collaborate with your colleagues on complex, multimedia projects, preparing you to excel in an increasingly digital world.

### CREDIT REQUIREMENT

49–50 quarter hours required

### REQUIRED CORE COURSES

33 quarter hours required
Complete the following courses:

| | |
|---|---|
| DGM 6105 Visual Communications Foundation | 4 QH |
| DGM 6108* Programming Foundations for Digital Media | 4 QH |
| DGM 6122 Foundations of Digital Storytelling | 4 QH |
| DGM 6140 Sound Design | 4 QH |
| DGM 6145 Information Technology and Creative Practice | 4 QH |

| DGM 6501 Web Creation Boot Camp | 2 QH |
|---|---|
| DGM 6511 Web Creation Bootcamp 2 | 2 QH |
| DGM 6890 Thesis Proposal Development | 1 QH |
| DGM 7990 Thesis | 4 QH |

Complete one of the following courses:

| DGM 6125 Time-Based Media | 4 QH |
|---|---|
| DGM 6168 Usability and Human Interaction | 4 QH |

*Students with sufficient programming experience may request a waiver to substitute the required course DGM 6108 Programming Foundations for Digital Media with DGM 6308 Intermediate Programming for Digital Media.

## CONCENTRATIONS COURSES

16 quarter hours required
Choose one of the following concentrations:

### *3-D Animation Concentration*

| DGM 6450 Animation Basics | 4 QH |
|---|---|
| DGM 6510 3-D Modeling | 4 QH |
| DGM 6530 Character Animation | 4 QH |
| DGM 6540 Compositing | 4 QH |

### *Digital Media Management Concentration*

Complete four of the following courses:

| DGM 6230 Digital Media Entrepreneurship | 4 QH |
|---|---|
| DGM 6279 Project Management for Digital Media | 4 QH |
| DGM 6280 Managing for Digital Media | 4 QH |
| DGM 6285 Interactive Marketing Fundamentals | 4 QH |
| DGM 6290 Social Media and Brand Strategy Implementation | 4 QH |

### *Digital Video Concentration*

Complete four of the following courses:

| DGM 6300 Digital Capture and Output | 4 QH |
|---|---|
| DGM 6430 Screenwriting: Linear and Interactive | 4 QH |
| DGM 6435 Digital Video Production | 4 QH |
| DGM 6440 Editing in the Digital Studio | 4 QH |
| DGM 6456 Media Content Delivery | 4 QH |
| DGM 6520 Lighting for the Camera | 4 QH |
| DGM 6540 Compositing | 4 QH |

### *Game Design Concentration*

| DGM 6400 Game Design Fundamentals | 4 QH |
|---|---|
| DGM 6405 Game Development | 4 QH |
| DGM 6408 Game Design Algorithms and Data Structures | 4 QH |
| DGM 6410 Game Design Technology Lab | 4 QH |

### *Interactive Design Concentration*

REQUIRED COURSE

| DGM 6461 Interactive Information Design 1 | 4 QH |
|---|---|

COURSE GROUPS

Complete three courses from one of the following two course tracks:

DESIGN TRACK

| DGM 6217 Typography for Interactivity | 4 QH |
|---|---|
| DGM 6317 Screen-Based Publication Design | 4 QH |
| DGM 6463 Interactive Information Design 2 | 4 QH |
| DGM 6471 Designing Infographics | 4 QH |

USABILITY AND DEVELOPMENT TRACK

| DGM 6268 Usable Design for Mobile Digital Media | 4 QH |
|---|---|
| DGM 6308 Intermediate Programming for Digital Media | 4 QH |
| DGM 6451 Web Development | 4 QH |
| DGM 6471 Designing Infographics | 4 QH |

### *Social Media Concentration*

Choose at least 15 quarter hours from among the following courses:

| CMN 6045 Leveraging Digital Technologies: Strategy, Assessment, and Governance | 3 QH |
|---|---|
| CMN 6055 Planning and Design of Social Media Channels and Online Communities | 3 QH |
| CMN 6065 Implementation and Management of Social Media Channels and Online Communities | 3 QH |
| DGM 6285 Interactive Marketing Fundamentals | 4 QH |
| DGM 6290 Social Media and Brand Strategy Implementation | 4 QH |
| TCC 6710 Content Strategy | 4 QH |

## WORKSHOPS

Optional digital media workshops are designed to provide valuable technical skills and tools for students in all graduate degree programs. Students may choose one of the following workshops:

| DGM 6500 Working with Digital Images | 2 QH |
|---|---|
| DGM 6501 Web Creation Boot Camp | 2 QH |
| DGM 6502 Working with Sound | 2 QH |
| DGM 6503 Flash Intensive | 2 QH |
| DGM 6504 ActionScript (Intensive) | 2 QH |
| DGM 6505 Modeling and Rendering (Intensive) | 2 QH |
| DGM 6506 Introduction to Digital Video | 2 QH |
| DGM 6507 Illustrator Intensive | 2 QH |
| DGM 6508 Game Development Intensive | 2 QH |
| DGM 6509 Integrated Suite Workshop | 2 QH |
| DGM 6511 Web Creation Bootcamp 2 | 2 QH |
| DGM 6513 Single-Lens Reflex Camera Workshop | 2 QH |
| DGM 6514 HTML5 Workshop | 2 QH |
| DGM 6515 Introduction to After Effects | 2 QH |
| DGM 6518 Game Programming Intensive 1 | 2 QH |
| DGM 6519 Game Programming Intensive 2 | 2 QH |
| DGM 6531 Rigging Workshop | 2 QH |
| DGM 6532 Rigging Workshop 2 | 2 QH |

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## EDUCATION

</div>

## Graduate Certificate in Adult and Organizational Learning

From globalization to technology, economic volatility to talent management, there is an increasing need to educate today's workforce for competitive advantage. To meet these needs, trainers, executive development professionals, human resource managers, and educators must stay current in adult and organizational learning.

The Graduate Certificate in Adult and Organizational Learning is designed to provide participants with foundational knowledge in adult learning, needs assessment, and program review. Students have an opportunity to gain expertise and understanding of the methods and models available for instruction, delivery channels, and overall program development.

### CREDIT REQUIREMENT

16 quarter hours required

### REQUIRED CORE COURSES

Complete the following two courses (8 QH):

| | |
|---|---|
| EDU 6319 How People Learn | 4 QH |
| EDU 6323 Technology as a Medium for Learning | 4 QH |

Complete one of the following courses (4 QH):

| | |
|---|---|
| EDU 6324 Competencies, Assessment, and Learning Analytics | 4 QH |
| EDU 6437 Assessment in Education | 4 QH |

Complete one of the following courses (4 QH):

| | |
|---|---|
| EDU 6331 E-Learning Design as a Collaborative Profession | 4 QH |
| EDU 6450 The Globalization of Education | 4 QH |

## Graduate Certificate in Distance Learning

Distance learning is the fastest-growing area of postsecondary education in the United States. In order to meet the expanding need for qualified instructors and professionals, the CPS created the online Graduate Certificate in Distance Learning.

The curriculum is based on cutting-edge distance education techniques, recognized best practices, and proven methodologies, as applied by Northeastern University and other leading institutions. Focused on emerging trends in distance learning and hands-on instruction, this online certificate offers educators the opportunity to achieve excellence in distance learning administration and instruction.

### CREDIT REQUIREMENT

16 quarter hours required

### REQUIRED CORE COURSES

Complete all of the following courses (12 QH):

| | |
|---|---|
| EDU 6319 How People Learn | 4 QH |
| EDU 6321 Models for Learning Design | 4 QH |
| EDU 6323 Technology as a Medium for Learning | 4 QH |

Complete one of the following courses (4 QH):

| | |
|---|---|
| EDU 6324 Competencies, Assessment, and Learning Analytics | 4 QH |
| EDU 6331 E-Learning Design as a Collaborative Profession | 4 QH |
| EDU 6332 Open Learning | 4 QH |
| EDU 6558 Issues in Education | 4 QH |

## Graduate Certificate in Higher Education Administration

The effective administration of higher education institutions has never been so critical than at this time. Consider:

- The president of the United States of America and the secretary of education are calling for access to higher education for all.
- European and Asian universities are ascending in quality, increasing as market forces.
- The electronic delivery of education is escalating, creating new pedagogy and delivery models.

To meet these challenges, as well as changing demographics, financial concerns, and legal and policy requirements, administrators and leaders in higher education need to be increasingly sophisticated and knowledgeable.

The Graduate Certificate in Higher Education Administration is designed to provide participants with an overall understanding of managerial concepts as well as the operational and strategic concepts that lead to effective administration. This program is best suited for individuals seeking mid- to senior-level administrative roles and individuals interested in transitioning from industry and other organizations into academia.

The certificate comprises 16 quarter hours, which may be applied toward the Master of Education in Higher Education Administration.

### CREDIT REQUIREMENT

16 quarter hours required

### REQUIRED CORE COURSES

Complete the following three courses:

| | |
|---|---|
| EDU 6201 The Landscape of Higher Education | 4 QH |
| EDU 6202 Faculty, Curriculum, and Academic Community | 4 QH |
| EDU 6203 Education Law, Policy, and Finance | 4 QH |

### ELECTIVE COURSE (4 QH)

Complete one of the following courses:

| | |
|---|---|
| EDU 6319 How People Learn | 4 QH |
| EDU 6330 Digital Media Literacy | 4 QH |
| EDU 6332 Open Learning | 4 QH |
| EDU 6520 Learning and the Brain: Translating Research into Practice | 4 QH |
| EDU 6558 Issues in Education | 4 QH |

## Master of Arts in Teaching, Elementary Licensure Curriculum

Designed for aspiring teachers and career changers, the Master of Arts in Teaching in Elementary Education (MAT)* offers an appreciation for and an understanding of the diverse educational needs, social concerns, and cultural values of today's elementary and secondary schools. This graduate degree in teaching seeks to enhance your foundational skills, broaden your perspectives, and strengthen your ability to inspire and educate. The master's degree, which includes a full term of student teaching, seeks to produce graduates well positioned to make a meaningful impact in their school, in their community, and in the lives of their students.

*The MAT (grades 1–6) has been approved at the initial licensure level by the Massachusetts Department of Elementary and Secondary Education.

### CREDIT REQUIREMENT

45 quarter hours required

### REQUIRED CORE COURSES

36 quarter hours required
Complete the following courses:

| | |
|---|---|
| EDU 6051 Culture, Equity, Power, and Influence | 4 QH |
| EDU 6086 Foundations of Literacy Development and Instruction | 4 QH |

Complete four of the following courses:

| | |
|---|---|
| EDU 6104 Child and Adolescent Development, Learning, and Teaching | 4 QH |
| EDU 6107 Inclusion, Equity, and Diversity | 4 QH |
| EDU 6154 Inquiry in the Sciences and Humanities | 4 QH |
| EDU 6155 Inquiry in Mathematics | 4 QH |
| EDU 6185 English-Language Learners in the General Education Classroom | 4 QH |
| EDU 6866** Teaching Practicum and Seminar | 1 to 8 QH |

**Students must successfully pass all sections of the Massachusetts Test for Educator Licensure (MTEL) in order to qualify to participate in the practicum course. We recommend you explore taking the MTEL as soon as possible. Visit www.doe.mass.edu/mtel for more information on registration and test dates.

### ELECTIVE COURSES

9 quarter hours required
Students must select at least three elective courses.

***Looking to deepen your knowledge and expertise?***
The MAT+ offers qualifying students the opportunity to complete a MAT with further study in a selected area of expertise. Currently, students can take additional course work to earn either an additional license in special education (teacher of students of moderate disabilities, PreK–8 or 5–12) or a certificate in Teaching English as a Second Language (TESOL).

***MAT+ in Special Education***
This Commonwealth of Massachusetts–approved program may be completed with only an additional 10 quarter hours beyond the standard MAT curriculum. Qualifying students must take the seven licensure courses outlined in the MAT curriculum, select qualifying special education courses for the two elective course

options (within the MAT curriculum), and complete three additional special education courses.
The special education course requirements are:

| | |
|---|---|
| Advanced special education course | 4 QH |
| Advanced literacy course | 4 QH |
| Advanced behavior management course | 4 QH |
| Assessment course | 4 QH |
| EDU 6874 Practicum, Portfolio, and Panel Review | 0 to 4 QH |

## Master of Arts in Teaching, Secondary Licensure Curriculum

Designed for aspiring teachers and career changers, the Master of Arts in Secondary Education (MAT)* offers an appreciation for and an understanding of the diverse educational needs, social concerns, and cultural values of today's secondary schools.

This MAT in secondary education seeks to enhance your foundational skills, broaden your perspectives, and strengthen your ability to inspire and educate. This master's degree, which includes a full term of student teaching, seeks to produce graduates well positioned to make a meaningful impact in their school, in their community, and in the lives of their students.

- Gain political, social, and historical perspectives on education.
- Explore the richly complex environments of schools and communities.
- Develop a working understanding of teaching and learning in diverse settings.
- Investigate how humans learn, acquire knowledge, and make sense of their experiences.
- Examine theories of teaching and explore how best to teach for understanding and learning achievement.
- Research methods and materials, pedagogies, and assessment strategies that foster integrated learning.

*The Master of Arts in Secondary Education (grades 8–12) has been approved at the initial licensure level by the Massachusetts Department of Elementary and Secondary Education.

### CREDIT REQUIREMENT

45 quarter hours required

### REQUIRED CORE COURSES

36 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| EDU 6051 Culture, Equity, Power, and Influence | 4 QH |
| EDU 6064 Curriculum and Assessment | 4 QH |
| EDU 6104 Child and Adolescent Development, Learning, and Teaching | 4 QH |
| EDU 6107 Inclusion, Equity, and Diversity | 4 QH |
| EDU 6162 Language, Culture, and Literacy in Middle and High Schools | 4 QH |
| EDU 6185 English-Language Learners in the General Education Classroom | 4 QH |

Complete one of the following courses:

| | |
|---|---|
| EDU 6122 Teaching the Language Arts | 4 QH |
| EDU 6124 Teaching History and the Social Sciences | 4 QH |
| EDU 6127 Teaching Science | 4 QH |
| EDU 6129 Teaching Mathematics | 4 QH |

Complete the following course:

| | |
|---|---|
| EDU 6866** Teaching Practicum and Seminar | 1 to 8 QH |

**Students must successfully pass all sections of the Massachusetts Test for Educator Licensure (MTEL) in order to qualify to participate in the practicum course. We recommend you explore taking the MTEL as soon as possible. Visit www.doe.mass.edu/mtel for more information on registration and test dates.

## ELECTIVE COURSES

9 quarter hours required

Students must select at least three elective courses.

### *Looking to deepen your knowledge and expertise?*

The MAT+ offers qualifying students the opportunity to complete a MAT with further study in a selected area of expertise. Currently, students can take additional course work to earn either an additional license in special education (teacher of students of moderate disabilities, PreK–8 or 5–12) or a certificate in Teaching English as a Second Language (TESOL).

### *MAT+ in Special Education*

This Commonwealth of Massachusetts–approved program may be completed with only an additional 10 quarter hours beyond the standard MAT curriculum. Qualifying students must take the seven licensure courses outlined in the MAT curriculum, select qualifying special education courses for the two elective course options (within the MAT curriculum), and complete three additional special education courses.

The special education course requirements are:

| | |
|---|---|
| Advanced special education course | 4 QH |
| Advanced literacy course | 4 QH |
| Advanced behavior management course | 4 QH |
| Assessment course | 4 QH |
| EDU 6874 Practicum, Portfolio, and Panel Review | 0 to 4 QH |

## Master of Education, eLearning and Instructional Design Concentration

Recent research on the science of learning has revolutionized our understanding of how people learn. As technology has become ubiquitous in society, learning takes place in many venues and formats: face-to-face, blended, online, and mobile. Seismic shifts are taking place in the education sector, such as competency-based learning and open education. These developments are creating a growing demand for professionals who can help their organizations think strategically about approaches to learning that are pedagogically sound and technology-savvy.

The elearning and instructional design concentration explores the leading edge of next-generation learning design, with the goal of preparing its graduates to thrive in a world of expanded opportunities and delivery modes for learning. The concentration's innovative approach blends academic and experiential workplace-based learning. During the course of study, students develop an online portfolio of work to demonstrate their capacity to think strategically, put creative ideas into action, and design environments that improve student learning to meet academic, personal, institutional, and organizational goals.

### CREDIT REQUIREMENT

45 quarter hours required

### REQUIRED ELEARNING AND INSTRUCTIONAL DESIGN CONCENTRATION COURSES

36 quarter hours required

### REQUIRED CORE COURSES

9 quarter hours required

Complete the following courses:

| | |
|---|---|
| EDU 6050 Education as an Advanced Field of Study | 5 QH |
| EDU 6051 Culture, Equity, Power, and Influence | 4 QH |

### REQUIRED CONCENTRATION COURSES

Complete the following five courses (20 QH):

| | |
|---|---|
| EDU 6319 How People Learn | 4 QH |
| EDU 6321 Models for Learning Design | 4 QH |
| EDU 6323 Technology as a Medium for Learning | 4 QH |
| EDU 6324 Competencies, Assessment, and Learning Analytics | 4 QH |
| EDU 6329 Connecting Theory and Practice | 4 QH |

Complete one of the following courses (4 QH):

| | |
|---|---|
| EDU 6202 Faculty, Curriculum, and Academic Community | 4 QH |
| EDU 6331 E-Learning Design as a Collaborative Profession | 4 QH |

Complete two of the following courses (8 QH):

| | |
|---|---|
| EDU 6322 Iterative Design of Learning Experiences | 4 QH |
| EDU 6332 Open Learning | 4 QH |
| EDU 6558 Issues in Education | 4 QH |

Complete the following course in your last term of study (4 QH):

| | |
|---|---|
| EDU 6225 Capstone | 4 QH |

## Master of Education, Higher Education Administration Concentration

Due to advances in e-learning and increasing student enrollments, the need for capable and effective school administrators has never been greater. In addition to providing solid guidance and direction, they must work to meet the needs of faculty, students, and parents alike. In response, the CPS offers a Master of Education program with a concentration in higher education administration.

This innovative master's degree program explores complex industry issues such as student demographics, financial concerns, legal and policy requirements, technology, and competitive forces.

## CREDIT REQUIREMENT

45 quarter hours required

## REQUIRED CORE COURSES

9 quarter hours required

Complete the following courses:

| | |
|---|---|
| EDU 6050 Education as an Advanced Field of Study | 5 QH |
| EDU 6051 Culture, Equity, Power, and Influence | 4 QH |

## REQUIRED HIGHER EDUCATION ADMINISTRATION CONCENTRATION COURSES

32 quarter hours required

Complete the following six courses (24 QH):

| | |
|---|---|
| EDU 6201 The Landscape of Higher Education | 4 QH |
| EDU 6202 Faculty, Curriculum, and Academic Community | 4 QH |
| EDU 6203 Education Law, Policy, and Finance | 4 QH |
| EDU 6221 Enrollment, Retention, Graduation, Success | 4 QH |
| EDU 6437 Assessment in Education | 4 QH |
| EDU 6447 The Demographics of Higher Education | 4 QH |

Complete one of the following courses (4 QH):

| | |
|---|---|
| EDU 6450 The Globalization of Education | 4 QH |
| INT 6900 International Field Study Experience | 4 QH |

Complete the following course in your last term (4 QH):

| | |
|---|---|
| EDU 6225 Capstone | 4 QH |

## ELECTIVES

Complete one of the following courses (4 QH):

| | |
|---|---|
| EDU 6319 How People Learn | 4 QH |
| EDU 6330 Digital Media Literacy | 4 QH |
| EDU 6332 Open Learning | 4 QH |
| EDU 6520 Learning and the Brain: Translating Research into Practice | 4 QH |
| EDU 6558 Issues in Education | 4 QH |

## Master of Education, Learning and Instruction Concentration—Overview

As the field of education evolves, today's educators are constantly challenged to be aware of and incorporate best-in-class practices, new technologies, and the latest research and trends within their classrooms. In response, the CPS offers the Master of Education with a Concentration in Learning and Instruction.

Designed for a broad range of educators, this program provides an in-depth look at the critical issues that are transforming the face of education: technology and distance learning, globalization, creative and critical thinking, assessments, and learning outcomes.

Reflecting the new direction of education, this master's degree program also allows you to choose your area of focus by selecting from degree specializations in math, science, English-language learning, literacy, leadership, and technology.

Whether you are a classroom teacher or an administrator or work in youth development, community education, early childhood, or in a before/aftercare program, you have an opportunity to gain new perspectives and acquire fresh strategies for meeting the needs of today's students. This program seeks to produce graduates empowered to implement new ideas and innovative strategies that are designed to improve educational effectiveness.

## CREDIT REQUIREMENT

45 quarter hours required

## REQUIRED CORE COURSES

9 quarter hours required

Complete the following courses:

| | |
|---|---|
| EDU 6050 Education as an Advanced Field of Study | 5 QH |
| EDU 6051 Culture, Equity, Power, and Influence | 4 QH |

## REQUIRED LEARNING AND INSTRUCTION CONCENTRATION COURSES

20 quarter hours required

Complete one of the following courses (4 QH):

| | |
|---|---|
| EDU 6319 How People Learn | 4 QH |
| EDU 6465 Critical and Creative Thinking | 4 QH |
| EDU 6520 Learning and the Brain: Translating Research into Practice | 4 QH |

Complete the following courses (12 QH):

| | |
|---|---|
| EDU 6328 Policy and Leadership | 4 QH |
| EDU 6330 Digital Media Literacy | 4 QH |
| EDU 6437 Assessment in Education | 4 QH |

Complete the following course in your last term (4 QH):

| | |
|---|---|
| EDU 6225 Capstone | 4 QH |

## REQUIRED ELECTIVE COURSES

16 quarter hours required

Complete four of the following courses:

| | |
|---|---|
| EDU 6185 English-Language Learners in the General Education Classroom | 4 QH |
| EDU 6201 The Landscape of Higher Education | 4 QH |
| EDU 6221 Enrollment, Retention, Graduation, Success | 4 QH |
| EDU 6300 Introduction to Language and Linguistics: How English Is Structured and Used | 4 QH |
| EDU 6323 Technology as a Medium for Learning | 4 QH |
| EDU 6332 Open Learning | 4 QH |
| EDU 6426 Developmental Language, Literacy, and Writing: Assessment and Instruction | 4 QH |
| EDU 6429 Child and Adolescent Variations | 4 QH |
| EDU 6431 Developing Skills and Accessing Ideas: Curriculum | 4 QH |
| EDU 6447 The Demographics of Higher Education | 4 QH |
| EDU 6450 The Globalization of Education | 4 QH |
| EDU 6528 Adaptive Learning/Behavior Management Strategies: Consultation and Collaboration | 4 QH |
| EDU 6534 Bilingualism, Second Language, and Literacy Development | 4 QH |
| EDU 6558 Issues in Education | 4 QH |

## Master of Education, Special Education Concentration

Demand for graduate-level-prepared special education practitioners is on the rise, driven by heightened degree requirements and a shortage of licensed, qualified teachers. In response, the CPS is pleased to offer the Master of Education with a Concentration in Special Education. Designed for educators who are licensed at the initial or professional level in another discipline, this innovative master's degree program prepares you to meet the special needs of students across a variety of school environments.

This program meets the Massachusetts Department of Elementary and Secondary Education standards and competencies for an additional licensure as a Teacher of Students with Moderate Disabilities, PreK–8 and 5–12.

In this advanced program, you have an opportunity to explore specific topics on modifying curriculum, designing curriculum-based assessments, managing severe behaviors, developing individualized education programs (IEPs), leveraging community resources, and improving literacy. As a result, you have an opportunity to enhance your ability to meet the needs of a diverse student population and to achieve the competencies required for this specialized license.

### CREDIT REQUIREMENT

45 quarter hours required

### REQUIRED CORE COURSES

9 quarter hours required
Complete the following courses:

| | |
|---|---|
| EDU 6050 Education as an Advanced Field of Study | 5 QH |
| EDU 6051 Culture, Equity, Power, and Influence | 4 QH |

### REQUIRED SPECIAL EDUCATION CONCENTRATION COURSES

20 quarter hours required
Complete the following courses:

| | |
|---|---|
| EDU 6425 Special Education: Foundations for Understanding the Inclusive School | 4 QH |
| EDU 6426 Developmental Language, Literacy, and Writing: Assessment and Instruction | 4 QH |
| EDU 6528 Adaptive Learning/Behavior Management Strategies: Consultation and Collaboration | 4 QH |
| EDU 6569 Differentiated Instruction and Assessment in Mathematics | 4 QH |
| EDU 6874 Practicum, Portfolio, and Panel Review | 4 QH |

### REQUIRED ELECTIVE COURSES

16 quarter hours required
Complete four of the following courses (16 QH):

| | |
|---|---|
| EDU 6429 Child and Adolescent Variations | 4 QH |
| EDU 6431 Developing Skills and Accessing Ideas: Curriculum | 4 QH |
| EDU 6437 Assessment in Education | 4 QH |
| EDU 6465 Critical and Creative Thinking | 4 QH |

| | |
|---|---|
| EDU 6520 Learning and the Brain: Translating Research into Practice | 4 QH |
| EDU 6530 Beyond Behavior Management | 4 QH |
| EDU 6558 Issues in Education | 4 QH |
| EDU 6570 Advanced Strategies in Literacy: Readers and Writers Who Struggle | 4 QH |

## Doctor of Education

The Doctor of Education (EdD) program offers a rich, dynamic learning experience—one that blends critical engagement with theory, practice, and research.

Offering innovative and engaging opportunities, our EdD seeks to further cultivate the skills and knowledge necessary to effect meaningful change in your organization. As a doctor of education student, you have an opportunity to collaborate with an accomplished group of fellow practitioners, exposing you to global perspectives and strengthening your ability to think critically about today's educational challenges.

Built on Northeastern University's scholar-practitioner model, the EdD program integrates your professional experience with doctoral-level research, which should enable you to identify and address your practice-based issues while investigating matters of social justice. Through rigorous course work and collaborative opportunities, you have an opportunity to conduct empirical research culminating in a doctoral thesis that examines a compelling educational challenge.

### ADMISSION REQUIREMENTS

Please note that all doctor of education degrees offered through the CPS have the following admission requirements:

- Online application
- Academic transcripts (undergraduate **and** graduate)
- Admissions statement (1,000–1,200 words)
- Minimum of three years of professional work experience in a related field
- Professional resumé
- Faculty recommendation
- Two professional recommendations
- English-language proficiency proof (for non-native English-language speakers)

## Doctor of Education—Curriculum, Teaching, Learning, and Leadership Concentration

The Doctor of Education (EdD) curriculum, teaching, learning, and leadership concentration seeks to help educational leaders develop the competencies, dispositions, and values required to pursue educational reform, based on a commitment to social justice. Students have an opportunity to explore the relationship between effective educational leadership and the ways that curriculum and teaching can enhance learning opportunities for students across their life span.

This EdD concentration focuses on preparing transformational leaders who recognize the importance of providing quality educational experiences for all learners.

## CREDIT REQUIREMENT

60 quarter hours required*

## REQUIRED FOUNDATION COURSES

12 quarter hours required

Complete the following courses:

| | |
|---|---|
| EDU 7202 Transforming Human Systems | 3 QH |
| EDU 7209 Introduction to Doctoral Studies | 3 QH |
| EDU 7210 Leadership Theory and Research | 3 QH |
| EDU 7214 Changing Conceptions of Learning and Human Development: Research and Practice | 3 QH |

## REQUIRED RESEARCH COURSES

9 quarter hours required

| | |
|---|---|
| EDU 7280 Fundamentals of Research | 3 QH |
| EDU 7281 Research Design | 3 QH |
| EDU 7283 Proposal Development—Qualitative | 3 QH |

## CURRICULUM, TEACHING, LEARNING, AND LEADERSHIP CONCENTRATION COURSES

15 quarter hours required

| | |
|---|---|
| EDU 7213 Education Entrepreneurship | 3 QH |
| EDU 7216 Social Justice and Educational Equity | 3 QH |
| EDU 7217 Educational Systems: The Dynamics between Policy, Values, and Practice | 3 QH |
| EDU 7242 Situated Leadership | 3 QH |
| EDU 7244 Curriculum Theory and Practice Over Time: Implications for Educational Leadership | 3 QH |

## ELECTIVE COURSES

12 quarter hours required

Students take additional courses from any concentration. Electives offered within the curriculum, teaching, learning, and leadership concentration are not limited to but include:

| | |
|---|---|
| EDU 7222 Community Engagement | 3 QH |
| EDU 7230 Current and Emerging Practice in STEM Education | 3 QH |
| EDU 7241 International Research and Practices in Curricula | 3 QH |
| EDU 7243 Doctoral Seminar in Curriculum Leadership | 3 QH |
| Doctor of Education advanced graduate credit | Up to 9 QH |

## DOCTORAL THESIS COURSES

12 quarter hours required

| | |
|---|---|
| EDU 8796 Thesis Proposal and the Internal Review Board | 3 QH |
| EDU 8797 Thesis Data Collection, Initial Analysis, and Management | 3 QH |
| EDU 8798 Thesis Data Analysis and Presentation | 3 QH |
| EDU 8799 Thesis Findings and Discussion | 3 QH |

*North Carolina residents must complete an additional 9 quarter hours to satisfy degree requirements (EDU 7284, EDU 7285, and EDU 7286).

## Doctor of Education—Higher Education Administration Concentration

The Doctor of Education (EdD) higher education administration concentration includes the study of practice and scholarship across a variety of postsecondary education settings, including community and four-year colleges, for-profit organizations, and research institutions. Addressing globalization trends in higher education, this concentration combines theoretical with practice-based concepts.

This concentration offers students an opportunity to conduct and apply research that advances administrative practice or theory in higher education administration. Students have an opportunity to further their understanding and utilization of research design as they interpret research literature and conduct research studies.

This program seeks to produce graduates well-grounded in the educational roles and critical issues in colleges and universities, including:

- Cultural, ethical, and societal issues in higher education
- Historical considerations in higher education around the world
- Organization, governance, leadership, and administrative theories
- Higher education finance, law, and planning
- Establishing and sustaining initiatives in higher education

## CREDIT REQUIREMENT

60 quarter hours required*

## REQUIRED FOUNDATION COURSES

12 quarter hours required

Complete the following courses:

| | |
|---|---|
| EDU 7202 Transforming Human Systems | 3 QH |
| EDU 7209 Introduction to Doctoral Studies | 3 QH |
| EDU 7210 Leadership Theory and Research | 3 QH |
| EDU 7214 Changing Conceptions of Learning and Human Development: Research and Practice | 3 QH |

## REQUIRED RESEARCH COURSES

9 quarter hours required

| | |
|---|---|
| EDU 7280 Fundamentals of Research | 3 QH |
| EDU 7281 Research Design | 3 QH |
| EDU 7283 Proposal Development—Qualitative | 3 QH |

## HIGHER EDUCATION ADMINISTRATION CONCENTRATION COURSES

15 quarter hours required

| | |
|---|---|
| EDU 7204 Global and Historical Perspectives on Higher Education | 3 QH |
| EDU 7250 Organizational Systems and Institutional Governance | 3 QH |
| EDU 7253 The Legal Environment of Higher Education | 3 QH |
| EDU 7256 Financial Decision Making in Higher Education | 3 QH |
| EDU 7258 Strategic Management in Higher Education | 3 QH |

## ELECTIVE COURSES

2 quarter hours required

Students take additional courses from any concentration. Electives offered within the curriculum, teaching, learning, and leadership concentration are not limited to but include:

| | |
|---|---|
| EDU 7251 Student Engagement in Higher Education | 3 QH |
| EDU 7254 Postsecondary and Institutional Public Policy | 3 QH |
| EDU 7257 The Urban University in the United States | 3 QH |
| EDU 7260 Comparative International/Global Higher Education | 3 QH |
| EDU 7264 Educating Global Students: Issues and Practices | 3 QH |
| EDU 7266 Contemporary Issues in Community Colleges | 3 QH |
| EDU 7267 Community College and Learning Communities | 3 QH |
| EDU 7268 Community College Leadership | 3 QH |
| Doctor of Education advanced graduate credit | Up to 9 QH |

## DOCTORAL THESIS COURSES

12 quarter hours required

| | |
|---|---|
| EDU 8796 Thesis Proposal and the Internal Review Board | 3 QH |
| EDU 8797 Thesis Data Collection, Initial Analysis, and Management | 3 QH |
| EDU 8798 Thesis Data Analysis and Presentation | 3 QH |
| EDU 8799 Thesis Findings and Discussion | 3 QH |

*North Carolina residents must complete an additional 9 quarter hours to satisfy degree requirements (EDU 7284, EDU 7285, and EDU 7286).

# Doctor of Education—Organizational Leadership Studies Concentration

The Doctor of Education (EdD) organizational leadership studies concentration positions experienced leaders to assume greater responsibilities within their organizations. Designed for leaders working in educational, government, healthcare, military, not-for-profit, for-profit, and management consulting organizations, this concentration combines theory, research, and practice to develop individuals who can effectively manage and lead change in today's fast-paced, global environment.

The interdisciplinary curriculum offers a strong foundation in leadership, culture, learning, change, communications, systems, and strategy. Students have an opportunity to conduct and apply doctoral research to develop real-world answers to the leadership challenges facing twenty-first-century organizations.

Throughout the course of the program, students have an opportunity to:

- Review contemporary leadership theory and models emphasizing recent conceptualizations such as adaptive, relational, distributed, complexity, and global leadership to refine their personal leadership knowledge, skills, and abilities.
- Examine key models of organizational culture to build their own capability to understand and interact with different societal and organizational cultures across the world.
- Enhance their ability to think systemically by developing the required competencies to create cultures and structuring processes for learning in their organizations.
- Explore classical and modern theories of organization and design a forward-thinking organization creating all components, including vision, mission, strategy, structure, and processes.
- Use both seminal and current theoretical approaches of organizational communication to investigate the dynamic interplay between communication processes and human organizing.
- Examine seminal and modern group dynamics research to assess group processes and to stimulate group development inside their organizations.
- Investigate topical consulting strategies and organizational assessment tools and conduct an organizational diagnosis to gain a comprehensive understanding of the models, variables, and perspectives used to understand complex organizational processes.
- Integrate organizational power theory, research, and practical diagnostic tools to systematically identify and evaluate the political processes and behaviors at play inside their organizations.

This program seeks to produce graduates who have the capacity to contribute new knowledge to leadership scholarship and become positive forces of change.

## CREDIT REQUIREMENT

60 quarter hours required*

## REQUIRED FOUNDATION COURSES

12 quarter hours required

Complete the following courses:

| | |
|---|---|
| EDU 7202 Transforming Human Systems | 3 QH |
| EDU 7209 Introduction to Doctoral Studies | 3 QH |
| EDU 7210 Leadership Theory and Research | 3 QH |
| EDU 7214 Changing Conceptions of Learning and Human Development: Research and Practice | 3 QH |

## REQUIRED RESEARCH COURSES

9 quarter hours required

| | |
|---|---|
| EDU 7280 Fundamentals of Research | 3 QH |
| EDU 7281 Research Design | 3 QH |
| EDU 7283 Proposal Development—Qualitative | 3 QH |

## ORGANIZATIONAL LEADERSHIP STUDIES CONCENTRATION COURSES

15 quarter hours required

| | |
|---|---|
| EDU 7272 Global Perspectives of Organizational Culture | 3 QH |
| EDU 7275 Contemporary Models of Leadership | 3 QH |
| EDU 7276 Organizational Communication: Institutional and Global Perspectives | 3 QH |
| EDU 7277 Organizational Learning and Systems Thinking | 3 QH |
| EDU 7278 Organization Theory and Design | 3 QH |

## ELECTIVE COURSES

12 quarter hours required

Students take additional courses from any concentration. Electives offered within the curriculum, teaching, learning, and leadership concentration are not limited to but include:

| | |
|---|---|
| EDU 7274 Doctoral Seminar in Organizational Leadership and Communication | 3 QH |
| Doctor of Education advanced graduate credit | Up to 9 QH |

## DOCTORAL THESIS COURSES

12 quarter hours required

| | |
|---|---|
| EDU 8796 Thesis Proposal and the Internal Review Board | 3 QH |
| EDU 8797 Thesis Data Collection, Initial Analysis, and Management | 3 QH |
| EDU 8798 Thesis Data Analysis and Presentation | 3 QH |
| EDU 8799 Thesis Findings and Discussion | 3 QH |

*North Carolina residents must complete an additional 9 quarter hours to satisfy degree requirements (EDU 7284, EDU 7285, and EDU 7286).

## FINANCIAL MARKETS AND INSTITUTIONS

## Graduate Certificate in Financial Markets and Institutions

In this rapidly changing business environment, the barriers between institutions are eroding, and competition is increasing due to deregulation and new product development. Managing internal operations more efficiently and adapting to the changing external environment is critical to the long-term survival of institutions. The Graduate Certificate in Financial Markets and Institutions seeks to prepare students to measure the impact of accounting decisions on performance; to manage risks, assets, and liabilities to meet corporate goals; to understand domestic and international financial systems and the institutions within them; and to build financial relationships that foster marketing financial products.

An examination of financial services industry principles and practices seeks to provide individuals working in brokerage houses, investment or commercial banks, insurance companies, or real estate with a greater understanding of financial systems as well as how to manage risks, assets, and liabilities in meeting corporate goals.

*Note:* Courses from this certificate may not be applied toward the Master of Science in Leadership.

### CREDIT REQUIREMENT

16 quarter hours required

### REQUIRED CORE COURSES

16 quarter hours required

Complete the following courses:

| | |
|---|---|
| FIN 6101 Accounting Fundamentals for Financial Institutions | 4 QH |
| FIN 6102 Asset and Liability Management | 4 QH |
| FIN 6120 Building Financial Relationships | 4 QH |
| FIN 6161 Investment Analysis | 4 QH |

## GEOGRAPHIC INFORMATION SYSTEMS

## Graduate Certificate in Geographic Information Systems

A geographic information system (GIS) combines layers of data to give needed information on specific locations. Such a system can map environmental sensitivities or geological features or can report on how best to speed emergency personnel to an accident or crime scene. Current fields using GIS include healthcare, public safety, environmental management, transportation and operations technology, real estate, and public utilities.

The Graduate Certificate in Geographic Information Systems program offers hands-on training, seeking to give students the necessary skills and understanding to apply GIS competently and effectively. As a result of the certificate curriculum, students should be well versed in GIS theory, have practical hands-on exposure to GIS software and hardware, understand the representation of data in both mapped and tabular forms, and know how to plan and construct spatial databases.

The courses in this certificate program may be applied to the Master of Professional Studies in Geographic Information Technology.

### CREDIT REQUIREMENT

18 quarter hours required

### REQUIRED CORE COURSES

12 quarter hours required
Complete the following courses:

| | |
|---|---|
| GIS 5101 Introduction to Geographic Information Systems | 3 QH |
| GIS 5102 Fundamentals of GIS Analysis | 3 QH |
| GIS 5201 Advanced Spatial Analysis | 3 QH |
| RMS 5105 Fundamentals of Remote Sensing | 3 QH |

### ELECTIVE COURSES

6 quarter hours required
Complete two of the following courses:

| | |
|---|---|
| GIS 6340 GIS Customization | 3 QH |
| GIS 6350 GIS Management and Implementation | 3 QH |
| GIS 6360 Spatial Databases | 3 QH |
| GIS 6370 Internet-Based GIS | 3 QH |
| GIS 6385 GIS/Cartography | 3 QH |
| GIS 6390 Business Applications of Geographic Information Systems | 3 QH |
| GIS 6391 Healthcare Applications of Geographic Information Systems | 3 QH |
| GIS 6394 Crisis Mapping for Humanitarian Action | 3 QH |
| GIS 6395 Geospatial Analysis of Crime | 3 QH |
| GIS 6396 GIS for Defense, Homeland Security, and Emergency Response | 3 QH |

## Master of Professional Studies in Geographic Information Technology

Increased interest in geographic information and its applications is fueling demand for surveyors, cartographers, photogrammetrists, and mapping technicians. In response to this increased demand, Northeastern University's College of Professional Studies has developed the Master of Professional Studies in Geographic Information Technology (GIT).

Designed to advance your technical expertise, this online degree in geographic information technology explores a range of topics that are essential to the geographic information systems (GIS) field—from project management and system implementation to database design and execution. In addition, advanced concepts and techniques in areas such as raster-based GIS, geospatial information, and GIS modeling are also addressed within this online master's degree. Combining technical knowledge with hands-on GIS training, this results-oriented program seeks to enhance your skills and broaden your knowledge base—equipping you to competently apply GIS in your chosen field.

*Please note:* High-speed Internet service is required for course work in this program.

### CREDIT REQUIREMENT

45–46 quarter hours required

### REQUIRED CORE COURSES

21–22 quarter hours required
Complete the following courses:

| | |
|---|---|
| GIS 5101 Introduction to Geographic Information Systems | 3 QH |
| GIS 5102 Fundamentals of GIS Analysis | 3 QH |
| GIS 5201 Advanced Spatial Analysis | 3 QH |
| GIS 6980 Capstone | 3 QH |
| RMS 5105 Fundamentals of Remote Sensing | 3 QH |

Complete two of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 QH |
| ITC 6020 Information Systems Design and Development | 3 QH |
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6125 Managing Organizational Culture | 3 QH |
| PJM 5900* Foundations of Project Management | 4 QH |

*This course is required for students who do not have at least two years of professional experience working on projects. This course is only intended for those who are not familiar with professional project work. Students with two years or more of professional project experience may substitute PJM 6000 for PJM 5900.

### CONCENTRATIONS COURSES

18–20 quarter hours
*Note:* If students prefer to focus their studies on a particular concentration, they may select 18 quarter hours from one of the concentrations below and complement their studies with 6 quarter hours of open elective courses to meet the minimum 45-quarter-hour degree requirement.

Students are not required to complete a concentration. Any combination of 24 quarter hours from concentration and elective courses will satisfy degree requirements.

### Geographic Information Systems
18 quarter hours required

Complete six of the following courses:

| | |
|---|---|
| GIS 6340 GIS Customization | 3 QH |
| GIS 6350 GIS Management and Implementation | 3 QH |
| GIS 6360 Spatial Databases | 3 QH |
| GIS 6370 Internet-Based GIS | 3 QH |
| GIS 6385 GIS/Cartography | 3 QH |
| GIS 6390 Business Applications of Geographic Information Systems | 3 QH |
| GIS 6391 Healthcare Applications of Geographic Information Systems | 3 QH |
| GIS 6394 Crisis Mapping for Humanitarian Action | 3 QH |
| GIS 6395 Geospatial Analysis of Crime | 3 QH |
| GIS 6396 GIS for Defense, Homeland Security, and Emergency Response | 3 QH |

### Remote Sensing
18 quarter hours required

Complete the following course:

| | |
|---|---|
| RMS 6110 Digital Image Processing | 3 QH |

Complete five of the following courses:

| | |
|---|---|
| RMS 6220 Geographic Information Systems for Remote Sensing | 3 QH |
| RMS 6230 Remote Sensing and Global Change | 3 QH |
| RMS 6240 Introduction to Radar and LiDAR Remote Sensing | 3 QH |
| RMS 6250 Remote Sensing of Vegetation | 3 QH |
| RMS 6260 Remote Sensing for Archaeology | 3 QH |
| RMS 6270 Remote Sensing for Disaster Management | 3 QH |
| RMS 6280 Automated Feature Extraction for the Geospatial Professional | 3 QH |
| RMS 6290 Spectroscopic Image Analysis | 3 QH |
| RMS 6292 Photogrammetry and GPS | 3 QH |

### OPEN ELECTIVE COURSES
6 quarter hours required

Open electives can be fulfilled by completing either (a) 6 quarter hours from the courses listed above or (b) either COP 6940 or INT 6943 and 3 quarter hours from the courses listed above.

| | |
|---|---|
| COP 6940 Personal and Career Development | 3 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |

## GLOBAL STUDIES AND INTERNATIONAL RELATIONS

## Graduate Certificate in Global Studies and International Relations

The Graduate Certificate in Global Studies and International Relations is designed to provide students with the skills and training necessary to analyze, research, and evaluate a topic of interest in a global location. Overall, the program curriculum focuses on the themes of transition and development in the global world. Core courses provide a base of knowledge about global issues and are combined with an elective that allows students to focus on a specific area of interest.

### CREDIT REQUIREMENT
16 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| GST 6100 Globalization and Global Politics and Economics | 4 QH |
| GST 6101 Global Literacy, Culture, and Community | 4 QH |
| GST 6320 Peace and Conflict | 4 QH |

### Area Studies
Complete one of the following courses:

| | |
|---|---|
| GST 6501 Regional Studies: East Asia | 4 QH |
| GST 6502 Regional Studies: Middle East | 4 QH |
| GST 6503 Regional Studies: Sub-Saharan Africa | 4 QH |
| GST 6504 Regional Studies: Europe | 4 QH |
| GST 6505 Regional Studies: Southwest and Central Asia | 4 QH |
| GST 6506 Regional Studies: Latin America | 4 QH |

## Master of Science in Global Studies and International Relations

Globalization has created a world of new opportunities for those savvy enough to recognize them and acquire the new skill sets needed for success in international government, consulting, business and industry, nonprofit, and educational sectors.

This program prepares students for internationally focused positions that range from traditional practitioners of diplomacy, to development workers, to executives employed in the dynamic world of international consultancy, trade, and industry. With courses enriched by classmates from every continent, students are active learners in a collaborative, cross-cultural setting from their very first course.

The core curriculum ensures all students have a solid grounding in foundational courses such as international politics, economics, security, and diplomacy. Students then select from a broad-based menu of concentrations, allowing them to develop specialties. The program culminates in a capstone experience in which students elect to write a thesis, engage in a case study, or undertake short-term travel to conduct intensive field research.

## CREDIT REQUIREMENT

46 quarter hours required

## REQUIRED FOUNDATION COURSES

24 quarter hours required

Complete the following courses:

| | |
|---|---|
| GST 6100 Globalization and Global Politics and Economics | 4 QH |
| GST 6101 Global Literacy, Culture, and Community | 4 QH |
| GST 6109 Basic Field Research Methods | 4 QH |
| GST 6320 Peace and Conflict | 4 QH |

### *Area Studies*

Complete one of the following courses:

| | |
|---|---|
| GST 6501 Regional Studies: East Asia | 4 QH |
| GST 6502 Regional Studies: Middle East | 4 QH |
| GST 6503 Regional Studies: Sub-Saharan Africa | 4 QH |
| GST 6504 Regional Studies: Europe | 4 QH |
| GST 6505 Regional Studies: Southwest and Central Asia | 4 QH |
| GST 6506 Regional Studies: Latin America | 4 QH |

### *Capstone*

Complete one of the following courses:

| | |
|---|---|
| GST 6920 Case Study in Global Studies | 4 QH |
| GST 7990* Thesis | 4 QH |
| INT 6900** International Field Study Experience | 3 QH |

*This course, which requires faculty approval, should be taken as the last course within the program.

**Registration in INT 6900 requires co-registration in a 1-QH directed study (only for global studies students using this to satisfy capstone requirement. Global studies students must also have completed GST 6109 in order to be eligible for registration in INT 6900.

## CONCENTRATIONS COURSES

20 quarter hours

*Note:* Students are required to complete one of the following concentrations. Five courses are required, four of which must be from a single concentration. The fifth course can be from the student's chosen concentration, another global studies concentration course (from below), or an additional area studies course.

### *Conflict Resolution Concentration*

Complete three of the following courses:

| | |
|---|---|
| GST 6300 Security and Terrorism | 4 QH |
| GST 6324 Divided Societies in the Modern World | 4 QH |
| GST 6326 International Conflict and Cooperation | 4 QH |
| GST 6327 Conflict and Postconflict Development | 4 QH |
| GST 6360 Nuclear Weaponry: Science and Politics | 4 QH |
| GST 6740 Human Rights | 4 QH |

### *Development and Global Health Concentration*

| | |
|---|---|
| GST 6210 The Developers | 4 QH |
| GST 6340 Poverty and Wealth | 4 QH |
| GST 6350 Global Economics of Food and Agriculture | 4 QH |
| GST 6610 Sustainable Development | 4 QH |
| GST 6700 Global Health Perspectives, Politics, and Experiences in International Development | 4 QH |
| GST 6710 Critical Issues and Challenges in the Practice of Global Health | 4 QH |

### *Diplomacy Concentration*

| | |
|---|---|
| GST 6540 Politics of the European Union | 4 QH |
| GST 6550 U.S. Foreign Policy | 4 QH |
| GST 6590 Public Diplomacy | 4 QH |
| GST 6600 The Practice of Diplomacy | 4 QH |
| GST 6740 Human Rights | 4 QH |

### *Global Student Mobility Concentration*

| | |
|---|---|
| GST 6410 Education and Information Technology | 4 QH |
| GST 6810 International Higher Education | 4 QH |
| GST 6820 Managing Study Abroad | 4 QH |
| GST 6830 Managing International Students | 4 QH |
| GST 6840 The Business of International Education | 4 QH |
| GST 6850 Immigration and Legal Issues in International Higher Education | 4 QH |

### *International Economics Concentration*

| | |
|---|---|
| GST 6102 Global Corporate and Social Responsibility | 4 QH |
| GST 6200 The Funders | 4 QH |
| GST 6220 Globalization of Emerging Economies | 4 QH |
| GST 6310 Immigration and Labor | 4 QH |
| GST 6340 Poverty and Wealth | 4 QH |
| GST 6430 Leadership and Management | 4 QH |
| GST 6580 Opportunities in International Consulting | 4 QH |

## ELECTIVE COURSES

Students must take 2–4 QH of elective courses (either from the list below or from any of the courses listed above) to satisfy the 46-QH degree requirement:

| | |
|---|---|
| COP 6940* Personal and Career Development | 3 QH |
| GST 6983 Topics | 2 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |

*Enrollment into this course requires participation in the cooperative education program.

## HEALTH MANAGEMENT

## Graduate Certificate in Health Management

Projections for the healthcare industry state that job growth will remain above average into the next decade. The needs of an aging population along with the increased human life cycle are just some of the factors contributing to this growth.

The Graduate Certificate in Health Management examines the financial, political, legal, and operational aspects of a healthcare facility and explores the evolution of healthcare delivery in the United States.

Health managers are found in different roles across healthcare organizations including:

- Strategic planning
- Operations
- Human resources
- Fund-raising
- Purchasing

Health managers are responsible for designing, administering, managing, and evaluating health policies, programs, and services. The courses in this certificate also serve as a concentration in the Master of Science in Leadership program.

### CREDIT REQUIREMENT

18 quarter hours required

### REQUIRED CORE COURSES

12 quarter hours required
Complete the following courses:

| | |
|---|---|
| HMG 6110 Organization, Administration, Financing, and History of Healthcare | 3 QH |
| HMG 6120 Human Resource Management in Healthcare | 3 QH |
| HMG 6130 Healthcare Strategic Management | 3 QH |
| NPM 6120 Financial Management for Nonprofit Organizations | 3 QH |

### ELECTIVE COURSES

6 quarter hours required
Complete two of the following courses:

| | |
|---|---|
| HRM 6020 Strategic Recruitment, Training, and Performance Management | 3 QH |
| HMG 6140 Principles of Population-Based Management | 3 QH |
| HMG 6150 Seminar in Health Services Research: Issues and Research | 2 QH |
| HMG 6160 Healthcare Information Systems Management | 3 QH |
| HMG 6170 Health Law, Politics, and Policy | 3 QH |
| NPM 6110 Legal and Governance Issues in Nonprofit Organizations | 3 QH |
| NPM 6150 Human Resources Management in Nonprofit Organizations | 3 QH |

## HOMELAND SECURITY

## Master of Arts in Homeland Security

The Master of Arts in Homeland Security is intended to prepare the next generation of emergency managers and homeland security professionals for leadership roles in the public and private sectors. The degree offers a comprehensive program of studies covering core elements of homeland security and emergency management at the graduate level, including management skills, intelligence gathering and analysis, risk management, emergency planning and management, legal issues, technological issues, and social psychology. The MA in Homeland Security program is designed to develop high-level operational expertise through the application of the above content to the implementation of emergency response protocols as executed in the United States.

### CREDIT REQUIREMENT

45–47 quarter hours required

### CORE COURSE REQUIREMENT

21 quarter hours required
Complete the following courses:

| | |
|---|---|
| CMN 6050 Crisis Communication | 3 QH |
| HLS 6000 Introduction to Homeland Security | 3 QH |
| HLS 6010 The Unconventional Threat to Homeland Security | 3 QH |
| HLS 6020 Technology for Homeland Security | 3 QH |
| HLS 6030 Intelligence for Homeland Security | 3 QH |
| HLS 6040 Critical Infrastructure: Vulnerability Analysis and Protection | 3 QH |
| HLS 6050 Multidisciplinary Approaches to Homeland Security | 3 QH |

### ELECTIVE COURSES

6–8 quarter hours required
Complete two of the following courses:

| | |
|---|---|
| CJS 5978 Independent Study | 3 QH |
| CJS 6000 Management for Security Professionals | 3 QH |
| CJS 6005 Legal and Regulatory Issues for Security Management | 3 QH |
| CJS 6010 Advanced Principles of Security Management and Threat Assessment | 3 QH |
| CJS 6105 Domestic and International Terrorism | 3 QH |
| CJS 6125 Issues in National Security | 3 QH |
| CJS 6430 Risk Management | 3 QH |
| CJS 6964 Co-op | 0 QH |
| CMN 6060 Negotiation, Mediation, and Facilitation | 3 QH |
| GST 6300 Security and Terrorism | 4 QH |
| GST 6720 Emerging Infectious Diseases and Health Impacts of Social and Environmental Changes | 4 QH |
| HLS 6983 Topics in Homeland Security | 1–4 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |

## CONCENTRATIONS COURSES

18 quarter hours

### Emergency Management and Geographic Information Technologies Concentration

| | |
|---|---|
| GIS 5101 Introduction to Geographic Information Systems | 3 QH |
| GIS 5102 Fundamentals of GIS Analysis | 3 QH |
| GIS 6394 Crisis Mapping for Humanitarian Action | 3 QH |
| HLS 6060 Strategic Planning and Budgeting | 3 QH |
| HLS 6070 Emergency Management and Geographic Information Systems | 3 QH |
| HLS 6080 Continuity of Operations and Planning | 3 QH |

### Organization and Infrastructure Continuity Concentration

| | |
|---|---|
| CJS 6430 Risk Management | 3 QH |
| GIS 5101 Introduction to Geographic Information Systems | 3 QH |
| GIS 5102 Fundamentals of GIS Analysis | 3 QH |
| HLS 6090 Organization and Structural Continuity Planning | 3 QH |
| ITC 6310 Information Security Governance | 3 QH |
| ITC 6315 Information Security Risk Management | 3 QH |

## HUMAN RESOURCES MANAGEMENT

## Graduate Certificate in Human Resources Management

In today's multifaceted organizations, human resource professionals must respond to the growing challenges of regulatory compliance, complex benefit plans, and training and motivating employees.

The Graduate Certificate in Human Resources Management seeks to foster a deep understanding of organizational development and effective change management, workforce planning and strategic recruitment, and training and performance management.

### CREDIT REQUIREMENT

18 quarter hours required

### REQUIRED CORE COURSES

18 quarter hours required

Complete the following courses:

| | |
|---|---|
| HRM 6005 Creating a High-Performance Organization: Strategic Organizational and HRM Choices | 3 QH |
| HRM 6010 Total Compensation | 3 QH |
| HRM 6020 Strategic Recruitment, Training, and Performance Management | 3 QH |
| HRM 6030 Employee Rights and Employer Obligations | 3 QH |
| HRM 6040* High-Performance Human Resources Systems and Development | 3 QH |
| HRM 6045 Change, Challenge, and Competence | 3 QH |

*This course recommended as the last course within the program.

## HUMAN SERVICES

## Master of Science in Human Services

Professionals with graduate degrees in human services are needed to address a wide range of societal issues—whether by providing direct services, supervising personnel, or administering programs and policies. Often responsible for working with vulnerable populations, human services professionals must be adept at conducting assessments, developing service plans and policies, leading interdisciplinary teams, and managing care for at-risk clients.

To address this important need, the CPS offers the online Master of Science in Human Services. In addition to a solid core curriculum, the program offers several electives, as well as concentrations in leadership, organizational communication, and global studies—enabling you to focus your graduate studies in the area that best matches your interests and career objectives. Reflecting Northeastern's philosophy of practice-oriented education, this human services master's degree includes work-based applications and a capstone service-learning project, offering you an opportunity to deepen your knowledge within your chosen specialty. This human services graduate degree program seeks to produce graduates with the knowledge and skills they need to pursue a leadership role in the fulfilling field of human services.

### CREDIT REQUIREMENT

45–46 quarter hours required

### REQUIRED CORE COURSES

21 quarter hours required
Complete the following courses:

| | |
|---|---|
| HSV 6100 Theory and Practice of Human Services | 3 QH |
| HSV 6110 Human Services Management and Development | 3 QH |
| HSV 6120 Social Inequality, Social Change, and Community Building | 3 QH |
| HSV 6160 Introduction to Employee Assistance Programs | 3 QH |
| HSV 6630 Research and Evaluation in Human Services | 3 QH |
| HSV 6640 Policy Issues in Human Services | 3 QH |
| HSV 6980 Capstone | 3 QH |

### ELECTIVE COURSES

9 quarter hours required
Complete three of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| CMN 6080 Intercultural Communication | 3 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |
| NPM 6120 Financial Management for Nonprofit Organizations | 3 QH |
| NPM 6130 Fund-Raising and Development for Nonprofit Organizations | 3 QH |
| NPM 6140 Grant and Report Writing | 3 QH |
| NPM 6150 Human Resources Management in Nonprofit Organizations | 3 QH |

### CONCENTRATIONS COURSES

15–16 quarter hours required
Choose one of the following concentrations:

*Global Studies Concentration*

16 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| GST 6100 Globalization and Global Politics and Economics | 4 QH |
| GST 6101 Global Literacy, Culture, and Community | 4 QH |
| GST 6102 Global Corporate and Social Responsibility | 4 QH |

Complete one of the following courses:

| | |
|---|---|
| GST 6300 Security and Terrorism | 4 QH |
| GST 6310 Immigration and Labor | 4 QH |
| GST 6330 Global Issues: Religion, the State, and Society | 4 QH |

*Leadership Concentration*

15 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6110 Leading Teams | 3 QH |
| LDR 6120 Creating Leadership Capacity: Developing Bench Strength | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |

Complete one of the following courses:

| | |
|---|---|
| LDR 6125 Managing Organizational Culture | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |

*Organizational Communication Concentration*

15 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 QH |
| CMN 6020 Ethical Issues in Organizational Communication | 3 QH |
| CMN 6050 Crisis Communication | 3 QH |
| CMN 6090 Organizational Culture, Climate, and Communication | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |

## INFORMATICS

## Master of Professional Studies in Informatics

A relatively new and rapidly evolving area, informatics is increasingly used to solve today's problems. Whether it's used to create information and communication technologies, design decision support systems, develop 3-D visualizations, or devise mobile applications, informatics can be applied across a wide range of industries to address a variety of privacy, security, healthcare, environmental, educational, and social challenges. In response, Northeastern University offers the Master of Professional Studies in Informatics. Designed to improve your computing skills and enhance your knowledge of computing applications, this master's degree seeks to prepare you to excel in the fast-growing and dynamic field of informatics.

### CREDIT REQUIREMENT

45–47 quarter hours required

### REQUIRED CORE COURSES

24 quarter hours required
Complete the following courses:

| | |
|---|---|
| ITC 6000 Database Management Systems | 3 QH |
| ITC 6010 Information Technology Strategy and Governance | 3 QH |
| ITC 6020 Information Systems Design and Development | 3 QH |
| ITC 6030 Computer Systems and Networks | 3 QH |
| ITC 6035 Information Technology Project Management | 3 QH |
| ITC 6040 Informatics Capstone | 3 QH |
| ITC 6045 Information Technology Policy, Ethics, and Social Responsibility | 3 QH |
| ITC 6300 Foundations of Information Security | 3 QH |

### CONCENTRATION COURSES

*Note:* If students prefer to focus their studies on a particular concentration, they may complete 18–20 QH from one of the concentrations below and complement their studies with 3–4 QH of elective courses (listed at the end of the curriculum) to meet the minimum 45-QH degree requirement.

Students are not required to complete a concentration. Any combination of 21–24 QH from concentration and elective courses satisfies the degree requirement.

#### *Information Security Management Concentration*

18–20 quarter hours required

| | |
|---|---|
| ITC 6305 IT Infrastructure (Systems, Networks, Telecom) | 3 QH |
| ITC 6310 Information Security Governance | 3 QH |
| ITC 6315 Information Security Risk Management | 3 QH |
| ITC 6320 Information Security Technology | 3 QH |

Complete two of the following courses:

| | |
|---|---|
| ITC 6325 CISA Preparation | 3 QH |
| ITC 6330 CISSP Preparation | 3 QH |
| MIS 6080 Network Security Concepts | 4 QH |
| MIS 6082 Network Protection | 4 QH |

#### *Geographic Information Systems Concentration*

18 quarter hours required
Classes offered online only
Complete the following courses:

| | |
|---|---|
| GIS 5101 Introduction to Geographic Information Systems | 3 QH |
| GIS 5102 Fundamentals of GIS Analysis | 3 QH |
| GIS 5201 Advanced Spatial Analysis | 3 QH |
| RMS 5105 Fundamentals of Remote Sensing | 3 QH |

Complete two of the following courses:

| | |
|---|---|
| GIS 6340 GIS Customization | 3 QH |
| GIS 6350 GIS Management and Implementation | 3 QH |
| GIS 6360 Spatial Databases | 3 QH |
| GIS 6370 Internet-Based GIS | 3 QH |
| GIS 6385 GIS/Cartography | 3 QH |
| GIS 6390 Business Applications of Geographic Information Systems | 3 QH |
| GIS 6391 Healthcare Applications of Geographic Information Systems | 3 QH |

#### *Leading and Managing Technical Projects Concentration*

| | |
|---|---|
| ITC 6305 IT Infrastructure (Systems, Networks, Telecom) | 3 QH |
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6205 Leading and Managing Technical Projects | 3 QH |
| PJM 6210 Communication Skills for Project Managers | 3 QH |
| PJM 6215 Leading Remote Project Teams | 3 QH |
| PJM 6220 Planning and Scheduling Technical Projects | 3 QH |

### ELECTIVE COURSES

Complete a minimum of 3 quarter hours from the following list:

| | |
|---|---|
| DGM 6145 Information Technology and Creative Practice | 4 QH |
| DGM 6500 Working with Digital Images | 2 QH |
| DGM 6501 Web Creation Boot Camp | 2 QH |
| DGM 6511 Web Creation Bootcamp 2 | 2 QH |
| GIS 5101 Introduction to Geographic Information Systems | 3 QH |
| GIS 5102 Fundamentals of GIS Analysis | 3 QH |
| GIS 6360 Spatial Databases | 3 QH |
| GIS 6370 Internet-Based GIS | 3 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |
| ITC 6015 Enterprise Information Architecture | 3 QH |
| ITC 6335 Data Warehousing and Data Mining | 3 QH |
| ITC 6340 Mobile and Wireless Networks and Applications | 3 QH |
| ITC 6345 Systems and Network Administration | 3 QH |
| ITC 6355 Web Application Design and Development | 3 QH |
| ITC 7120 Healthcare Information Systems | 3 QH |
| PJM 6000 Project Management Practices | 3 QH |
| TCC 6110 Information Architecture | 4 QH |
| TCC 6120 Usability and User Experience | 4 QH |

## Graduate Certificate in Information Security Management

Information security is a management issue with global business implications. To succeed in today's network economy requires more than simply a focus on information technology (IT) issues. Succeeding also requires a focus on security strategy and management. IT security governance is an overarching consideration in all risk-assessment and management-related endeavors and is important for information security since many issues have legal, regulatory, policy, and ethical considerations. The associated risks of business today must be clearly understood and managed.

### CREDIT REQUIREMENT

18 quarter hours required

### REQUIRED CORE COURSES

15 quarter hours required
Complete the following courses:

| | |
|---|---|
| ITC 6305 IT Infrastructure (Systems, Networks, Telecom) | 3 QH |
| ITC 6310 Information Security Governance | 3 QH |
| ITC 6315 Information Security Risk Management | 3 QH |
| ITC 6320 Information Security Technology | 3 QH |

### ELECTIVE COURSES

Complete two of the following courses:

| | |
|---|---|
| ITC 6325 CISA Preparation | 3 QH |
| ITC 6330 CISSP Preparation | 3 QH |
| MIS 6080 Network Security Concepts | 4 QH |
| MIS 6082 Network Protection | 4 QH |

## Doctor of Law and Policy

Public servants, executives, and managers operate in an increasingly complex global environment. A doctoral education seeks to provide the policy, analytic, and research skills necessary to advance one's career.

Developed jointly by the College of Professional Studies and Northeastern's Law and Public Policy program, the Doctor of Law and Policy program (DLP) is designed for experienced professionals who are interested in the origins, development, implementation, and analysis of legal and public policy decisions in government and related institutions. The program prepares students to advance their careers within a variety of fields while focusing their thesis research on a precise law and policy topic.

Students undertake the DLP in order to understand the ways in which public and related institutions formulate and execute policy. Students have the opportunity to develop the ability to interpret and assess the research of others, to acquire skills as researchers, and to communicate their knowledge to a wide range of audiences. Those who successfully complete the degree are equipped to bring their skills and knowledge to senior policy and management positions in government, nonprofit agencies, research organizations, consulting firms, and corporations.

The DLP program is structured so course work and the doctoral thesis can be completed in two years. Classes meet one weekend per month in Boston, and the learning continues online throughout the rest of the month.

Northeastern University also offers a traditional PhD in Law, Policy, and Society. To learn more, visit the law and public policy program website at www.northeastern.edu/law/academics/curriculum/dual-degrees/lawpolicy.html.

### CREDIT REQUIREMENT

48 quarter hours required

### REQUIRED COURSES

***Year One, Summer Quarter***

| | |
|---|---|
| LWP 6120 Law and Legal Reasoning 1 | 2 QH |
| LWP 6401 Law and Policy Concepts 1: The Policy Making Process | 2 QH |
| LWP 6424 Research Methods | 2 QH |

***Year One, Fall Quarter***

| | |
|---|---|
| LWP 6121 Law and Legal Reasoning 2 | 2 QH |
| LWP 6402 Law and Policy Concepts 2: Strategizing for Public Policy | 2 QH |
| LWP 6420 Quantitative Methods | 2 QH |

***Year One, Winter Quarter***

| | |
|---|---|
| LWP 6122 Law and Legal Reasoning 3 | 2 QH |
| LWP 6403 Law and Policy Concepts 3: Policy Case Studies | 2 QH |
| LWP 6423 Qualitative Methods | 2 QH |

*Year One, Spring Quarter*

| | |
|---|---|
| LWP 6123 Law and Legal Reasoning 4 | 2 QH |
| LWP 6404 Evaluation Research | 2 QH |
| LWP 6410 Economics for Policy Analysis | 2 QH |

*Year Two, Summer Quarter*

| | |
|---|---|
| LWP 6425 Methods and Theory as Applied to Doctoral Research | 2 QH |
| LWP 6431 Political and Moral Ethics and Dilemmas | 2 QH |
| LWP 6500 Doctoral Research Design 1 | 2 QH |

*Year Two, Fall Quarter*

| | |
|---|---|
| LWP 6450 Public Policy Theory and Practice 1 | 4 QH |
| LWP 6501 Doctoral Research Design 2 | 2 QH |

*Year Two, Winter Quarter*

| | |
|---|---|
| LWP 6451 Public Policy Theory and Practice 2 | 4 QH |
| LWP 6502 Doctoral Research Design 3 | 2 QH |

*Year Two, Spring Quarter*

| | |
|---|---|
| LWP 6452 Public Policy Theory and Practice 3 | 4 QH |
| LWP 6503 Doctoral Research Design 4 | 2 QH |

*Additional Quarters (if needed)*

| | |
|---|---|
| LWP 7994 Thesis Continuation—Part Time | 0 QH |

## LEADERSHIP

## Graduate Certificate in Leadership

Today's cross-functional teams and organizations require a leadership style that capitalizes on the collective expertise and capabilities of the group. The development and mastery of collaborative leadership skills are not typically part of one's focused discipline preparation; hence, leadership requires deliberate development by those who assume leadership roles. The Graduate Certificate in Leadership starts with the premise that everyone is capable of leadership. The program studies every aspect of leadership dynamics from the leader as an individual to working in teams and from the organization itself to the development of strategic leadership techniques. Course work exposes participants to a series of alternative perspectives of leadership, including collaborative models. Using the course's action-learning methods, participants build a personal model of leadership that they can put to immediate use in their workplace.

### CREDIT REQUIREMENT

18 quarter hours required

### REQUIRED COURSES

12 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6110 Leading Teams | 3 QH |
| LDR 6120 Creating Leadership Capacity: Developing Bench Strength | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |

### ELECTIVE COURSES

6 quarter hours required

Complete two of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 QH |
| HRM 6005 Creating a High-Performance Organization: Strategic Organizational and HRM Choices | 3 QH |
| LDR 6125 Managing Organizational Culture | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |

## Master of Science in Leadership

As today's workforce continues to diversify, leadership tasks and responsibilities have become more complex. The Master of Science in Leadership seeks to prepare you to meet these evolving challenges by helping you cultivate a personal leadership philosophy. Leveraging students' interdisciplinary backgrounds, this master's degree in leadership combines real-world lessons with an action-learning approach that is designed to build and strengthen your leadership capabilities.

In September of 2009, the Master of Science in Leadership with a Concentration in Project Management received accreditation by the Project Management Institute's Global Accreditation Center (GAC), the world's leading association for project management professionals. Accreditation is achieved by meeting the GAC's rigorous standards, which include an assessment of program objectives and outcomes, a review of on-site and online resources, evaluations of faculty and students, and proof of continuous improvements in the area of project management.

*Note:* Courses from FIN and ACC may not be applied toward this degree.

## CREDIT REQUIREMENT

45–46 quarter hours required

## REQUIRED CORE COURSES

27 quarter hours required

Complete all of the following courses in the order listed below:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6110 Leading Teams | 3 QH |
| LDR 6115 Powerful Communication | 3 QH |
| LDR 6120 Creating Leadership Capacity: Developing Bench Strength | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |
| LDR 6145 Managing a Diverse Workforce | 3 QH |
| LDR 6150 Transforming Organizations | 3 QH |
| LDR 7995 Project | 3 QH |

## ELECTIVE COURSES

3 quarter hours required

Complete one of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| CMN 6060 Negotiation, Mediation, and Facilitation | 3 QH |
| CMN 6080 Intercultural Communication | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |
| COP 6940* Personal and Career Development | 3 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |
| LDR 6125 Managing Organizational Culture | 3 QH |

*Enrollment into this course requires participation in the cooperative education program.

## CONCENTRATION COURSES

15–16 quarter hours required

Choose one of the following concentrations:

### Health Management Concentration

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| HMG 6110 Organization, Administration, Financing, and History of Healthcare | 3 QH |
| HMG 6130 Healthcare Strategic Management | 3 QH |
| HMG 6140 Principles of Population-Based Management | 3 QH |
| HMG 6160 Healthcare Information Systems Management | 3 QH |
| HMG 6170 Health Law, Politics, and Policy | 3 QH |

### Human Resources Concentration

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| HRM 6005 Creating a High-Performance Organization: Strategic Organizational and HRM Choices | 3 QH |
| HRM 6010 Total Compensation | 3 QH |
| HRM 6020 Strategic Recruitment, Training, and Performance Management | 3 QH |
| HRM 6030 Employee Rights and Employer Obligations | 3 QH |
| HRM 6040 High-Performance Human Resources Systems and Development | 3 QH |

### Leading and Managing Technical Projects Concentration

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6205 Leading and Managing Technical Projects | 3 QH |
| PJM 6210 Communication Skills for Project Managers | 3 QH |
| PJM 6215 Leading Remote Project Teams | 3 QH |
| PJM 6220 Planning and Scheduling Technical Projects | 3 QH |

### Nonprofit Management Concentration

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| NPM 6110 Legal and Governance Issues in Nonprofit Organizations | 3 QH |
| NPM 6120 Financial Management for Nonprofit Organizations | 3 QH |
| NPM 6125 Promoting Nonprofit Organizations | 3 QH |
| NPM 6130 Fund-Raising and Development for Nonprofit Organizations | 3 QH |
| NPM 6140 Grant and Report Writing | 3 QH |

### Organizational Communications Concentration

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 to 6 QH |
| CMN 6020 Ethical Issues in Organizational Communication | 3 QH |
| CMN 6050 Crisis Communication | 3 to 6 QH |
| CMN 6090 Organizational Culture, Climate, and Communication | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |

*Project Management Concentration*

15–16 quarter hours required

Complete the following courses:

| | |
|---|---|
| PJM 5900* Foundations of Project Management | 4 QH |
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6015 Project Risk Management | 3 QH |
| PJM 6025 Project Scheduling and Cost Planning | 3 QH |

*This course is required for students who do not have at least two years of professional experience working on projects. This course is highly recommended for students who don't have a basic working knowledge of MsProject software. Students with project management experience are not required to take this course.

Complete two** of the following courses:

| | |
|---|---|
| PJM 6125 Project Evaluation and Assessment | 3 QH |
| PJM 6135 Project Quality Management | 3 QH |
| PJM 6140 Managing Troubled Projects | 3 QH |
| PJM 6705 Portfolio Management in the Enterprise Environment | 3 QH |

**Students who take PJM 5900 are required to take only one course within this section.

*Sport and Social Change Concentration*

16 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| GST 6102 Global Corporate and Social Responsibility | 4 QH |
| HSV 6120 Social Inequality, Social Change, and Community Building | 3 QH |
| LDR 6360 Dynamics of Change at the Community and Social Level | 3 QH |
| LDR 6410 Leadership and Organization in Sport | 3 QH |
| LDR 6427 Gender and Diversity in Sport | 3 QH |

## Master of Sports Leadership

The practice-oriented sports leadership master's degree is structured to accommodate midcareer athletic administrators and coaches, as well as individuals seeking to prepare for careers in the sports industry.

Developed in collaboration with Northeastern University's Center for the Study of Sport in Society, the Master of Sports Leadership seeks to prepare you for a variety of sport-related occupations—whether it's working with a professional or intercollegiate sports team; with a fitness club or wellness organization; or in marketing, communication, or sports management. Courses within this unique graduate degree examine the social and business issues that are critical to sports leadership. Offered in an online format with an intensive one-week summer institute in Boston, this practice-oriented degree seeks to provide you with a well-rounded educational experience, equipping you to advance your career in the sports industry.

**CREDIT REQUIREMENT**

45 quarter hours required

**REQUIRED CORE COURSES**

24 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 to 6 QH |
| LDR 6135 The Ethical Leader | 3 QH |
| LDR 6400 Sports Management | 3 QH |
| LDR 6405* Sport in Society | 3 QH |
| LDR 6410 Leadership and Organization in Sport | 3 QH |
| LDR 6430 Sports Law | 3 QH |
| LDR 6441* Sports Media Relations | 3 QH |

*Summer institute course; only available on-campus in Boston. Summer institute courses should be taken only after students have completed their first year of classes.

Complete one of the following courses. This course should be taken as the last course in the program and requires faculty advisor approval:

| | |
|---|---|
| LDR 6961 Internship | 3 QH |
| LDR 6995 Project | 3 QH |

**ELECTIVE COURSES**

18 quarter hours required

Complete six of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |
| LDR 6323 Event Management | 3 QH |
| LDR 6427 Gender and Diversity in Sport | 3 QH |
| LDR 6435 Fiscal Practices in Sports | 3 QH |
| LDR 6440 Sports Marketing and Promotions | 3 QH |
| LDR 6442 Athletic Fund-Raising | 3 QH |
| LDR 6443 Ticket Sales and Strategies | 3 QH |
| LDR 6445 Corporate Sponsorships | 3 QH |
| LDR 6455 NCAA Compliance | 3 QH |
| LDR 6460 Risk Management in Athletics | 3 QH |
| LDR 6465 Title IX | 3 QH |
| LDR 6470 Bystander Strategies for the Prevention of Gender-Based Violence | 3 QH |
| LDR 6615 Academic Advising and Life Skills | 3 QH |
| Open elective* | 3 QH |

*Choose one course from any College of Professional Studies graduate program.

## NONPROFIT MANAGEMENT

## Graduate Certificate in Nonprofit Management

Nonprofits today simply require a higher level of management expertise. Nonprofit managers are required to manage people and programs more efficiently and effectively. The Graduate Certificate in Nonprofit Management focuses on developing skills in organizational management, financial management, fund-raising, grant and report writing, human resources management, and governance.

The program integrates theoretical approaches with practical application to prepare students for positions in either small or large nonprofit organizations. The program targets individuals who work in the nonprofit sector as executive directors, managers, program staff, board members, and volunteers. Students have an opportunity to participate in case studies, individual and group projects, and class discussions.

### CREDIT REQUIREMENT
18 quarter hours required

### REQUIRED COURSES
18 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| NPM 6110 Legal and Governance Issues in Nonprofit Organizations | 3 QH |
| NPM 6120 Financial Management for Nonprofit Organizations | 3 QH |
| NPM 6125 Promoting Nonprofit Organizations | 3 QH |
| NPM 6130 Fund-Raising and Development for Nonprofit Organizations | 3 QH |
| NPM 6140 Grant and Report Writing | 3 QH |
| NPM 6150 Human Resources Management in Nonprofit Organizations | 3 QH |

## Master of Science in Nonprofit Management

Facing the threat of privatization and for-profit competition, nonprofit organizations are challenged to find leaders who not only possess keen business and managerial skills but can also effect change at a community or social level. Being successful in this dynamic and rewarding field requires strong leadership, managerial and interpersonal skills, as well as in-depth knowledge of fund-raising, marketing, program development, and governance issues.

Integrating theoretical approaches with practical applications, the Master of Science in Nonprofit Management seeks to prepare you for a leadership position in a not-for-profit university, hospital, charity, foundation, or religious organization. This nonprofit degree program seeks to produce graduates well equipped to embark on a career in nonprofit management—prepared, and inspired, to make a meaningful impact.

### CREDIT REQUIREMENT
45-47 quarter hours required

### REQUIRED COURSES
24 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6360 Dynamics of Change at the Community and Social Level | 3 QH |
| NPM 6110 Legal and Governance Issues in Nonprofit Organizations | 3 QH |
| NPM 6120 Financial Management for Nonprofit Organizations | 3 QH |
| NPM 6125 Promoting Nonprofit Organizations | 3 QH |
| NPM 6130 Fund-Raising and Development for Nonprofit Organizations | 3 QH |
| NPM 6140 Grant and Report Writing | 3 QH |
| NPM 6150 Human Resources Management in Nonprofit Organizations | 3 QH |

### ELECTIVE COURSES
6 quarter hours required
Complete two of the following courses:

| | |
|---|---|
| CMN 6050 Crisis Communication | 3 QH |
| CMN 6080 Intercultural Communication | 3 QH |
| COP 6940* Personal and Career Development | 3 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |
| LDR 6110 Leading Teams | 3 QH |

*Enrollment into this course requires participation in the cooperative education program.

### CONCENTRATIONS COURSES
15–17 quarter hours required
Choose one of the following concentrations or select any College of Professional Studies graduate certificate.

*Global Studies Concentration*
16 quarter hours required
Complete the following courses:

| | |
|---|---|
| GST 6100 Globalization and Global Politics and Economics | 4 QH |
| GST 6101 Global Literacy, Culture, and Community | 4 QH |
| GST 6102 Global Corporate and Social Responsibility | 4 QH |

Complete one of the following courses:

| | |
|---|---|
| GST 6210 The Developers | 4 QH |
| GST 6340 Poverty and Wealth | 4 QH |
| GST 6610 Sustainable Development | 4 QH |

*Human Services Concentration*
15 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| HSV 6100 Theory and Practice of Human Services | 3 QH |
| HSV 6110 Human Services Management and Development | 3 QH |
| HSV 6160 Introduction to Employee Assistance Programs | 3 QH |
| HSV 6630 Research and Evaluation in Human Services | 3 QH |
| HSV 6640 Policy Issues in Human Services | 3 QH |

*Leadership Concentration*

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| LDR 6110 Leading Teams | 3 QH |
| LDR 6120 Creating Leadership Capacity: Developing Bench Strength | 3 QH |
| LDR 6125 Managing Organizational Culture | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |

*Organizational Communications Concentration*

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 QH |
| CMN 6020 Ethical Issues in Organizational Communication | 3 QH |
| CMN 6050 Crisis Communication | 3 QH |
| CMN 6090 Organizational Culture, Climate, and Communication | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |

*Project Management Concentration*

15–16 quarter hours required

Complete the following courses:

| | |
|---|---|
| PJM 5900* Foundations of Project Management | 4 QH |
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6015 Project Risk Management | 3 QH |
| PJM 6025 Project Scheduling and Cost Planning | 3 QH |

*This course is required for students who do not have at least two years of professional experience working on projects. This course is highly recommended for students who don't have a basic working knowledge of MsProject software. Students with project management experience are not required to take this course.

Complete two** of the following courses:

| | |
|---|---|
| PJM 6125 Project Evaluation and Assessment | 3 QH |
| PJM 6135 Project Quality Management | 3 QH |
| PJM 6140 Managing Troubled Projects | 3 QH |
| PJM 6705 Portfolio Management in the Enterprise Environment | 3 QH |

**Students who take PJM 5900 are only required to take one course within this section.

*Social Media and Online Communities Concentration*

15–17 quarter hours required

Complete five of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| CMN 6025 Digital Era Skills: Platforms, Tools, and Techniques | 3 QH |
| CMN 6035 Legal, Policy, and Ethical Issues in the Digital Era | 3 QH |
| CMN 6045 Leveraging Digital Technologies: Strategy, Assessment, and Governance | 3 QH |
| CMN 6055 Planning and Design of Social Media Channels and Online Communities | 3 QH |
| CMN 6065 Implementation and Management of Social Media Channels and Online Communities | 3 QH |
| DGM 6285 Interactive Marketing Fundamentals | 4 QH |
| DGM 6290 Social Media and Brand Strategy Implementation | 4 QH |

*Sports and Social Change Concentration*

16 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| GST 6102 Global Corporate and Social Responsibility | 4 QH |
| HSV 6120 Social Inequality, Social Change, and Community Building | 3 QH |
| LDR 6360 Dynamics of Change at the Community and Social Level | 3 QH |
| LDR 6410 Leadership and Organization in Sport | 3 QH |
| LDR 6427 Gender and Diversity in Sport | 3 QH |

## Graduate Certificate in Organizational Communication

The study of organizational communication focuses on the dynamics of communication in complex organizations for the purpose of learning how individuals within such organizations can become effective communicators. Whether the context of such communication is meetings or professional presentations, communicating during a crisis, or intercultural exchanges, the message is consistent: Effective communication is a crucial factor in determining organizational success.

### CREDIT REQUIREMENT

18 quarter hours required

### REQUIRED COURSES

9 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 QH |
| CMN 6020 Ethical Issues in Organizational Communication | 3 QH |
| CMN 6910* Organizational Communication Assessment | 3 QH |

*Should be taken as the last course within the program.

### ELECTIVE COURSES

6 quarter hours required

Complete two of the following courses:

| | |
|---|---|
| CMN 6050 Crisis Communication | 3 QH |
| CMN 6060 Negotiation, Mediation, and Facilitation | 3 QH |
| CMN 6061 Personal Branding | 3 QH |
| CMN 6070 Interviewing | 3 QH |

Complete one of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| CMN 6080 Intercultural Communication | 3 QH |
| CMN 6090 Organizational Culture, Climate, and Communication | 3 QH |
| CMN 6100 Communication Networks and Managing Information | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |

## Master of Science in Corporate and Organizational Communication

Across all industries and professions, strong written and oral communication skills are essential to success. Whether you are seeking to advance in a communications-related field or get ahead in your current organization, this program seeks to provide the practical knowledge and valuable perspectives you need to communicate across a variety of contexts and situations.

From negotiation and writing to crisis management and public speaking, the Master of Science in Corporate and Organizational Communication examines topics that are critical to effective organizational communication. Incorporating best practices, case studies, and classroom learning, courses within this innovative master's degree in communication address complex communication challenges, seeking to provide you with a distinct advantage in today's competitive marketplace.

### CREDIT REQUIREMENT

45 quarter hours required

### REQUIRED CORE COURSES

21 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 QH |
| CMN 6020 Ethical Issues in Organizational Communication | 3 QH |
| CMN 6050 Crisis Communication | 3 QH |
| CMN 6080 Intercultural Communication | 3 QH |
| CMN 6090 Organizational Culture, Climate, and Communication | 3 QH |
| CMN 6100 Communication Networks and Managing Information | 3 QH |
| CMN 6910 Organizational Communication Assessment | 3 QH |

### ELECTIVE COURSES

9 quarter hours required

Complete three of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| CMN 6025 Digital Era Skills: Platforms, Tools, and Techniques | 3 QH |
| CMN 6060 Negotiation, Mediation, and Facilitation | 3 QH |
| CMN 6061 Personal Branding | 3 QH |
| CMN 6070 Interviewing | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |
| CMN 6120 Communicating to and with the Media | 3 QH |
| COP 6940* Personal and Career Development | 3 QH |
| INT 6943 Integrative Experiential Learning | 3QH |

*Enrollment into this course requires participation in the cooperative education program.

### CONCENTRATIONS COURSES

15–17 quarter hours required

Choose one of the following concentrations or select any College of Professional Studies graduate certificate.

***Human Resources Management Concentration***

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| HRM 6005 Creating a High-Performance Organization: Strategic Organizational and HRM Choices | 3 QH |
| HRM 6010 Total Compensation | 3 QH |
| HRM 6020 Strategic Recruitment, Training, and Performance Management | 3 QH |

| | |
|---|---|
| HRM 6030 Employee Rights and Employer Obligations | 3 QH |
| HRM 6040 High-Performance Human Resources Systems and Development | 3 QH |

### *Human Services Concentration*

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| HSV 6100 Theory and Practice of Human Services | 3 QH |
| HSV 6110 Human Services Management and Development | 3 QH |
| HSV 6120 Social Inequality, Social Change, and Community Building | 3 QH |
| HSV 6160 Introduction to Employee Assistance Programs | 3 QH |
| HSV 6630 Research and Evaluation in Human Services | 3 QH |

### *Leadership Concentration*

15 quarter hours required

Complete the following courses:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6110 Leading Teams | 3 QH |
| LDR 6120 Creating Leadership Capacity: Developing Bench Strength | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |

Complete one of the following courses:

| | |
|---|---|
| LDR 6125 Managing Organizational Culture | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |

### *Leading and Managing Technical Projects Concentration*

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6205 Leading and Managing Technical Projects | 3 QH |
| PJM 6210 Communication Skills for Project Managers | 3 QH |
| PJM 6215 Leading Remote Project Teams | 3 QH |
| PJM 6220 Planning and Scheduling Technical Projects | 3 QH |

### *Project Management Concentration*

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| PJM 5900* Foundations of Project Management | 4 QH |
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6015 Project Risk Management | 3 QH |
| PJM 6025 Project Scheduling and Cost Planning | 3 QH |

*This course is required for students who do not have at least two years of professional experience working on projects. This course is highly recommended for students who don't have a basic working knowledge of MsProject software. Students with project management experience are not required to take this course.

Complete two** of the following courses:

| | |
|---|---|
| PJM 6125 Project Evaluation and Assessment | 3 QH |
| PJM 6135 Project Quality Management | 3 QH |
| PJM 6140 Managing Troubled Projects | 3 QH |
| PJM 6705 Portfolio Management in the Enterprise Environment | 3 QH |

**Students who take PJM 5900 are required to take one only course in this section.

### *Social Media and Online Communities Concentration*

15 quarter hours required

Complete five of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| CMN 6025 Digital Era Skills: Platforms, Tools, and Techniques | 3 QH |
| CMN 6035 Legal, Policy, and Ethical Issues in the Digital Era | 3 QH |
| CMN 6045 Leveraging Digital Technologies: Strategy, Assessment, and Governance | 3 QH |
| CMN 6055 Planning and Design of Social Media Channels and Online Communities | 3 QH |
| CMN 6065 Implementation and Management of Social Media Channels and Online Communities | 3 QH |
| DGM 6285 Interactive Marketing Fundamentals | 4 QH |
| DGM 6290 Social Media and Brand Strategy Implementation | 4 QH |
| TCC 6710 Content Strategy | 4 QH |

### *Sport and Social Change Concentration*

16 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| GST 6102 Global Corporate and Social Responsibility | 4 QH |
| HSV 6120 Social Inequality, Social Change, and Community Building | 3 QH |
| LDR 6360 Dynamics of Change at the Community and Social Level | 3 QH |
| LDR 6410 Leadership and Organization in Sport | 3 QH |
| LDR 6427 Gender and Diversity in Sport | 3 QH |

# PHYSICAL THERAPY

## Transitional Doctor of Physical Therapy

Designed for practicing physical therapists, the transitional Doctor of Physical Therapy (DPT) is an innovative, 100 percent online program. Integrating art and science, as well as professional and experiential learning, this curriculum seeks to provide you with the necessary knowledge base for today's practitioners with earned a doctoral degree.

Core courses within this physical therapy doctoral program include differential diagnosis and medical screening, diagnostic imaging, pharmacology, nutrition, and motor control. The capstone course, "Comprehensive Case Analysis," is a culmination of all work within the transitional DPT curriculum. Students have an opportunity to prepare a comprehensive and publishable case report or other scholarly work in partial fulfillment of the requirement for a transitional DPT degree.

The transitional DPT also includes specializations in a variety of areas such as orthopedics, pediatrics, geriatrics, advanced nutrition, women's health, education, and business management. If you have a unique specialization interest, you may also complete a directed study on a preapproved topic of your choosing.

### CREDIT REQUIREMENT

The transitional DPT degree is built upon a core of six courses. Beyond the common core, requirements may vary depending on whether the physical therapist is MSPT or BSPT prepared in addition to the student's past experiences.

For students entering with a Master of Science in Physical Therapy, 26 quarter hours required.

Residents of the state of North Carolina must have an earned master's degree to be eligible for admission to the Transitional Doctor of Physical Therapy program.

### REQUIRED COURSES

22 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| PTH 6100 Differential Diagnosis and Medical Screening | 4 QH |
| PTH 6110 Diagnostic Imaging | 4 QH |
| PTH 6120 Clinical Nutrition | 3 QH |
| PTH 6130 Pharmacology | 3 QH |
| PTH 6140 Motor Control | 4 QH |
| PTH 6900 Comprehensive Case Analysis | 4 QH |

### ELECTIVE COURSES

4 quarter hours required
Complete one of the following courses:

| | |
|---|---|
| PTH 6200 Research Methods and Statistical Analysis | 5 QH |
| PTH 6220 Fostering Change in Health Behavior | 4 QH |
| PTH 6235 Administrative and Management Keys for Contemporary Physical Therapist Practice | 4 QH |
| PTH 6430 Educational Strategies for Effective Healthcare Delivery | 4 QH |
| PTH 6480 Evidence-Based Exercise for the Older Adult | 4 QH |

| | |
|---|---|
| PTH 6490 Pediatric Physical Therapy: Emerging Topics and Evidence-Based Practice | 4 QH |
| PTH 6561 Evidence-Based Examination and Outcomes for the Cervical-Thoracic Spine and Temporomandibular Joint | 4 QH |
| PTH 6562 Evidence-Based Examination and Outcomes for Upper Extremity: Shoulder, Elbow, and Hand | 4 QH |
| PTH 6563 Evidence-Based Examination and Outcomes for Lumbar Spine and Sacroiliac Joint | 4 QH |
| PTH 6564 Evidence-Based Examination and Outcomes for Lower Extremity: Hip, Knee, Foot, and Ankle | 4 QH |
| PTH 6983 Topics in Physical Therapy | 4 QH |
| PTH 6985 Psychosocial and Emotional Challenges Facing Older Adults | 4 QH |

**Residents of the state of North Carolina must complete 8 quarter hours of elective course work.**

For students entering with a Bachelor of Science in Physical Therapy, 35 quarter hours required.

### REQUIRED COURSES

31 quarter hours required
Complete the following courses:

| | |
|---|---|
| PTH 6100 Differential Diagnosis and Medical Screening | 4 QH |
| PTH 6110 Diagnostic Imaging | 4 QH |
| PTH 6120 Clinical Nutrition | 3 QH |
| PTH 6130 Pharmacology | 3 QH |
| PTH 6140 Motor Control | 4 QH |
| PTH 6200 Research Methods and Statistical Analysis | 5 QH |
| PTH 6900 Comprehensive Case Analysis | 4 QH |

Complete one of the following courses:

| | |
|---|---|
| PTH 6220 Fostering Change in Health Behavior | 4 QH |
| PTH 6235 Administrative and Management Keys for Contemporary Physical Therapist Practice | 4 QH |
| PTH 6430 Educational Strategies for Effective Healthcare Delivery | 4 QH |

### ELECTIVE COURSES

4 quarter hours required
Complete one elective course:

| | |
|---|---|
| PTH 6200 Research Methods and Statistical Analysis | 5 QH |
| PTH 6220 Fostering Change in Health Behavior | 4 QH |
| PTH 6235 Administrative and Management Keys for Contemporary Physical Therapist Practice | 4 QH |
| PTH 6430 Educational Strategies for Effective Healthcare Delivery | 4 QH |
| PTH 6480 Evidence-Based Exercise for the Older Adult | 4 QH |
| PTH 6490 Pediatric Physical Therapy: Emerging Topics and Evidence-Based Practice | 4 QH |
| PTH 6561 Evidence-Based Examination and Outcomes for the Cervical-Thoracic Spine and Temporomandibular Joint | 4 QH |
| PTH 6562 Evidence-Based Examination and Outcomes for Upper Extremity: Shoulder, Elbow, and Hand | 4 QH |

| | |
|---|---|
| PTH 6563 Evidence-Based Examination and Outcomes for Lumbar Spine and Sacroiliac Joint | 4 QH |
| PTH 6564 Evidence-Based Examination and Outcomes for Lower Extremity: Hip, Knee, Foot, and Ankle | 4 QH |
| PTH 6983 Topics in Physical Therapy | 4 QH |
| PTH 6985 Psychosocial and Emotional Challenges Facing Older Adults | 4 QH |

## PROJECT MANAGEMENT

## Graduate Certificate in Project Management

Technical and managerial employees at all levels of organizations are being asked to manage small and large projects. Many of these professionals have not been specifically trained to effectively and efficiently manage projects. The task of managing projects has its own body of knowledge. This program seeks to provide the practical and theoretical knowledge for which the Project Management Institute tests, and it is expected that individuals who successfully complete this program will be capable of fulfilling the education requirements of the Project Management Professional (PMP) certification exam.

This certificate program in project management is designed with sufficient course flexibility to accommodate professionals with various levels of project management experience. Project management principles are applicable to both manufacturing and service industries, including professionals in fields such as software engineering, construction management, and financial services.

### CREDIT REQUIREMENT

18–19 quarter hours required

### REQUIRED COURSES

9–13 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| PJM 5900* Foundations of Project Management | 4 QH |
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6015 Project Risk Management | 3 QH |
| PJM 6025 Project Scheduling and Cost Planning | 3 QH |

*This course is required for students who do not have at least two years of professional experience working on projects. This course is intended only for those who are not familiar with professional project work. Students with two years or more of professional project experience should not take this course.

### ELECTIVE COURSES

9** quarter hours required

Complete three** of the following courses:

| | |
|---|---|
| PJM 6125*** Project Evaluation and Assessment | 3 QH |
| PJM 6135 Project Quality Management | 3 QH |
| PJM 6140 Managing Troubled Projects | 3 QH |
| PJM 6705 Portfolio Management in the Enterprise Environment | 3 QH |

**Students who take PJM 5900 are required to take only two courses (6 quarter hours) in this section.

***Recommended as the last course in the program.

## Master of Science in Project Management

Companies succeed or fail based on their ability to bring quality products and services to market in a timely manner. Without skilled project managers in place, companies are challenged to deliver projects on time, on budget, and according to specifications. From inception to completion, project managers are responsible for every step in the process: project definition, cost

and risk estimation, schedule planning and monitoring, budget management, negotiation and conflict resolution, project leadership, and project presentation and evaluation.

The Master of Science in Project Management is designed to provide you with the practical skills and theoretical concepts you need to lead complex projects. Featuring real-world case studies, this project management degree presents techniques and tools for managing long- and short-term projects successfully and cost-effectively. Augmenting the core project management courses are concentrations that seek to provide you with content-specific expertise that enables you to deepen your knowledge in your field of interest.

In September of 2009, the Master of Science in Project Management received accreditation by the Project Management Institute's Global Accreditation Center (GAC), the world's leading association for project management professionals. Accreditation is achieved by meeting the GAC's rigorous standards, which include an assessment of program objectives and outcomes, a review of on-site and online resources, evaluations of faculty and students, and proof of continuous improvements in the area of project management.

## CREDIT REQUIREMENT
45–47 quarter hours required

## REQUIRED COURSES
21–22 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| PJM 5900* Foundations of Project Management | 4 QH |
| PJM 6000 Project Management Practices | 3 QH |
| PJM 6910 Capstone | 3 QH |

*This course is required for students who do not have at least two years of professional experience working on projects. This course is highly recommended for students who don't have a basic working knowledge of MsProject software. Students with project management experience are not required to take this course.

Complete five** of the following courses:

| | |
|---|---|
| PJM 6005 Project Scope Management | 3 QH |
| PJM 6015 Project Risk Management | 3 QH |
| PJM 6025 Project Scheduling and Cost Planning | 3 QH |
| PJM 6135 Project Quality Management | 3 QH |
| PJM 6140 Managing Troubled Projects | 3 QH |
| PJM 6145 Global Project Management | 3 QH |
| PJM 6705 Portfolio Management in the Enterprise Environment | 3 QH |

**Students who take PJM 5900 are required to take only four courses in this section.

## ELECTIVE COURSES
9 quarter hours required
Complete three of the following courses:

| | |
|---|---|
| CMN 6015 Introduction to the Digital Era: The Power of Social Media | 3 QH |
| CMN 6060 Negotiation, Mediation, and Facilitation | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |

| | |
|---|---|
| COP 6940* Personal and Career Development | 3 QH |
| INT 6943 Integrative Experiential Learning | 3 QH |
| LDR 6110 Leading Teams | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |

*Enrollment into this course requires participation in the cooperative education program.

## CONCENTRATIONS COURSES
15–16 quarter hours required

### *Clinical Trial Design Concentration*
16 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| BTC 6211 Validation and Auditing of Clinical Trial Information | 4 QH |
| BTC 6213 Clinical Trial Design Optimization and Problem Solving | 4 QH |
| PMC 6212 Clinical Drug Development Data Analysis: Concepts | 4 QH |
| RGA 6210 Strategic Planning and Project Management for Regulatory Affairs | 4 QH |

### *Construction Management Concentration*
15 quarter hours required
Complete all of the following courses:

| | |
|---|---|
| CMG 6400 Introduction to Construction Management | 4 QH |
| CMG 6402 Alternative Project Delivery Methods and Project Controls | 4 QH |
| CMG 6403 Safety, Project Risk, and Quality Management | 4 QH |
| LDR 6110 Leading Teams | 3 QH |

### *Geographic Information Systems Concentration*
15 quarter hours required
Complete the following courses:

| | |
|---|---|
| GIS 5101 Introduction to Geographic Information Systems | 3 QH |
| GIS 5102 Fundamentals of GIS Analysis | 3 QH |
| GIS 5201 Advanced Spatial Analysis | 3 QH |
| RMS 5105 Fundamentals of Remote Sensing | 3 QH |

Complete one of the following courses:

| | |
|---|---|
| GIS 6340 GIS Customization | 3 QH |
| GIS 6350 GIS Management and Implementation | 3 QH |
| GIS 6370 Internet-Based GIS | 3 QH |
| GIS 6390 Business Applications of Geographic Information Systems | 3 QH |
| GIS 6391 Healthcare Applications of Geographic Information Systems | 3 QH |

### *Information Security Management Concentration*
15 quarter hours required
Complete the following courses:

| | |
|---|---|
| ITC 6300 Foundations of Information Security | 3 QH |
| ITC 6310 Information Security Governance | 3 QH |
| ITC 6315 Information Security Risk Management | 3 QH |
| ITC 6320 Information Security Technology | 3 QH |

Complete one of the following courses:

| | |
|---|---|
| ITC 6305 IT Infrastructure (Systems, Networks, Telecom) | 3 QH |
| ITC 6345 Systems and Network Administration | 3 QH |
| MIS 6080 Network Security Concepts | 4 QH |
| MIS 6082 Network Protection | 4 QH |

### *Leadership Concentration*

15 quarter hours required

Complete the following courses:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6110 Leading Teams | 3 QH |
| LDR 6120 Creating Leadership Capacity: Developing Bench Strength | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |

Complete one of the following courses:

| | |
|---|---|
| LDR 6125 Managing Organizational Culture | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |

### *Leading and Managing Technical Projects Concentration*

| | |
|---|---|
| PJM 6205 Leading and Managing Technical Projects | 3 QH |
| PJM 6210 Communication Skills for Project Managers | 3 QH |
| PJM 6215 Leading Remote Project Teams | 3 QH |
| PJM 6220 Planning and Scheduling Technical Projects | 3 QH |
| ITC 6305 IT Infrastructure (Systems, Networks, Telecom) | 3 QH |

### *Organizational Communication Concentration*

15 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| CMN 6010 Foundations of Organizational Communication | 3 QH |
| CMN 6020 Ethical Issues in Organizational Communication | 3 QH |
| CMN 6050 Crisis Communication | 3 QH |
| CMN 6090 Organizational Culture, Climate, and Communication | 3 QH |
| CMN 6110 Group Dynamics and Interpersonal Conflict: Meeting Management | 3 QH |

## REGULATORY AFFAIRS

## Graduate Certificate in Biopharmaceutical Domestic Regulatory Affairs

The biotechnology and pharmaceutical industries continue to experience rapid growth in the U.S. market. As companies in these industries seek approval to market their products in the United States, demand for qualified regulatory affairs professionals continues to increase. Product development scientists, marketers, quality personnel, as well as legal experts that guide companies through the Food and Drug Administration (FDA) approval process, will benefit from regulatory affairs training.

The Graduate Certificate in Biopharmaceutical Domestic Regulatory Affairs is designed to provide students with a greater understanding of U.S. biologic and pharmaceutical product regulation and their unique development, marketing, manufacturing and postmarket approval-related issues. The program also seeks to prepare students to ensure regulatory compliance, proper validation, and utilization of proper quantitative measurement techniques. Courses from this certificate may be applied toward the Master of Science in Regulatory Affairs for Drugs, Biologics, and Medical Devices.

### CREDIT REQUIREMENT

16–17 quarter hours required

### REQUIRED COURSES

16–17 quarter hours required

Complete the following courses:

| | |
|---|---|
| RGA 6200 Biologics Development: A Regulatory Overview | 4 QH |
| RGA 6201 New Drug Development: A Regulatory Overview | 4 QH |
| RGA 6202 Medical Device Development: A Regulatory Overview | 4 QH |

Complete one of the following courses:

| | |
|---|---|
| RGA 6203 Food, Drug, and Medical Device Law: Topics and Cases | 5 QH |
| RGA 6206 Practical Aspects of Regulatory Compliance | 4 QH |
| RGA 6210 Strategic Planning and Project Management for Regulatory Affairs | 4 QH |
| RGA 6211 Combination Products and Convergence | 4 QH |
| RGA 6212 Safety Sciences 1: Introduction to Safety and Surveillance | 4 QH |
| RGA 6214 The Food and Drug Administration: Creation, Behavior, Regulatory Culture | 4 QH |
| RGA 6216 The Medical, Social, and Financial Dimensions of Orphan Drugs | 4 QH |
| RGA 6217 Biomedical Product Development: From Biotech to Boardroom to Market | 4 QH |
| TCC 6370 Regulatory Writing: Medical Device Submissions | 4 QH |
| TCC 6380 Regulatory Writing: New Drug Applications | 4 QH |

## Graduate Certificate in Biopharmaceutical International Regulatory Affairs

To work in today's global biopharmaceutical industry, there is a strong need to understand international regulations that impact the development, marketing, and manufacturing of pharmaceutical and biotechnology products.

The Graduate Certificate in Biopharmaceutical International Regulatory Affairs curriculum focuses on factors that facilitate the safety, performance, and efficacy of biomedical goods. Program training covers the assessment of international regulations and interpretation of their likely impact on a company's global commercialization strategies. Through participation in the program, students will have an opportunity to gain an understanding of international regulatory requirements necessary to implement such strategies.

Course work covers biotechnology and pharmaceutical product approval processes, regulatory analysis, and liability laws as they exist across different regulatory systems. The graduate certificate will provide core regulatory knowledge to students entering into the field from bench research, clinical studies, quality control/assurance, pharmacy, bioengineering, business, and legal analysis. The curriculum covers regulatory environments in Europe, Latin America, Australia, Japan, and other emerging economies. Courses from this certificate may be applied toward the Master of Science in Regulatory Affairs for Drugs, Biologics, and Medical Devices.

### CREDIT REQUIREMENT

16 quarter hours required

### REQUIRED COURSES

16 quarter hours required

Complete the following courses:

| | |
|---|---|
| RGA 6220 Global Biotechnology Product Registration: E.U., U.S. Product Regulation | 4 QH |
| RGA 6221 European Union Compliance Process and Regulatory Affairs | 4 QH |

Complete two of the following courses:

| | |
|---|---|
| RGA 6210 Strategic Planning and Project Management for Regulatory Affairs | 4 QH |
| RGA 6212 Safety Sciences 1: Introduction to Safety and Surveillance | 4 QH |
| RGA 6222 European Medical Device Regulations | 4 QH |
| RGA 6223 Introduction to Canadian, Asian, and Latin American Regulatory Affairs | 4 QH |
| RGA 6225 Japanese Medical Device Regulations and Registration | 4 QH |
| RGA 6226 Canadian and Australian Medical Device Regulations | 4 QH |
| RGA 6227 Emerging Medical Device Markets | 4 QH |
| RGA 6228 Managing International Clinical Trials | 4 QH |

## Graduate Certificate in Medical Devices Regulatory Affairs

The national and regional medical device industries have continued to experience significant market growth, despite the fluctuations in the overall global economy. There are more than 7,000 medical device companies in the United States alone, and nearly 1,000 of these are based in Massachusetts. In total, the medical device sector in Massachusetts employs 36,000 workers, has a payroll of over $1.8 billion, and annual product shipments of $7.3 billion.

The Graduate Certificate in Medical Devices Regulatory Affairs provides students with an opportunity to gain a detailed knowledge of the regulations influencing the commercialization of new and existing medical devices. The intensely practical curriculum spans the entire life cycle of product development and introduces students to the salient features governing both pre- and postapproval stages. The program content also examines the relationship between regulatory agencies and the medical device industry. Students have the opportunity to take specialized courses on regulatory systems outside the United States.

The certificate will help advance the careers of students coming from such fields as bioengineering, quality control/assurance, intellectual property, business, and marketing. The choice of several courses makes this certificate ideal for students already working in the regulatory world as well as those just entering into the profession.

Courses from this certificate may be applied toward the Master of Science in Regulatory Affairs for Drugs, Biologics, and Medical Devices.

### CREDIT REQUIREMENT

16–17 quarter hours required

### REQUIRED COURSES

8 quarter hours required

Complete the following two courses:

| | |
|---|---|
| RGA 6202 Medical Device Development: A Regulatory Overview | 4 QH |
| RGA 6205 Emerging Trends and Issues in the Medical Device Industry | 4 QH |

### ELECTIVE COURSES

8–9 quarter hours required

Complete two of the following courses:

| | |
|---|---|
| BTC 6260 The Business of Medicine and Biotechnology | 4 QH |
| ITP 6305 Technology Licensing | 4 QH |
| RGA 6112 Biomedical Intellectual Property Management: Patents | 4 QH |
| RGA 6203 Food, Drug, and Medical Device Law: Topics and Cases | 5 QH |
| RGA 6211 Combination Products and Convergence | 4 QH |
| RGA 6222 European Medical Device Regulations | 4 QH |
| RGA 6225 Japanese Medical Device Regulations and Registration | 4 QH |

RGA 6226 Canadian and Australian Medical Device    4 QH
   Regulations
RGA 6227 Emerging Medical Device Markets    4 QH
TCC 6370 Regulatory Writing: Medical Device    4 QH
   Submissions

## Master of Science in Regulatory Affairs for Drugs, Biologics, and Medical Devices

The rapid growth of the biomedical product industries and the ever-evolving regulatory landscape have driven high demand for trained regulatory affairs professionals in both the public and private sectors. In response to this demand, Northeastern University's College of Professional Studies offers the Master of Science in Regulatory Affairs for Drugs, Biologics, and Medical Devices.

This unique graduate degree is designed to both broaden and deepen the student's understanding of current regulations and their practical application in the development of biomedical products. Courses within this program provide students with the opportunity to integrate both scientific knowledge and regulatory perspectives, within the larger context of global commercialization. From discovery through the postmarket phase of product development, this master's degree covers the regulatory and market access requirements to bring a medical product to—and maintain its presence in—the global marketplace.

### CREDIT REQUIREMENT

45 quarter hours required

### REQUIRED COURSES

25 quarter hours required
Complete all of the following courses:
BTC 6210 Human Experimentation: Methodological    4 QH
   Issues Fundamentals
RGA 6100 Introduction to Drug and Medical Device    4 QH
   Regulation
RGA 6200 Biologics Development: A Regulatory    4 QH
   Overview
RGA 6201 New Drug Development: A Regulatory    4 QH
   Overview
RGA 6202 Medical Device Development: A Regulatory    4 QH
   Overview
RGA 6203* Food, Drug, and Medical Device Law:    5 QH
   Topics and Cases

*This course should be taken as the final required course.

*Note:* Completion of RGA 6280 Advanced Writing on International Biomedical Topics may be required of students as a condition for their continued enrollment in this program.

### BUSINESS AND LAW COURSES

4 quarter hours required
Complete one of the following courses:
BTC 6260 The Business of Medicine and Biotechnology    4 QH
RGA 6110 Understanding the Healthcare Landscape    4 QH
RGA 6214 The Food and Drug Administration:    4 QH
   Creation, Behavior, Regulatory Culture
RGA 6216 The Medical, Social, and Financial    4 QH
   Dimensions of Orphan Drugs
RGA 6217 Biomedical Product Development: From    4 QH
   Biotech to Boardroom to Market
RGA 6218 Regulatory Affairs in an Entrepreneurial    4 QH
   Environment
RGA 6219 The Advertising and Promotion of Drug and    4 QH
   Medical Device Products
RGA 6235 Emerging Product Categories in the    4 QH
   Regulation of Drugs and Biologics

### SAFETY AND SURVEILLANCE COURSES

4 quarter hours required
Complete one of the following courses:
BTC 6211 Validation and Auditing of Clinical Trial    4 QH
   Information
RGA 6212 Safety Sciences 1: Introduction to Safety and    4 QH
   Surveillance
RGA 6213 Safety Science 2: Safety Surveillance,    4 QH
   Pharmacoepidemiology, Risk
RGA 6230 Clinical Laboratory Management in Clinical    4 QH
   Trials
RGA 6233 Application of Quality System Regulation in    4 QH
   Medical Device Design and Manufacturing
RGA 6234 Drug and Device Supplier Risk    4 QH
   Management: Compliance and Processes
RGA 6280** Advanced Writing on International    4 QH
   Biomedical Topics
TCC 6310 Regulatory Documentation Processes    4 QH
TCC 6370 Regulatory Writing: Medical Device    4 QH
   Submissions
TCC 6380 Regulatory Writing: New Drug Applications    4 QH

**Completion of this course may be required of students as a condition for their continued enrollment in this program.

### DEVELOPMENT AND STRATEGY COURSES

4 quarter hours required
Complete one of the following courses:
BTC 6213 Clinical Trial Design Optimization and    4 QH
   Problem Solving
PMC 6212 Clinical Drug Development Data Analysis:    4 QH
   Concepts
RGA 6112 Biomedical Intellectual Property    4 QH
   Management: Patents

RGA 6205 Emerging Trends and Issues in the Medical        4 QH
Device Industry
RGA 6210 Strategic Planning and Project Management        4 QH
for Regulatory Affairs
RGA 6211 Combination Products and Convergence             4 QH
RGA 6215 Project Management in Early Drug                 4 QH
Discovery and Development
RGA 6245 Regulation of Generic Pharmaceutical and         4 QH
Biosimilar Products
RGA 6250 Financing and Reimbursement in Biomedical        4 QH
Product Development

### INTERNATIONAL COURSES

4 quarter hours required

Complete one of the following courses:

RGA 6220 Global Biotechnology Product Registration:       4 QH
E.U., U.S. Product Regulation
RGA 6221 European Union Compliance Process and            4 QH
Regulatory Affairs
RGA 6222 European Medical Device Regulations              4 QH
RGA 6223 Introduction to Canadian, Asian, and Latin       4 QH
American Regulatory Affairs
RGA 6225 Japanese Medical Device Regulations and          4 QH
Registration
RGA 6226 Canadian and Australian Medical Device           4 QH
Regulations
RGA 6227 Emerging Medical Device Markets                  4 QH
RGA 6228 Managing International Clinical Trials            4 QH
RGA 6240 The Evolving Indian Regulatory Landscape         4 QH

### ELECTIVE COURSES

4 quarter hours required

Complete one of the following courses or one additional elective
from any of the other categories:

COP 6940*** Personal and Career Development               3 QH
INT 6943*** Integrative Experiential Learning             3 QH
RGA 6206 Practical Aspects of Regulatory Compliance       4 QH

***Enrollment in this course requires participation in the cooperative
education program (subject to availability). Students must also take
RGA 6920 (1 QH) to meet the 4 QH elective course requirement. Effective
spring 2012, all students in this program are required to complete both
RGA 6100 and BTC 6210 before enrolling in COP 6940.

## Master of Science in Regulatory Affairs of Food and Food Industries

The Master of Science in Regulatory Affairs of Food and Food
Industries degree is designed to offer a combination of theory
and practical training for professionals looking to enter into the
field of food regulatory affairs or to advance their careers in a
critical industrial sector of the United States and abroad. In this
field, rapidly evolving regulations and expansion of international
markets create an increasing need for highly trained
professionals equipped to serve instrumental roles in the
formation of efficient public policies, the implementation of
regulatory guidelines, industry's compliance with regulations,

and the regulatory strategies of companies looking to create a
sustainable competitive advantage in the food industry.

### CREDIT REQUIREMENT

47 quarter hours required

### REQUIRED CORE COURSES

23 quarter hours required

Complete all of the following courses:

RFA 6100 Introduction to Regulatory Affairs of Food       3 QH
and Food Industries
RFA 6110 From Farm to Family Table: Understanding         3 QH
the Food Regulatory Life Cycle
RFA 6120 Economic and Social Aspects of Food              3 QH
RFA 6130 Food Law in the United States                    3 QH
RFA 6140 Managing Projects in Food Regulatory             3 QH
Affairs: Practical Considerations
RFA 6200 Comparing U.S. Regulatory Systems and            4 QH
Agencies
RFA 6205 Key Submissions for Food Regulatory              4 QH
Affairs

### REGULATORY PROCESSES

8 quarter hours required

Complete two of the following courses:

RFA 6210 Food Safety and Modernization                    4 QH
RFA 6215 Risk Analysis and Hazard Analysis in the         4 QH
Food Industry
RFA 6220 Food Safety and Surveillance: Concepts and       4 QH
Applications
RFA 6225 Introduction to Food Science                     4 QH
RFA 6230 The Scientific, Social, and Commercial           4 QH
Aspects of Genetically Modified Foods
RFA 6235 Regulatory Differences and Similarities: An      4 QH
International Investigation

### BUSINESS AND MARKETING

8 quarter hours required

Complete 2 of the following courses:

COP 6940** Personal and Career Development                3 QH*
INT 6943** Integrative Experiential Learning              3 QH*
NTR 6155 Nutrition Entrepreneurship                       3 QH*
NTR 6165 Food and Society                                 4 QH
RFA 6310 Food Across International Borders: The           4 QH
International Food Trade
RFA 6315 From Farm to Dinner Table: The                   4 QH
Industrialization and Commercialization of Food
RFA 6350 Political, Social, and Economic Influences on    4 QH
Food Law, Regulation, and Policy

*Additional course work is required to meet total category quarter-hour
requirement.

**This course may fulfill only one requirement.

## INTERNATIONAL FOOD REGULATIONS

8 quarter hours required

Complete 2 of the following courses:

| | |
|---|---|
| GST 6350 Global Economics of Food and Agriculture | 4 QH |
| RFA 6410 Food and the North American Free Trade Agreement | 4 QH |
| RFA 6415 Food Safety and Surveillance in Asia | 4 QH |
| RFA 6420 Between Science and Governments: Food Regulations in the European Union | 4 QH |
| RFA 6425 Food Laws in Latin America | 4 QH |
| RFA 6430 Food Safety and Commercialization in Emerging Economies | 4 QH |

## REMOTE SENSING

# Graduate Certificate in Remote Sensing

Remote sensing is the measurement of information by a recording device that is not in physical contact with the object being measured. In practice, remote sensing is the utilization at a distance (as from aircraft, space shuttle, spacecraft, satellite, or ship) of any device for gathering information about the environment. The term remote sensing is most often applied to terrestrial and weather observations but can be applied to planetary environments and astronomy. Remote sensing is applicable to many other situations, including land-use change, pollution tracking, land-use and planning, transportation systems, and military observation.

The online Graduate Certificate in Remote Sensing aims to make education and training in remote sensing available to adult and professional students. The remote sensing certificate program seeks to produce students who are well versed in remote sensing theory, who have hands-on exposure to remote sensing software and hardware, and who have learned how to extract pertinent data from remotely sensed data sets. This six-course certificate program seeks to provide students with the necessary skills and understanding to apply remote sensing knowledge competently and effectively in a variety of areas.

## CREDIT REQUIREMENT

18 quarter hours required

## REQUIRED CORE COURSES

6 quarter hours required

Complete the following courses:

| | |
|---|---|
| RMS 5105 Fundamentals of Remote Sensing | 3 QH |
| RMS 6110 Digital Image Processing | 3 QH |

## ELECTIVE COURSES

12 quarter hours required

Complete four of the following courses:

| | |
|---|---|
| RMS 6220 Geographic Information Systems for Remote Sensing | 3 QH |
| RMS 6230 Remote Sensing and Global Change | 3 QH |
| RMS 6240 Introduction to Radar and LiDAR Remote Sensing | 3 QH |
| RMS 6250 Remote Sensing of Vegetation | 3 QH |
| RMS 6260 Remote Sensing for Archaeology | 3 QH |
| RMS 6270 Remote Sensing for Disaster Management | 3 QH |
| RMS 6280 Automated Feature Extraction for the Geospatial Professional | 3 QH |
| RMS 6290 Spectroscopic Image Analysis | 3 QH |
| RMS 6292 Photogrammetry and GPS | 3 QH |

<div style="background:red">RESPIRATORY CARE</div>

## Master of Science in Respiratory Care Leadership

Emerging environmental issues, recent technological advances, and a growing elderly population are escalating the need for skilled respiratory therapists. To be successful, today's respiratory care leaders must be skilled educators, practitioners, and case managers. In response, Northeastern University's College of Professional Studies has developed the Master of Science in Respiratory Care Leadership.

Created for practicing respiratory therapists, this master's degree in respiratory care incorporates an action-learning approach that seeks to build leadership competencies and to advance your clinical knowledge. Core respiratory care courses cover areas such as advanced cardiopulmonary physiology and research design. In addition, you have the opportunity to focus your studies in one of six concentrations: adult and organizational learning, clinical trial design, health management, higher education administration, nonprofit management, and regulatory affairs.

### CREDIT REQUIREMENT

45–46 quarter hours required

### REQUIRED RESPIRATORY CARE COURSES

24 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| RPT 6970 Seminar | 3 QH |
| RPT 7200 Advanced Cardiopulmonary Physiology | 3 QH |
| RPT 7205 The Evolving Roles of Respiratory Care Professionals | 3 QH |
| RPT 7210 Research Design | 4 QH |
| RPT 7215 Applied Research in Respiratory Care | 3 QH |
| RPT 7300 Development of Clinical Practice Guidelines and Respiratory Care Protocols | 4 QH |
| RPT 7302 Respiratory Therapist Education | 4 QH |

### REQUIRED LEADERSHIP COURSES

6 quarter hours required

Complete two of the following courses:

| | |
|---|---|
| LDR 6100 Developing Your Leadership Capability | 3 QH |
| LDR 6110 Leading Teams | 3 QH |
| LDR 6135 The Ethical Leader | 3 QH |
| LDR 6140 Developing the Strategic Leader | 3 QH |

*Note:* Leadership courses are offered in both online and on-campus formats.

### CONCENTRATIONS COURSES

15–16 quarter hours required

Choose one of the following concentrations:

*Adult and Organizational Learning Concentration*

16 quarter hours required

Complete four of the following courses:

| | |
|---|---|
| EDU 6051 Culture, Equity, Power, and Influence | 4 QH |
| EDU 6201 The Landscape of Higher Education | 4 QH |
| EDU 6202 Faculty, Curriculum, and Academic Community | 4 QH |
| EDU 6221 Enrollment, Retention, Graduation, Success | 4 QH |
| EDU 6319 How People Learn | 4 QH |
| EDU 6323 Technology as a Medium for Learning | 4 QH |
| EDU 6447 The Demographics of Higher Education | 4 QH |

*Clinical Trial Design Concentration*

16 quarter hours required

Complete four of the following courses:

| | |
|---|---|
| BTC 6210 Human Experimentation: Methodological Issues Fundamentals | 4 QH |
| BTC 6211 Validation and Auditing of Clinical Trial Information | 4 QH |
| BTC 6213 Clinical Trial Design Optimization and Problem Solving | 4 QH |
| BTC 6260 The Business of Medicine and Biotechnology | 4 QH |
| RGA 6100 Introduction to Drug and Medical Device Regulation | 4 QH |
| RGA 6202 Medical Device Development: A Regulatory Overview | 4 QH |
| RGA 6205 Emerging Trends and Issues in the Medical Device Industry | 4 QH |

*Health Management Concentration*

15 quarter hours required

Complete five of the following courses:

| | |
|---|---|
| HMG 6110 Organization, Administration, Financing, and History of Healthcare | 3 QH |
| HMG 6120 Human Resource Management in Healthcare | 3 QH |
| HMG 6130 Healthcare Strategic Management | 3 QH |
| HMG 6140 Principles of Population-Based Management | 3 QH |
| HMG 6160 Healthcare Information Systems Management | 3 QH |
| HMG 6170 Health Law, Politics, and Policy | 3 QH |
| NPM 6120 Financial Management for Nonprofit Organizations | 3 QH |
| NPM 6125 Promoting Nonprofit Organizations | 3 QH |
| NPM 6130 Fund-Raising and Development for Nonprofit Organizations | 3 QH |

# Master of Science in Technical Communication

A proliferation of new technologies and applications has heightened the call for professionals who can communicate complex technical ideas succinctly and articulately. In response, Northeastern University's College of Professional Services offers the Master of Science in Technical Communication.

This online master's degree is designed to improve your technical communication skills and to provide you with a foundation for applying those skills across a variety of contexts. With two concentrations from which to choose—biomedical writing or computer industry writing—this graduate degree in technical communication seeks to prepare you for a rewarding career as a technical writer, editor, tool expert, or technical trainer.

## CREDIT REQUIREMENT

46 quarter hours required

## REQUIRED COURSES

20 quarter hours required

Complete all of the following courses:

| | |
|---|---|
| TCC 6100 Introduction to Technical and Professional Writing | 4 QH |
| TCC 6102 Editing Technical Content | 4 QH |
| TCC 6110 Information Architecture | 4 QH |
| TCC 6120 Usability and User Experience | 4 QH |
| TCC 6850* Technical Communications Capstone Project | 4 QH |

*Should be taken as the final course in the program

## CONCENTRATIONS COURSES

16–18 quarter hours

*Note:* If students prefer to focus their studies on a particular concentration, they may select from one of the concentrations below and complement their studies with 8–10 QH of elective courses (listed at the end of the curriculum) to meet the minimum 46-QH degree requirement.

Students are not required to complete a concentration. Any combination of 26 QH from concentration and elective courses will satisfy degree requirements.

### *Computer Industry Writing Concentration*

16 quarter hours required

Complete four of the following courses:

| | |
|---|---|
| TCC 6400 Structured Documentation | 4 QH |
| TCC 6410 Online Documentation | 4 QH |
| TCC 6430 Writing for the Computer Industry | 4 QH |
| TCC 6440 Advanced Writing for the Computer Industry | 4 QH |
| TCC 6450 Managing Technical Publications | 4 QH |
| TCC 6520 Marketing Writing | 4 QH |

### *Social Media and Online Communities Concentration*

16–18 quarter hours required

Complete the following course:

| | |
|---|---|
| TCC 6710 Content Strategy | 4 QH |

Complete 12–14 QH of the following courses:

| | |
|---|---|
| CMN 6035 Legal, Policy, and Ethical Issues in the Digital Era | 3 QH |
| CMN 6045 Leveraging Digital Technologies: Strategy, Assessment, and Governance | 3 QH |
| CMN 6055 Planning and Design of Social Media Channels and Online Communities | 3 QH |
| CMN 6065 Implementation and Management of Social Media Channels and Online Communities | 3 QH |
| DGM 6285 Interactive Marketing Fundamentals | 4 QH |
| DGM 6290 Social Media and Brand Strategy Implementation | 4 QH |

## ELECTIVE COURSES

8–10 quarter hours required

| | |
|---|---|
| DGM 6500 Working with Digital Images | 2 QH |
| DGM 6501 Web Creation Boot Camp | 2 QH |
| DGM 6503 Flash Intensive | 2 QH |
| DGM 6506 Introduction to Digital Video | 2 QH |
| DGM 6509 Integrated Suite Workshop | 2 QH |
| DGM 6511 Web Creation Bootcamp 2 | 2 QH |
| TCC 6310 Regulatory Documentation Processes | 4 QH |
| TCC 6370 Regulatory Writing: Medical Device Submissions | 4 QH |
| TCC 6380 Regulatory Writing: New Drug Applications | 4 QH |
| TCC 6410 Online Documentation | 4 QH |
| TCC 6460 Information Management | 4 QH |
| TCC 6470 Web Accessibility for Technical Communicators | 4 QH |
| TCC 6480 Instructional Design for Technical Communicators | 4 QH |
| TCC 6610 Prototyping | 2 QH |
| TCC 6620 Collecting User Data | 2 QH |
| TCC 6630 Introduction to XML | 2 QH |
| TCC 6640 Wiki-Based Documentation | 2 QH |
| TCC 6710 Content Strategy | 4 QH |
| TCC 6720 Writing for Global Markets | 2 QH |

# *College of Science*

## www.northeastern.edu/cos/graduate

**J. Murray Gibson, PhD,** *Dean*

**David E. Budil, PhD**, *Associate Dean, Research*
**Patricia A. Mabrouk, PhD,** *Associate Dean, Academic and Faculty Affairs*
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The College of Science seeks to offer advanced students outstanding academics and real-world research experience through cutting-edge research opportunities that are both discipline based and interdisciplinary. These doctoral, master's, and professional degree programs in the physical sciences, life sciences, and mathematics seek to give students a deep understanding of emerging fields such as chemical biology, cognition and neuroscience, environmental and marine science, biochemistry, nanoscience, and network science. Our programs are positioned at the forefront of discovery, invention, and innovation. We seek to prepare students and professionals to enter the scientific workforce serving the academy, government, or private sector.

Fifteen degrees are awarded in the College of Science at the graduate level. The Master of Science degree is awarded in biology, bioinformatics, biotechnology, marine biology, chemistry, mathematics, applied mathematics, operations research, and physics.

The Doctor of Philosophy degree is available in biology; chemistry; ecology, evolution, and marine biology; mathematics; physics; and psychology.

## Grading Policies

In the College of Science, not more than two courses or 6 semester hours of credit, whichever is greater, may be repeated to satisfy the requirements for the degree. Only such repeats will be counted in calculating the cumulative grade-point average.

No grade changes are permitted after the end of the final examination period one calendar year from the semester in which the student registered for the course. In calculating the overall cumulative average, all graduate-level course work completed at the time of clearance for graduation will be counted unless the student is immediately continuing on for a PhD degree in his or her department.

## Course Registration

Students are encouraged to obtain advisor approval of course selections each semester. This approval is required for all assistantship recipients, and some departments require it for all students. Students should check with individual departments for specific guidelines.

## Transfer Credit

A student may petition to transfer up to 9 semester hours of his or her program using credits from another institution, provided that the credits transferred consist of a grade of B (3.000) or better in graduate-level courses, have been earned at a U.S. accredited institution, and have not been used toward any other degree. Note: If approved by the College of Science, credits from Northeastern University's College of Professional Studies (CPS) transfer to the College of Science as external credits and count toward the 9-semester-hour maximum of transfer credit. As courses at other institutions may not parallel courses at Northeastern, the student's academic department will determine the number of semester hours the external course will be worth. This calculation may result in fewer semester hours than the course was assigned at the institution at which the student completed the course. In addition, courses accepted for transfer credit must have been completed within five years of the date the student is admitted to graduate study. Grades are not transferred. Some departments may accept fewer than 9 transfer credits.

## Awards

Only those students who are registered in degree programs are eligible for awards. Award recipients will receive an official award letter from the College of Science via email. Please pay attention to this letter as it is an official contract that should be read carefully.

In addition, to maintain awards, students must be making satisfactory progress toward their degrees.

Receipt of financial support administered by the College of Science is contingent on satisfactory academic progress toward the degree and on meeting department-specific guidelines. The College of Science requires that all students receiving awards will generally have two semesters to reach a 3.000 GPA. Students whose cumulative GPA is below 3.000 will be reviewed by their departments and by the College of Science and may have their funding terminated on recommendation of their department or by decision of the College of Science in consultation with their department. Renewals of awards will depend on the student making satisfactory academic progress toward the degree, including a GPA of 3.000 or the department's

minimum GPA, if it is higher than the College of Science minimum, and satisfactory performance of any duties required by the award.

## Satisfactory Progress

Satisfactory progress means satisfying requirements in the College of Science, in this graduate catalog, and in the regulations specified by the departments.

The College of Science sets minimum standards for all students to fulfill. Departments and programs may have additional requirements that exceed those of the College of Science. Students in the College of Science must be making satisfactory progress, including working toward the graduation requirement of a grade-point average of 3.000 in their course work and the timely completion of course work and comprehensive/qualifying examinations. See also the university's policy on academic standing on page 23 ("Minimum Cumulative Grade-Point Average").

## Time Limitation

Please refer to university policy regarding time limitations. If students wish to apply for an extension of the time limit, they must submit a petition to their department of study. The petition must include a detailed plan for completion of all remaining degree requirements. In the case of master's degree time limit extension requests for course work, the department must certify that the content of each of the courses has not changed since the time the student completed the course. If deemed appropriate, the department will recommend a time limit extension to Graduate Student Services. The Associate Dean for Academic and Faculty Affairs has final approval of time limit extensions.

## Changes in Requirements

The continuing development of the College of Science graduate programs forces regular revision of curricula. When no hardship is imposed on the student because of changes and the facilities of the school permit, the student is expected to meet the most recent requirements. However, if it can be demonstrated to the Director of Graduate Student Services that doing so does impose a substantial hardship, the requirements of the year in which the student matriculated will be applicable.

## The Doctor of Philosophy Degree (PhD)

The Doctor of Philosophy degree is awarded to candidates who provide evidence of high scholastic attainment and research ability in their major field. Specific degree requirements are administered by a committee in charge of the degree program. It is the responsibility of the chair of this committee to certify to the College of Science the completion of each requirement for each candidate.

## Residence Requirement

A Doctor of Philosophy degree student must spend the equivalent of at least one academic year in residence at the university as a full-time graduate student. The committee of each degree program specifies the method by which the residence requirement is satisfied.

## Qualifying Exam

In programs where a qualifying exam is required, students must complete this requirement within the time limit set by the program of study.

## Comprehensive Examination

Degree programs may require a comprehensive examination. Generally, students are expected to complete all of the required degree course work prior to taking the comprehensive examination. Students must complete this requirement within the time limit set by the program of study, usually within one term of completing the required course work.

## Doctoral Degree Candidacy

PhD degree candidacy is established when students have completed all departmental and university requirements for candidacy. These requirements vary by department and include completing the minimum number of graduate semester hours required of doctoral students by the department (this may include an earned master's degree accepted by the department) and passing a qualifying examination and/or a comprehensive examination. Once students reach doctoral degree candidacy they will be certified, in writing, by the college. Registration in course work is not permitted once a student reaches candidacy.

## Continuity of Registration

For each of the first two semesters that a doctoral candidate has established candidacy, the student must register for Dissertation. For each semester beyond the two Dissertation registrations, the student must register for Doctoral Dissertation Continuation until the dissertation is approved by the College of Science. During the terms when a student is registered for Doctoral Dissertation or Dissertation Continuation, course work is not permitted as the course requirements for the degree have already been met. If the academic program requires enrollment in seminars or courses in addition to Dissertation or Dissertation Continuation, the department's graduate coordinator will make a recommendation to the College of Science for approval. Approval must happen prior to registration. Students must be registered for Dissertation or Dissertation Continuation during the semester in which they take the final oral examination (including the full summer semester if that is when defense occurs). Any student who does not attend Northeastern University for a period of one year may be required to apply for readmission.

## Dissertation

Each doctoral student must complete a dissertation that embodies the results of extended research and makes an original contribution to the field. This work should give evidence of the candidate's ability to carry out investigation and interpret in a logical manner the results of the research. The method of approval of the dissertation is established by the committee in charge of the degree program. The chair of the dissertation committee must be a full-time member of the faculty of Northeastern University. In addition, the chair of the dissertation committee must hold a doctoral degree. Typically, only one external committee member is allowed.

## Final Oral Examination

The final oral examination will be on the subject matter of the Doctoral Dissertation and on important developments in the field of the dissertation. Other fields may be included if recommended by the examining committee. This examination will be taken after completion of all other degree requirements and must be held at least two weeks prior to the Commencement at which the PhD is awarded. The oral exam must take place on campus in the presence of the chair/advisor and other dissertation committee members. The dissertation defense must be publicly announced prior to the defense, and the opportunity given for other students, staff, and faculty to attend.

## The Master's Degree Academic Requirements

A candidate for the master's degree must complete a minimum of 30 semester hours of graduate-level course work and such other study as may be required by the department in which the student is registered.

To qualify for the degree, a minimum cumulative average of 3.000, equivalent to a grade of B, must be obtained. This average will be calculated each semester according to the university grading system and will exclude any transfer credits or repeated courses. A student who does not make satisfactory progress toward degree requirements, as specified by the individual department, may be terminated from the program.

## Comprehensive Examination

A final written or oral comprehensive examination is required in some programs. This examination will be given by the department concerned at least two weeks before the Commencement at which the degree is expected to be conferred.

## Thesis

Theses are required in some programs and should demonstrate the individual's capacity to execute independent work based on original material. Registration for Thesis is required in most programs.

Theses must be approved by the departmental graduate committee and, in cases in which a grade is required, must receive a grade of B (3.000) or better to be accepted.

## Continuity of Registration

Students are expected to maintain satisfactory progress toward their intended degrees. Students who have not completed their thesis after having registered for the specified number of thesis credits must register and pay for Master's Continuation each subsequent semester until the thesis is approved and submitted to ProQuest. Master's Continuation will carry no credit but will be recorded on the student transcript with the appropriate grade (S or U) for each semester of registration. All students must be registered in the last semester of their program.

## Interdisciplinary Doctoral Programs

Some graduate students may wish to pursue doctoral programs that involve substantial work in two or more departments. To meet this need, an interdisciplinary program may be established that corresponds in scope and depth to doctoral standards but does not agree exactly with the individual departmental regulations. Please consult this graduate catalog for policies and guidelines pertaining to this doctoral option.

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The biology PhD and MS programs seek to provide a broad background knowledge base in conjunction with in-depth study of a specialized area of biology. The programs emphasize close interaction between graduate students and faculty members in developing the intellectual and experimental skills required for creative, independent research. The professional science master's program in bioinformatics seeks to prepare students to enter the research management and technology transfer fields.

The PhD program entails course work from a core biology curriculum along with advanced courses in the student's area of research interest. This is complemented by intensive research and completion of a dissertation under faculty supervision. Faculty research includes biochemistry, microbiology, cell and molecular biology, genetics, neurobiology, regenerative biology, and the biology of reproduction. Financial support (teaching assistantships or research assistantships) is normally provided for PhD students who are making satisfactory progress toward completion of their degree. The MS program includes the same course work, research under faculty supervision, and completion of a written MS thesis.

The Master of Science in Bioinformatics is a professional program that consists of four parts: fundamental courses, core courses, an internship, and electives. All courses are available in the late afternoon or evening to accommodate those who are employed during the day.

## MS in Biology

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOL 5100 Biology Colloquium | 2 SH |
| BIOL 6303, 6399, 6401, or 6403 (choose two) | 8 SH |
| BIOL 7399 Research Problem Solving, Ethics, and Communication Skills | 4 SH |
| BIOL 7990 Thesis | 1 SH |
| Biology or other approved electives | 15 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MS in Bioinformatics

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| BIOL 6308 Bioinformatics Computational Methods 1 | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| BIOL 6309 Bioinformatics Computational Methods 2 | 4 SH |

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOL 6200 Bioinformatics Programming | 4 SH |
| BIOL 6381 Ethics in Biological Research | 2 SH |
| BIOL 7385 Bioinformatics Seminar | 2 SH |
| BIOL 8964 Co-op Work Experience | 0 SH |
| MATH 7340 Statistics for Bioinformatics | 4 SH |
| Graduate electives | 12 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## PhD in Biology—Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| Advisor-recommended courses | 0 SH |
| Advisor-approved electives | 0 SH |
| BIOL 9990 Dissertation | 0 SH |
| BIOL 9990 Dissertation | 0 SH |
| **PROGRAM TOTAL CREDITS** | **VARIABLE** |

## PhD in Biology—Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| BIOL 5100 Biology Colloquium | 2 SH |
| BIOL 6303, 6399, 6401, or 6403 (choose two) | 8 SH |
| BIOL 7399 Research Problem Solving, Ethics, and Communication Skills | 4 SH |
| BIOL 9990 Dissertation (taken twice) | 0 SH |
| BIOL 9996 Dissertation Continuation | 0 SH |
| Approved electives | 16 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## CHEMISTRY AND CHEMICAL BIOLOGY

**www.northeastern.edu/chem**

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The department offers thesis- and non-thesis-based advanced degrees with concentrations in analytical, inorganic, organic, and physical chemistry and in interdisciplinary fields such as polymers, materials, and chemical biology.

The PhD program is designed for students who have earned a bachelor's or a master's degree in chemistry or related areas and who wish to earn a doctorate in chemistry. The program of study includes some course work, but the primary emphasis is on the completion of an original research project, its articulation in a well-written thesis, and its subsequent defense before the thesis (oral examination) committee.

The PhD program is a full-time degree program that typically takes five years to complete. Financial support (teaching assistantships or research assistantships) is normally provided for students throughout their period of study if they are found to be making satisfactory progress toward their degree in accordance with departmental and university guidelines.

The Professional Master of Science in Biotechnology seeks to provide students with a common core of knowledge in biotechnology, with particular emphasis on their ability to integrate knowledge across disciplinary boundaries. Specific objectives are to provide students with didactic and practical knowledge in genomics, proteomics, and other bioanalytical approaches; drug discovery, development, and delivery; and bioprocess development and optimization.

## Special Student Status

Special student status allows students to take up to 12 semester hours of credit in graduate courses offered in the department without being enrolled in a degree program. Students who wish to then further their education in an MS or PhD program must apply to and be accepted into one of the graduate programs. Students who are successfully admitted into a degree program may apply for transfer credit (up to 12 semester hours) for course work taken as a special student.

## MS in Chemistry—Nonthesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHEM 5600 through CHEM 7999 | 30 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MS in Chemistry—Thesis Option

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHEM 5600 Research Skills and Ethics in Chemistry | 3 SH |
| CHEM 5601 through CHEM 7799 | 18 SH |
| CHEM 7730 Advanced Laboratory Methods | 4 SH |
| CHEM 8504 Graduate Seminar | 1 SH |
| CHEM 8986 Research | 6 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MS in Biotechnology—Biopharmaceutical Analytical Sciences Track

Part-time students go at their own pace.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| BIOT 5120 Introduction to Biotechnology | 3 SH |
| BIOT 5145 Basic Biotechnology Lab Skills | 1 SH |
| BIOT 5219 The Biotechnology Enterprise | 2 SH |
| BIOT 5560 Bioprocess Fundamentals | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| BIOL 6299 Molecular Cell Biology for Biotechnology | 3 SH |
| CHEM 5620 Protein Chemistry | 3 SH |
| PHSC 6214 Experimental Design and Biometrics | 2 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| BIOT 5130 Team Skills in Biotechnology | 2 SH |
| BIOT 6500 Professional Development for Co-op | 0 SH |
| CHEM 5550 Introduction to Glycobiology and Glycoprotein Analysis | 3 SH |
| Approved graduate elective | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| BIOT 6964 Co-op Work Experience | 0 SH |
| BIOT 7245 Biotechnology Applications Laboratory | 3 SH |
| CHEM 5616 Protein Mass Spectrometry | 3 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH |
| **PROGRAM TOTAL CREDITS** | **34.0 SH** |

## MS in Biotechnology—Pharmaceutical Technologies Track

Part-time students go at their own pace.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| BIOT 5120 Introduction to Biotechnology | 3 SH |
| BIOT 5145 Basic Biotechnology Lab Skills | 1 SH |
| BIOT 5219 The Biotechnology Enterprise | 2 SH |
| BIOT 5560 Bioprocess Fundamentals | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| BIOL 6299 Molecular Cell Biology for Biotechnology | 3 SH |
| CHEM 5620 Protein Chemistry | 3 SH |
| PHSC 6214 Experimental Design and Biometrics | 2 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| BIOT 5130 Team Skills in Biotechnology | 2 SH |
| BIOT 5700 Molecular Interactions of Proteins in Biopharmaceutical Formulations | 3 SH |
| BIOT 6500 Professional Development for Co-op | 0 SH |
| Approved graduate elective | 3 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| BIOT 5640 Drug Product Processes for Biopharmaceuticals | 3 SH |
| BIOT 6964 Co-op Work Experience | 0 SH |
| BIOT 7245 Biotechnology Applications Laboratory | 3 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH |

**PROGRAM TOTAL CREDITS**    **34.0 SH**

## MS in Biotechnology—Process Sciences Track

Part-time students go at their own pace.

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| BIOT 5120 Introduction to Biotechnology | 3 SH |
| BIOT 5145 Basic Biotechnology Lab Skills | 1 SH |
| BIOT 5219 The Biotechnology Enterprise | 2 SH |
| BIOT 5560 Bioprocess Fundamentals | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| BIOL 6299 Molecular Cell Biology for Biotechnology | 3 SH |
| BIOT 6214 Experimental Design and Biometrics | 2 SH |
| CHEM 5620 Protein Chemistry | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| BIOT 5130 Team Skills in Biotechnology | 2 SH |
| Complete two courses from BIOT 5631, BIOT 5635, or BIOT 5640 | 6 SH |
| BIOT 6500 Professional Development for Co-op | 0 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| BIOT 5640 (if needed) or approved graduate elective | 3 SH |
| BIOT 6964 Co-op Work Experience | 0 SH |
| BIOT 7245 Biotechnology Applications Laboratory | 3 SH |
| CHEM 5660 Analytical Biochemistry | 3 SH |

**PROGRAM TOTAL CREDITS**    **34.0 SH**

## PhD in Chemistry—Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHEM 5600 Research Skills and Ethics in Chemistry | 3 SH |
| CHEM 7750 Advanced Problem Solving | 3 SH |
| CHEM 8504 Graduate Seminar | 1 SH |
| CHEM 9990 Dissertation | 0 SH |
| CHEM 9996 Dissertation Continuation | 0 SH |

**PROGRAM TOTAL CREDITS**    **7.0 SH**

## PhD in Chemistry—Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| CHEM 5600 Research Skills and Ethics in Chemistry | 3 SH |
| CHEM 5601 through CHEM 7799 | 18 SH |
| CHEM 7730 Advanced Laboratory Methods | 4 SH |
| CHEM 7750 Advanced Problem Solving | 3 SH |
| CHEM 8504 Graduate Seminar | 1 SH |
| CHEM 8984 Master's Research | 4 SH |
| CHEM 9990 Dissertation | 0 SH |
| CHEM 9996 Dissertation Continuation | 0 SH |

**PROGRAM TOTAL CREDITS**    **33.0 SH**

The Department of Marine and Environmental Sciences graduate program offerings include core capacities in marine biology, ecology, and evolution. Students benefit from top-notch research facilities at both the Marine Science Center and the main campus in Boston. The MS in Marine Biology program prepares students for entry- and mid-level careers in marine research. The doctoral program in ecology, evolution, and marine biology prepares graduates for careers in academia, government agencies, and the private sector.

## MS in Marine Biology

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| BIOL 5103 Marine Biology Careers Seminar | 1 SH |
| BIOL 5501 Marine Botany | 4 SH |
| *Coreq.* BIOL 5502 | |
| BIOL 5502 Lab for BIOL 5501 | 1 SH |
| *Coreq.* BIOL 5501 | |
| BIOL 5503 Marine Invertebrate Zoology | 4 SH |
| *Coreq.* BIOL 5504 | |
| BIOL 5504 Lab for BIOL 5503 | 1 SH |
| *Coreq.* BIOL 5503 | |
| BIOL 5521 Experimental Design Marine Ecology | 4 SH |
| *Coreq.* BIOL 5522 | |
| BIOL 5522 Lab for BIOL 5521 | 1 SH |
| *Coreq.* BIOL 5521 | |
| BIOL 5589 Diving Research Methods | 2 SH |
| ENVR 5516 Oceanography | 4 SH |
| *Coreq.* ENVR 5517 | |
| ENVR 5517 Lab for ENVR 5516 | 1 SH |
| *Coreq.* ENVR 5516 | |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| BIOL 5505 Biology of Corals | 3 SH |
| BIOL 5507 Biology and Ecology of Fishes | 3 SH |
| BIOL 5509 Marine Birds and Mammals | 2 SH |
| *Coreq.* BIOL 5510 | |
| BIOL 5510 Lab for BIOL 5509 | 1 SH |
| *Coreq.* BIOL 5509 | |
| BIOL 5513 Tropical Terrestrial Ecology | 1 SH |
| BIOL 5519 Ocean and Coastal Processes | 2 SH |
| BIOL 5520 Coral Reef Ecology | 2 SH |
| BIOL 5527 Marine Conservation Biology | 3 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| BIOL 5529 Physiological and Molecular Marine Ecology | 3 SH |

### YEAR 1, SUMMER 2 SEMESTER

| | |
|---|---|
| BIOL 6964 Co-op Work Experience | 0 SH |
| BIOL 8507 Marine Biology Graduate Co-op Tutorial | 1 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| BIOL 6964 Co-op Work Experience | 0 SH |
| BIOL 8507 Marine Biology Graduate Co-op Tutorial | 1 SH |
| BIOL 8674 Marine Biology Research Project | 4 SH |

**PROGRAM TOTAL CREDITS**    **49.0 SH**

## Ecology, Evolution, and Marine Biology PhD Program

The PhD in Ecology, Evolution, and Marine Biology (EEMB) program provides students with advanced course work and training in ecology, evolution, and marine biology. For students entering with a bachelor's degree, EEMB program completion requires 30 semester hours of graduate-level course work, of which 20 semester hours must carry a letter grade. The remaining 10 semester hours must consist of colloquia, doctoral research, and approved graduate courses. Planned course work must be approved by the student's dissertation committee.

Students admitted with a master's degree must take two semesters of colloquium. Transcripts detailing their previous course work will be submitted upon arrival to their dissertation committee and the marine and environmental sciences graduate committee to determine whether additional course work is required. The dissertation committee may require the student to pursue additional course work as needed to provide the necessary background for their program of study. Additional course work may also be required depending on the student's performance on written qualifying and oral examinations.

Students must pass three examinations during the course of their graduate studies: (1) a written examination consisting of questions posed by the student's written examination committee; (2) an oral examination by the student's dissertation committee consisting of an oral presentation and defense of the student's dissertation proposal and including questions about the research areas that the student proposes to work in; and (3) a defense of their written dissertation consisting of a public seminar, public question-and-answer period, and private defense of their work to their dissertation committee. Dissertation committees consist of at least four Northeastern faculty and one external faculty member.

A cumulative GPA of 3.000 is required for graduation. All PhD students are required to have at least one first-authored publication submitted to or accepted in a peer-reviewed journal prior to their defense. The PhD will be awarded following

submission of a dissertation, approved by the candidate's dissertation committee, to the College of Science.

Students who (1) are admitted to the PhD program, (2) complete the course work component of the curriculum, and (3) prepare and defend a written thesis (as opposed to a more comprehensive dissertation) may, at the discretion of the graduate committee and their dissertation committee, be awarded a master's degree (Master of Science in Ecology, Evolution, and Marine Biology). The MS degree will only be awarded in rare instances where students and/or their dissertation committee, after communication with the graduate committee, determine that the PhD is untenable.

## PhD in Ecology, Evolution, and Marine Biology— Bachelor's Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| EEMB 7100 Colloquium | 2 SH |
| EEMB 8960 Exam Preparation—Doctoral | 0 SH |
| EEMB 9990 Dissertation | 0 SH |
| EEMB 9996 Dissertation Continuation | 0 SH |
| Approved graduate-level electives | 28 SH |

### PROGRAM TOTAL CREDITS — 30.0 SH

## PhD in Ecology, Evolution, and Marine Biology— Advanced Degree Entrance

### GENERAL REQUIREMENTS

| | |
|---|---|
| EEMB 7100 Colloquium | 2 SH |
| EEMB 8960 Exam Preparation—Doctoral | 0 SH |
| EEMB 9990 Dissertation | 0 SH |
| EEMB 9996 Dissertation Continuation | 0 SH |
| Committee-recommended courses | 0 SH |

### PROGRAM TOTAL CREDITS — 2.0 SH

## MATHEMATICS

**www.math.neu.edu**

CHRISTOPHER K. KING, PhD
*Professor and Chair*

567 Lake Hall
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*Graduate Coordinator*
Maxim Braverman, PhD, *Professor,* m.braverman@neu.edu

*Graduate Programs Information*
www.math.neu.edu/graduate-programs

The graduate programs offer MS and PhD degrees in mathematics, as well as an MS degree in operations research and an MS degree in applied mathematics. The programs are designed to provide students with a broad overview of current mathematics and a strong command of an area of specialization.

## The Master of Science Degree

A total of 32 semester hours, this program offers students with a bachelor's degree in mathematics or a related field an opportunity to broaden their knowledge in the several fields of mathematics and its applications. The program is designed to prepare graduates for careers in business, industry, or government.

### COURSE REQUIREMENTS

Eight 4-semester-hour graduate courses are required for the degree. Previous course work will be evaluated to determine proficiency in certain content areas and degree plan may be tailored accordingly. In some cases, a student may be required to take an assessment exam to determine content and knowledge proficiency. No course can be used to satisfy both a requirement and an elective. To qualify for degree conferral, students must obtain a minimum cumulative average of 3.000, equivalent to a grade of B.

## MS in Mathematics*

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| MATH 5101 or MATH 5102 (if student has satisfied MATH 5101) | 4 SH |
| MATH 5111or MATH 5112 (if student has satisfied MATH 5111) | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| MATH 5102 or MATH 7232 (if student has satisfied MATH 5102) | 4 SH |
| MATH 5112 Algebra 2 | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Two courses from the list "Approved Math Electives," below | 8 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Two courses from the list "Approved Math Electtives," below | 8 SH |

### PROGRAM TOTAL CREDITS — 32.0 SH

### APPROVED MATH ELECTIVES

| | |
|---|---|
| MATH 7201 Ordinary Differential Equations | 4 SH |
| MATH 7202 Partial Differential Equations 1 | 4 SH |
| MATH 7203 Numerical Analysis 1 | 4 SH |
| MATH 7205 Numerical Analysis 2 | 4 SH |
| MATH 7221 Topology 2 | 4 SH |
| MATH 7232 Combinatorial Analysis | 4 SH |
| MATH 7233 Graph Theory | 4 SH |
| MATH 7234 Optimization and Complexity | 4 SH |
| MATH 7235 Discrete Geometry 1 | 4 SH |
| MATH 7241 Probability 1 | 4 SH |
| MATH 7301 Functional Analysis | 4 SH |
| MATH 7302 Partial Differential Equations 2 | 4 SH |
| MATH 7314 Algebraic Geometry 1 | 4 SH |
| MATH 7341 Probability 2 | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7343 Applied Statistics | 4 SH |
| MATH 7344 Regression, ANOVA, and Design | 4 SH |
| MATH 7349 Stochastic Calculus and Introduction to No-Arbitrage Finance | 4 SH |

*pending approval

## The Master of Science Degree in Applied Mathematics

Eight graduate courses (32 semester hours of credit) are required for the degree: three required courses and five elective courses. The required courses provide a basic training in mathematical methods, and the elective courses include a wide variety of advanced topics. In addition, the program allows up to two of the elective courses to be taken outside the Department of Mathematics. No course can be used to satisfy both a requirement and an elective.

### COURSE REQUIREMENTS

*Required Courses*
Three core courses: MATH 5131 Introduction to Mathematical Methods and Modeling; MATH 7343 Applied Statistics or MATH 7342 Mathematical Statistics; MATH 5101 Analysis 1 or MATH 5111 Algebra 1 or MATH 7241 Probability 1.

*Five Electives*
Three must be graduate courses offered by the Department of Mathematics. With approval of the graduate coordinator, two may be graduate courses outside the department.

## MS in Applied Mathematics

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| MATH 5131 Introduction to Mathematical Methods and Modeling | 4 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| MATH 5101, MATH 5111, or MATH 7241 | 4 SH |
| MATH 7342 or MATH 7343 | 4 SH |
| Three MATH electives | 12 SH |
| Two approved electives | 8 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## The Master of Science Degree in Operations Research

This program seeks to train students in the basic techniques and theory of operations research and their applications to real-world problems. Graduates should have developed their analytical skills to attack complex, large-scale optimization problems of both a deterministic and stochastic nature. Eight 4-semester-hour graduate courses are required for this degree. Previous course work will be evaluated to determine proficiency in certain content areas and degree plan may be tailored accordingly. In some cases, a student may be required to take an assessment exam to determine content and knowledge proficiency. No course can be used to satisfy both a requirement and an elective. To qualify for degree conferral, a minimum cumulative average of 3.000, equivalent to a grade of B, must be obtained. Some courses listed for this program are offered in the College of Engineering or the College of Computer and Information Systems.

## MSOR—Master of Science in Operations Research*

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| MATH 7241 or MATH 7242 | 4 SH |
| OR 6205 Deterministics Operations Research | 4 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| MATH 7234 Optimization and Complexity | 4 SH |
| MATH 7342 or MATH 7343 | 4 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| Choose courses from the list "MSOR Approved Electives," below | 8 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| Choose courses from the list "MSOR Approved Electives," below | 8 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

**MSOR APPROVED ELECTIVES**

| | |
|---|---|
| CS 5200 Database Management Systems | 4 SH |
| CS 5800 Algorithms | 4 SH |
| EECE 7360 Combinatorial Optimization | 4 SH |
| EMGT 5220 Engineering Project Management | 4 SH |
| EMGT 6225 Economic Decision Making | 4 SH |

| | |
|---|---|
| IE 7200 Supply Chain Engineering | 4 SH |
| IE 7215 Simulation Analysis | 4 SH |
| IE 7275 Data Mining in Engineering | 4 SH |
| IE 7280 Statistical Methods in Engineering | 4 SH |
| IE 7285 Statistical Quality Control | 4 SH |
| IE 7290 Reliability Analysis and Risk Assessment | 4 SH |
| IE 7315 Human Factors Engineering | 4 SH |
| IE 7615 Neural Networks in Engineering | 4 SH |
| MATH 7203 Numerical Analysis 1 | 4 SH |
| MATH 7205 Numerical Analysis 2 | 4 SH |
| MATH 7232 Combinatorial Analysis | 4 SH |
| MATH 7233 Graph Theory | 4 SH |
| MATH 7341 Probability 2 | 4 SH |
| MATH 7342 Mathematical Statistics | 4 SH |
| MATH 7343 Applied Statistics | 4 SH |
| MATH 7344 Regression, ANOVA, and Design | 4 SH |
| MATH 7349 Stochastic Calculus and Introduction to No-Arbitrage Finance | 4 SH |
| OR 7240 Integer and Nonlinear Optimization | 4 SH |
| OR 7245 Network Analysis and Advanced Optimization | 4 SH |
| OR 7250 Multi-Criteria Decision Making | 4 SH |
| OR 7260 Constraint Programming | 4 SH |
| OR 7310 Logistics, Warehousing, and Scheduling | 4 SH |

*pending approval

## The Doctor of Philosophy Degree*

**TRACKS**

- Pure Mathematics
- Discrete Mathematics
- Probability/Statistics

**QUALIFYING EXAMS**

Qualifying exam sessions are given once in spring and once in fall. Students will be required to pass four qualifying exams: algebra 1, analysis 1, one exam in the area of concentration, and a fourth exam in a topic sufficiently different from the area of concentration. The possible combinations of major/minor will be posted each term on the departmental websites and available to students for review. The possible additional topics for qualifying exams are: algebra 2, analysis 2, combinatorics, geometry, ordinary differential equations, partial differential equations, probability, statistics, topology, and algebraic geometry. A qualifying exam may be taken twice by any student. Additional attempts may be allowed at the discretion of the graduate committee with permission from the graduate dean in the College of Science. Two qualifying exams should be passed no later than the end of the second year and all four by the end of the third year.

**TEACHING REQUIREMENT**

Some teaching experience is required while in the program. Students must attend university-led TA training at the start of the program; attend a one-semester TA training course conducted by faculty from the Department of Mathematics teaching committee; spend one semester shadowing faculty in the undergraduate

classroom; perform recitations and grading for the undergraduate course they are shadowing; and become a teacher of record for the undergraduate course they have been shadowing.

### RESIDENCE REQUIREMENT

The residence requirement is satisfied by one year of full-time graduate course work or two years of continuous registration for part-time work.

### COURSE REQUIREMENTS

Students entering with a bachelor's degree are required to take 64 credits of course work divided between foundational and advanced offerings. Students entering the program will be allowed to place out of some (possibly all) of the eight basic-level courses; the graduate coordinator together with the first-year graduate advisor will determine the allowable course substitutions and will advise the student which foundational courses to take. Students may satisfy requirements for MATH 5111 Algebra 1 and MATH 5101 Analysis 1 by taking qualifying exams in algebra 1 and in analysis 1 at the start of the program. Students may satisfy foundational course requirements if they demonstrate proficiency by passing an assessment exam in the course at the beginning of the semester or by demonstrating that they have taken a similar course and have adequate knowledge of the course material (syllabus and transcript are required; a brief oral examination is also required in that case). Academic advising will happen just before the start of each term and during the add/drop period in order to plan a student's course registration for the term. A complete listing of foundational and advanced courses is available from the Department of Mathematics and the graduate dean's office. Students are not permitted to register for more than two "readings" courses and three "topics" courses for credit toward the degree without explicit permission from the graduate dean. A minimum GPA of 3.000 is required for degree conferral.

*pending approval

## PhD in Mathematics—Pure Track*
## Bachelor's Degree Entry

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| MATH 5101 or MATH 5102 (if student has satisfied MATH 5101) | 4 SH |
| MATH 5111 or MATH 5112 (if student has satisfied MATH 5111) | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| MATH 5102 or MATH 7232 (if student has satisfied MATH 5102) | 4 SH |
| MATH 5112 Algebra 2 | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Two foundational graduate courses | 8 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Two foundational graduate courses | 8 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 4, FALL SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 4, SPRING SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### PROGRAM TOTAL CREDITS      64.0 SH

*pending approval

## PhD in Mathematics—Pure Track*
## Master's Degree Entry

### GENERAL REQUIREMENTS

| | |
|---|---|
| MATH 5101; MATH 5102; MATH 5111; MATH 5112 | 0 to 32 SH |
| Advanced course work | 32 SH |

### PROGRAM TOTAL CREDITS      32.0 TO 64.0 SH

*pending approval

## PhD in Mathematics—Discrete Track*
## Bachelor's Degree Entry

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| MATH 5101 or MATH 5102 (if student has satisfied MATH 5101) | 4 SH |
| MATH 5111 or MATH 5112 (if student has satisfied MATH 5101) | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| MATH 5112 or MATH 7232 or approved foundational course if student has satisfied MATH 5112 | 4 SH |
| MATH 7241 or approved foundational course if student has satisfied MATH 7241 | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Two foundational graduate courses | 8 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Two foundational graduate courses | 8 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 4, FALL SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 4, SPRING SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### PROGRAM TOTAL CREDITS      64.0 SH

*pending approval

## PhD in Mathematics—Discrete Track*
## Master's Degree Entry

### GENERAL REQUIREMENTS

| | |
|---|---|
| MATH 5101; MATH 5111; MATH 5112; MATH 7241 | 0 to 32 SH |
| Advanced course work | 32 SH |

### PROGRAM TOTAL CREDITS          32.0 TO 64.0 SH

*pending approval

## PhD in Mathematics—Probability/Statistics Track*
## Bachelor's Degree Entry

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| MATH 5101 or MATH 5102 (if student has satisfied MATH 5101) | 4 SH |
| MATH 5111 or MATH 5112 (if student has satisfied MATH 5111) | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| MATH 5102 or MATH 7232 (if student has satisfied MATH 5102) | 4 SH |
| MATH 7241 or MATH 7342 or MATH 7343 if student has satisfied MATH 7241 | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Two foundational graduate courses | 8 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Two foundational graduate courses | 8 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 4, FALL SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### YEAR 4, SPRING SEMESTER

| | |
|---|---|
| Two advanced graduate courses approved by advisor | 8 SH |

### PROGRAM TOTAL CREDITS          64.0 SH

*pending approval

## PhD in Mathematics—Probability/Statistics Track*
## Master's Degree Entry

### GENERAL REQUIREMENTS

| | |
|---|---|
| MATH 5101; MATH 5102; MATH 5111; MATH 7241 | 0 to 32 SH |
| Advanced course work | 32 SH |

### PROGRAM TOTAL CREDITS          32.0 TO 64.0 SH

*pending approval

### DOCTORAL CANDIDACY

PhD candidacy is reached when all of the following conditions are met:

- Completion of eight advanced courses
- Identification of an unsolved research problem
- Successful passing of four qualifying exams
- Assignment of PhD supervisor and creation of a one-page initial plan
- Completion of a three-page plan of research
- Completion of a ten-page progress report and a one-hour defense of proposal, presented to supervisor and three faculty members of graduate committee

### DISSERTATION REQUIREMENT

Each candidate must complete a dissertation that embodies the results of extended research and makes an original contribution to the field. This work should give evidence of the candidate's ability to carry out independent investigation and interpret, in a logical manner, the results of the research. There are two stages to this process:

- **Stage 1:** Students in the PhD program must have a dissertation supervisor within two years after joining the PhD program. The department views the failure of a student to find a supervisor within two years of joining the PhD program with concern and considers this sufficient cause to review the student's status in the PhD program. The process of obtaining a dissertation supervisor always involves two choices—the student chooses the supervisor, and the supervisor chooses the student. For this reason, the department does not guarantee a dissertation supervisor for every student, but the department recognizes its responsibility to help the student find a satisfactory match. This aid is usually provided by the student's graduate advisor, who should be familiar with the student's progress in finding a dissertation supervisor. The dissertation supervisor guides the student's further education as well as directs the student's dissertation. The dissertation itself must represent an original solution of a problem in the chosen area of mathematics that makes a significant contribution to the mathematical knowledge in that area. Students must enroll in Dissertation or Dissertation Continuation while fulfilling the dissertation requirements.
- **Stage 2 (Dissertation Defense):** The final oral examination on the dissertation is held in accordance with university regulations and given by a dissertation committee of four faculty members (three from the university, including the supervisor, and one from outside Northeastern University). The dissertation supervisor should propose this dissertation committee to the graduate committee for its approval at least one month before the PhD dissertation defense.

## PHYSICS

**www.northeastern.edu/physics**

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*Professor and Chair*

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The Northeastern Department of Physics performs advanced research in condensed matter, fundamental particles and fields, biophysics, and complexity. Students are expected to have demonstrated a graduate-level understanding of basic physics concepts upon completion of the MS degree. The program for the PhD degree consists of the required course work, a qualifying examination, a preliminary research seminar, the completion of a dissertation based upon original research performed by the student, and a dissertation defense upon completion of the dissertation. Based on these measures, students are expected to obtain a graduate-level understanding of basic physics concepts and demonstrate the ability to formulate a research plan, communicate orally a research plan, and conduct and present independent research.

## The Master of Science Degree

### GRADE REQUIREMENTS

To qualify for the MS degree, a cumulative average of 3.000, equivalent to a grade of B, must be obtained. No more than two courses or 6 semester hours of credit, whichever is greater, may be repeated in order to satisfy the requirements for the MS degree. A student who does not maintain a 3.000 cumulative average for two consecutive semesters, or is otherwise not making satisfactory progress toward the MS degree requirements, may be recommended for termination at the discretion of the graduate committee.

Within the above limitations, a required course for which a grade of F is received must be repeated with a grade of C or better and may be repeated only once. Elective courses in which an F has been received may be repeated once to obtain a C or better.

### TRANSFER CREDIT

Students must petition, in writing, through the graduate committee to the director of graduate student services for all transfer credit. An official transcript must be attached to the Request for Transfer Credit form. A maximum of 8 semester hours of credit obtained at another institution may be accepted toward the MS degree provided that the credits transferred consist of a grade of B or better in graduate-level courses, have been earned at an accredited U.S. institution, and have not been used toward any other degree. Grades are not transferred.

### CURRENT MS STUDENTS INTERESTED IN THE PhD PROGRAM

MS students interested in applying to the PhD program must complete the internal admission application.

### SPECIAL STUDENT STATUS

Special students are allowed to earn credit for a maximum of 12 semester hours. Students interested in taking more than 12 semester hours must make a formal application to the degree program online.

### MS DEGREE OPTIONS

- **Option 1** is the standard physics MS with or without an MS thesis. Up to 8 semester hours of courses can be substituted with an MS thesis.
- **Option 2** is the MS with a specialization (up to 12 semester hours of courses) in applied physics, engineering physics, biophysics, chemical physics, material physics, mathematical physics, and computational physics.

Both options require a minimum of 32 semester hours of graduate credit. The 32 semester hours may include up to 8 semester hours of transfer credit as approved by the Department of Physics's graduate committee and the college.

The MS degree options involve a common set of 24 semester hours of required graduate physics courses.

## MS in Physics—Nonthesis Option

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| PHYS 7301 Classical Mechanics/Math Methods | 4 SH |
| PHYS 7302 Electromagnetic Theory | 4 SH |
| PHYS 7315 Quantum Theory 1 | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| PHYS 7305 Statistical Physics | 4 SH |
| PHYS 7316 Quantum Theory 2 | 4 SH |
| College of Science approved elective | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| PHYS 7321 Computational Physics | 4 SH |
| College of Science approved elective | 4 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MS in Physics—Thesis Option

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| PHYS 7301 Classical Mechanics/Math Methods | 4 SH |
| PHYS 7302 Electromagnetic Theory | 4 SH |
| PHYS 7315 Quantum Theory 1 | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| PHYS 7305 Statistical Physics | 4 SH |
| PHYS 7316 Quantum Theory 2 | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| PHYS 7321 Computational Physics | 4 SH |
| Physics electives and/or master's thesis | 8 SH |

**PROGRAM TOTAL CREDITS**    **32.0 SH**

## MS in Physics—Specialization Option

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| PHYS 7301 Classical Mechanics/Math Methods | 4 SH |
| PHYS 7302 Electromagnetic Theory | 4 SH |
| PHYS 7315 Quantum Theory 1 | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| PHYS 7305 Statistical Physics | 4 SH |
| PHYS 7316 Quantum Theory 2 | 4 SH |
| College of Science approved elective | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| PHYS 7321 Computational Physics | 4 SH |
| College of Science approved elective | 4 SH |

**PROGRAM TOTAL CREDITS**    **32.0 SH**

## PhD in Physics

### GRADE REQUIREMENTS

The minimum grade required for the successful completion of the Part 1 courses is a B (3.000) average. Students will only be allowed to take the qualifying exam if they fulfill this requirement. The minimum grade required for the successful completion of Part 2 (excluding advanced research), is at least a B (3.000) average for the Part 2 courses. The Part 2 courses, including any makeup of grade-point-average deficiencies (see following), must be completed within two calendar years of passing the qualifying exam. The department expects students to complete the bulk of these courses in the first year after the qualifying exam. The cumulative average will be calculated each semester. No more than two courses or 8 semester hours of credit, whichever is greater, may be repeated in order to satisfy the requirement for the PhD degree. A student who does not maintain a 3.000 cumulative average for two consecutive semesters, or is otherwise not making satisfactory progress toward the PhD degree requirements, may be recommended for termination at the discretion of the graduate committee. Within the above limitations, a required course for which a grade of F is received must be repeated with a grade of C or better and may be repeated only once. In calculating the overall cumulative average, all graduate-level course work completed at the time of clearance for graduation will be counted.

### QUALIFYING EXAM REQUIREMENT

A student who fails to achieve the required B average for the Part 1 courses must petition the graduate committee in order to remain in the graduate program and be eligible to take the qualifying exam. A student who fails to achieve the required B average for the Part 2 courses must petition the graduate committee in order to remain in the graduate program. All students registered in the PhD program are required to pass a qualifying exam. The qualifying exam may include both written and oral parts. Any new, entering student with a master's degree from a U.S. institution may take the qualifying exam upon arriving at Northeastern University. Failure of the exam at this time will not be used to limit the two opportunities to take the examination in the future.

The qualifying exam consists of two parts:

- **Part 1:** Classical physics (based on classical mechanics and mathematical methods), electromagnetic theory, and statistical physics.
- **Part 2:** Quantum physics (based on quantum mechanics and its applications) and statistical physics. The content of the qualifying exam will be based on the content of the first-year courses, excluding Principles of Experimental Physics (PHYS 5318). A syllabus is available and on request will be distributed by the graduate coordinator to any student prior to the exam.

The qualifying exam is given twice yearly: once prior to the start of the fall semester and again within the first two weeks of the start of the spring semester. The exam will consist of one day each on Part 1 (classical physics/mathematical methods, electromagnetism, and statistical physics) and Part 2 (quantum physics and statistical physics).

Students who enter with a Master of Science degree from a U.S. institution may take the exam at the first opportunity after entering the program. Students who successfully pass both Part 1 and Part 2 of the qualifying exam on entry are exempted from the first-year courses except for Principles of Experimental Physics (PHYS 5318), which all students must take.

All students enrolled in the PhD program must take the fall qualifying exam after completing their first-year course of study with the required grade-point average. Students taking the exam for the first time must take both Part 1 and Part 2. A student who does not pass the exam on his or her first attempt must pass the exam the next time it is given in order to continue in the PhD program. However, a student who passes one part of the first attempt is not required to repeat that part.

A student who fails the written exam by less than 5 percent of the total possible score on the second attempt for that part will be automatically given an oral exam. A student who fails the written exam by more than 10 percent is excluded from taking an oral exam. These provisions apply separately to Parts 1 and 2 of the exam.

### PhD CANDIDACY

Degree candidacy is established when the student has passed the qualifying examination and completed both the Part 1 and Part 2 course requirements. PhD candidacy may be achieved before completion of the advanced elective if the elective in the student's specialization is not offered in a given year. The elective must be taken at the next opportunity. PhD degree candidacy is certified by the college. A maximum of five years after the establishment of doctoral degree candidacy is allowed for the completion of degree requirements.

## TRANSFER CREDIT

Students must petition in writing through the graduate committee to the director of graduate student services for all transfer credit. A copy of an official transcript must be attached to the Request for Transfer Credit form. A maximum of 8 semester hours of credit obtained at another institution may be accepted toward the PhD degree provided that the credits transferred consist of a grade of B or better, are graduate-level courses, have been earned at an accredited U.S. institution, and have not been used toward any other degree. Grades are not transferred.

## COURSE WAIVERS

Course waivers may be accepted toward the PhD degree course requirements, though they will not change the numbers of credits required for the program. The student must have received a B grade or better in equivalent graduate-level core courses that have been earned at an accredited institution. Students must petition in writing to the graduate committee for all course waivers and provide documentation in the form of official transcripts to support their petition.

## RESIDENCE REQUIREMENT

The residence requirement is satisfied by at least one year of full-time graduate work (i.e., enrollment in PhD Dissertation, for two consecutive semesters). Students must be continually enrolled throughout the pursuit of the dissertation.

## INTERNSHIP OPTION

A PhD candidate may spend one year in a participating high-technology, industrial, or government laboratory immediately after passing the PhD qualifying examination. In this program, the student is expected to remain in touch with the university by taking one course per semester at the university and by frequent contact with a faculty advisor. After the one-year paid internship, the student returns to the university to do the dissertation. Eligibility for this program is contingent on acceptance both by the department and by the external laboratory.

## PhD DISSERTATION REQUIREMENT

All PhD students are required to complete a dissertation based upon new and original research in one of the three following options:

- In one of the current theoretical or experimental research programs in the department, under direct supervision of an advisor from the Department of Physics. A dissertation committee will be formed consisting of the advisor, two full-time members of the department, and an additional member, either from within the department or from an outside department or institution.
- In a recognized interdisciplinary field involving another research area of the university, under the direct supervision of a faculty member in that field. In this case, an interdisciplinary committee is formed under the approval of the graduate committee, consisting of the direct supervisor, a departmental advisor, one other member of the department, and an additional member of either the department or the external department.

- In an area of applied research in one of the industrial or high-technology laboratories associated with the department's industrial PhD program. The direct supervisor is associated with the institution where the research is performed. In this case, a dissertation advisory committee is established by the graduate committee, consisting of the direct supervisor, the departmental advisor, and two other members of the department.

PhD students must select their departmental advisor no later than the end of the spring semester of their second year or their second semester after having passed the qualifying examination, whichever comes first. This process should start as soon as the student has identified a field of research or has passed the qualifying exam.

## PhD Dissertation Committee, Dissertation, and Preliminary Research Seminar Proposal

By the end of the spring semester of the third year or the second semester in which the student is enrolled for PhD dissertation, whichever comes first, each PhD student must have an approved dissertation committee and dissertation proposal. The dissertation committee must consist of a minimum of three full-time faculty members, including the advisor, and must be approved by the department's graduate committee. Often, the graduate committee will recommend that a dissertation committee have a membership of four individuals.

The student (with the aid and approval of his or her thesis advisor) will submit a PhD dissertation proposal to the graduate committee clearly outlining a plan to carry out new and original research in the context of previously published research in the scientific literature and also describe the methodologies to be employed. A proposed makeup of the dissertation committee will be submitted at the same time.

The graduate committee will evaluate the merit of the proposal and make recommendations for improvements when necessary, including any changes to the composition of the dissertation committee. No more than two submissions for a particular proposal may be made. In the case where a revised proposal does not meet a minimum academic standard that provides a basis for making such improvements, the graduate committee may instruct the student to select a different thesis topic or advisor.

After approval by the graduate committee, the proposal is circulated to the general faculty for comments. If the graduate coordinator receives any objections, the proposal will be referred back to the graduate committee for final resolution.

After the proposal and thesis committee have been approved, the student will make a public presentation of the material in the PhD proposal before the dissertation committee in a format open to the full department and advertised one week in advance. The dissertation committee will then meet in closed session to evaluate the seminar. The presentation must take place no later than the semester after the preliminary proposal is approved and, normally, in the same semester.

In the event that the dissertation advisor is changed, a new committee must be formed, with the approval of the graduate committee, and a new preliminary research seminar given.

### PhD DISSERTATION DEFENSE

The dissertation defense consists of a public presentation, followed by a question period conducted by the dissertation committee and limited to them and the department faculty. The date of the dissertation presentation must be publicized and a copy of the thesis deposited with the graduate secretary at least one week prior to the defense. If during this posting period or in the two business days following the defense a written objection to the thesis is lodged with the department chair by a member of the faculty, the chair may appoint an ad hoc postdefense review committee to provide advice on the scientific issues raised by the objection. Students should note that they must be registered for Dissertation or Dissertation Continuation during the semester in which they defend their dissertation and that they should schedule their defenses well in advance of the end of the semester in order to accommodate the review/waiting period and the time required to deposit the thesis.

The final dissertation defense is held in accordance with the College of Science regulations.

### COURSE WORK

The required courses are grouped into two sets, Part 1 and Part 2, having a total of 42 semester hours as a minimum. Part 1 courses (first-year courses) are typically taken prior to the qualifying exam. Students without a master's degree must complete all Part 1 courses in the first year to remain in good academic standing in the graduate program. Part 2 courses (second-year courses) may be taken before or after passing the qualifying exam.

## PhD in Physics

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| PHYS 7210 Introduction to Research in Physics | 0 SH |
| PHYS 7301 Classical Mechanics/Math Methods | 4 SH |
| PHYS 7302 Electromagnetic Theory | 4 SH |
| PHYS 7315 Quantum Theory 1 | 4 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| PHYS 5318 Principles of Experimental Physics | 4 SH |
| PHYS 7210 Introduction to Research in Physics | 0 SH |
| PHYS 7305 Statistical Physics | 4 SH |
| PHYS 7316 Quantum Theory 2 | 4 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| PHYS 7321 Computational Physics | 4 SH |
| PHYS 7323, 7324, or 7731 | 8 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| PHYS 7733 , PHYS 7734, or PHYS 7741 or approved biological physics elective | 3 to 5 SH |
| PHYS 9984 Advanced Research | 1 to 8 SH |

### GENERAL REQUIREMENTS

| | |
|---|---|
| PHYS 9990 Dissertation | 0 SH |
| PHYS 9996 Dissertation Continuation | 0 SH |

### PROGRAM TOTAL CREDITS            42.0 SH

By approval of the graduate committee, a specialization in biological physics may take a graduate course in biology, physics, or chemistry from an approved course list, instead of PHYS 7741. Additional appropriate courses may also be substituted by approval of the physics graduate committee.

Students who take PHYS 7731 and PHYS 7741 or an approved BIOL or CHEM course will receive a PhD in physics with a biological physics specialization (if it is desired to list a specialization*).

Students who take PHYS 7323 and PHYS 7733 will receive a PhD in physics with a particle physics specialization (if it is desired to list a specialization*).

Students who take PHYS 7324 and PHYS 7734 will receive a PhD in physics with a condensed matter physics specialization (if it is desired to list a specialization*).

All other combinations that meet the criteria for graduation result in a general PhD in physics. Multiple specializations are allowed if the individual requirements for each specialization are met.

*Please note that the specialization will not appear on the degree diploma or on the  official transcript but can be listed as the field of study on CVs and grant proposals.

# PSYCHOLOGY

**www.northeastern.edu/psychology**

JOANNE L. MILLER, PHD
*Matthews Distinguished University Professor and Chair*

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Rebecca Schachter, *Staff Assistant,* r.schachter@neu.edu

The PhD program in the Department of Psychology covers a wide spectrum of contemporary behavioral science within a close-knit community of faculty and students. The program offers four distinct areas of experimental emphasis: behavioral neuroscience, cognition, perception, and social/personality. The program does not offer training in clinical or counseling psychology. The objective of the PhD program is to prepare students to become experts in research and teaching in psychology. To accomplish this goal, the department takes a mentoring approach whereby the graduate students are apprentices in faculty laboratories, working closely with their faculty mentors throughout their time in the program. The basic apprenticeship relationship is supplemented by other activities, such as required courses (concentrated in the first and second years), advanced seminars and/or course work in this as well as other departments or universities, a colloquium series, assignments as teaching assistants, the master's project, and the dissertation and its oral defense. After the first year, the structure of the doctoral program, including course work, is flexible and assumes that the process of learning and scientific discovery must be individualized. Graduate students also have an opportunity to develop their teaching and research skills through close mentoring of undergraduate research assistants. The PhD program is a five-year, 12-month-per-year program. Students earn their master's degree at the end of their second year and progress to PhD candidacy. There is no freestanding master's program.

For students who enter the program with a master's degree, degree candidacy is established through completion of a set of requirements determined on an individual basis. An additional 20 semester hours beyond the master's degree are required for the PhD degree. The dissertation committee must consist of three tenured or tenure-track faculty members—two from the student's interest area and one from another area. The oral defense committee consists of the dissertation committee plus additional tenured and tenure-track faculty members.

A typical program of study is as follows.

## PhD in Psychology

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| PSYC 5100, 5110, 5120, 5130, 5140, 5150, 5160, or 5170 | 6 SH |
| PSYC 5180 Quantitative Methods 1 | 3 SH |
| PSYC 8401 Research Project | 3 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| PSYC 5100, 5110, 5120, 5130, 5140, 5150, 5160, or 5170 | 6 SH |
| PSYC 5181 Quantitative Methods 2 | 3 SH |
| PSYC 8401 Research Project | 3 SH |

**YEAR 1, SUMMER FULL SEMESTER**

| | |
|---|---|
| PSYC 8401 Research Project | 3 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| PSYC 7990 Thesis | 3 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| PSYC 7301 or PSYC 7302 | 3 SH |
| PSYC 7990 Thesis | 3 SH |

**YEAR 2, SUMMER FULL SEMESTER**

| | |
|---|---|
| PSYC 7996 Thesis Continuation | 0 SH |

**YEAR 3, FALL SEMESTER**

| | |
|---|---|
| PSYC 9990 Dissertation | 0 SH |

**YEAR 3, SPRING SEMESTER**

| | |
|---|---|
| PSYC 7301 or PSYC 7302 | 3 SH |
| PSYC 9990 Dissertation | 0 SH |

**YEAR 3, SUMMER FULL SEMESTER**

| | |
|---|---|
| PSYC 9996 Dissertation Continuation | 0 SH |

**YEAR 4, FALL SEMESTER**

| | |
|---|---|
| PSYC 9996 Dissertation Continuation | 0 SH |

**YEAR 5, FALL SEMESTER**

| | |
|---|---|
| PSYC 9996 Dissertation Continuation | 0 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Elective courses for psychology | 11 SH |

**PROGRAM TOTAL CREDITS**     **50.0 SH**

### INTERDISCIPLINARY

ALESSANDRO VESPIGNANI, PHD
*Sternberg Distinguished Professor
and Director for the Network Science Program*

*Network Science Program*
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The PhD program in Network Science aims at enhancing our understanding of networks arising from the interplay of human behavior, socio-technical infrastructures, information diffusion and biological agents. This is an intrinsically multidisciplinary activity, with members of the network science community representing a wide range of fields including computer science; information science; complexity; physics; sociology; communication; organizational behavior; political science; and epidemiology. This is an interdisciplinary doctoral program focused on training students in Network Science across several colleges including College of Science; College of Computer and Information Science; College of Social Sciences and Humanities; Bouve College of Health Sciences; College of Engineering; and College of Arts, Media and Design; with several research areas including: computational sciences; information sciences; health and life sciences; social sciences; and theoretical physics. Please see other collaborating colleges' catalog sections for possible concentration courses.

Coursework is dependent on a student's area of concentration and subject to prior approval by their faculty advisor. Required coursework will include the following: Two foundational courses in Network Science (Complex Networks and Applications and Network Science Data); two of three approved courses (Dynamical Processes in Complex Networks, plus Social Network Analysis or Network Data Mining); twelve semester hours of elective coursework defined by their specific track; and two research courses with core faculty of the program. A minimum of 32 credit hours of coursework is required, though the graduate program committee may recommend additional coursework based on student research interests.

Satisfactory progress in the program will be ongoing and formally evaluated at the end of both the first and second years of the program. Students will be expected to maintain a cumulative GPA of 3.0 or better in all coursework. Students will not be allowed to retake courses. A student who does not maintain the 3.0 GPA, or is not making satisfactory progress on their dissertation research, may be recommended for termination by the Graduate Program Committee.

Each student will have one primary research advisor from the Network Science Doctoral Program faculty.

Students will be expected to select their research advisor by the end of the spring semester of their second year in the program.

The Dissertation Committee will consist of at least 4 members: the dissertation advisor, one additional Network Science Doctoral program faculty member, one member expert in the specific topic of research (can be from outside the university), and one additional tenured/tenure-track faculty member from the concentration department/conferring College. The dissertation advisor must be a full time tenured or tenure-track member of the Northeastern University faculty. The dissertation committee must be approved by the Graduate Program Committee and constituted no later than the end of the spring semester of the first year of the program. Students may repeat the Comprehensive Examination once if they are unsuccessful.

## Qualifying Examination

The qualifying examination will consist of a two-part exam conducted by the Qualifying Examination and Dissertation Committee. The *technical component* of the exam is fulfilled when the student passes the Comprehensive Exam (see below), normally expected to be completed the spring semester of the second year. The *research core* of the qualifying exam is fulfilled with the acceptance of a high-quality paper to a strong peer-reviewed conference or journal. This might happen anytime during the PhD program but at least one year prior the dissertation defense. Students who fail to complete the two-part qualifying examination but who have completed all the PhD program's required coursework with a cumulative GPA of 3.0 or better will be awarded a terminal M.S. in Network Science degree. Note that no students will be admitted directly into the Network Science program for receipt of a M.S. degree.

## Degree Candidacy

A student is considered a Ph.D. degree candidate upon completion of required coursework with a minimum GPA of 3.0 overall on all courses, and satisfactory completion of the two-part qualifying examination.

## Comprehensive Examination

Students must submit a written dissertation proposal to the Qualifying Examination and Dissertation Committee. The proposal should identify the research problem, the research plan, and the potential impact on the field. A presentation of the proposal will be made in an open forum, and the student must successfully defend it before the Qualifying Examination and Dissertation Committee. The Comprehensive exam must precede the final dissertation defense by at least one year.

## Dissertation Defense

A Ph.D. student must complete and defend a dissertation that involves original research in Network Science. The dissertation defense must adhere to the policies as stated on page 217.

A typical program of study is as follows:

## PhD in Network Science

**GENERAL REQUIREMENTS**

| | |
|---|---|
| CS 6220 Network Data Mining or POLS 7334 Social Networks | 4 SH |
| NETS 8984 Research | 4 SH |
| PHYS 5116 Complex Networks and Applications | 4 SH |
| PHYS 7331 Network Science Data (pending approval) | 4 SH |
| PHYS 7335 Dynamical Process on Complex Networks (pending approval) | 4 SH |
| Program-approved courses with area of concentration | 12 SH |

**PROGRAM TOTAL CREDITS**     **32.0 SH**

# *College of Social Sciences and Humanities*

## www.northeastern.edu/cssh/graduate

UTA G. POIGER, PHD, *Dean*

**Jack McDevitt, PhD,** *Associate Dean,*
   *Research and Graduate Studies*
**Amy Killeen, MEd,** *Director,*
   *Graduate Admissions and Student Services*
**Sheila Magee Beare, MSCJ,** *Associate Director,*
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*General Regulations*
www.northeastern.edu/cssh/graduate/current_students

Amber Crowe, BA, *Administrative Coordinator,*
   *Graduate Admissions and Student Services*

Graduate education at Northeastern integrates the highest level of scholarship across disciplinary boundaries with significant research and experiential learning opportunities. This multidimensional learning environment seeks to develop students' critical thinking and creative problem-solving skills while introducing them to new perspectives in their fields. Our doctoral, master's, and professional degree programs seek to produce graduates who are well prepared for the diverse demands of careers in academia, industry, and the professions.

   The following are sample curricula that are valid for full-time students matriculating in fall 2014.

## SCHOOL OF CRIMINOLOGY AND CRIMINAL JUSTICE

**www.northeastern.edu/sccj**

CHESTER L. BRITT, PHD
*Professor and Dean*
NATASHA A. FROST, PHD
*Associate Professor and Associate Dean, Academic Programs*

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*Graduate Programs Contact*
Laurie Mastone, *Assistant to the Dean*

*Graduate Programs Booklet*
www.northeastern.edu/sccj/graduate/policies-and-procedures

The School of Criminology and Criminal Justice at Northeastern University seeks to prepare students for professional and research careers in criminal justice, criminology, and related fields by applying multidisciplinary and comparative social science to understand, predict, and explain crime and contribute to the development of public policy within urban communities. Using an active-learning approach, the school seeks to develop its students intellectually and ethically, while providing them with a keen appreciation for the complexities of crime and public and private efforts to make communities safer and to ensure justice. The school offers a Master of Science degree in criminology and criminal justice and a PhD degree in criminology and justice policy.

### Doctoral Degree Candidacy

A student achieves candidacy when he or she has successfully completed all course work, passed all required qualifying examinations, and deposited the final version of their dissertation proposal (approved by their full committee) with the school's graduate program office.

## MSCJ in Criminology and Criminal Justice—Nonthesis Option

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CRIM 7200 Criminology | 3 SH |
| CRIM 7204 Research and Evaluation Methods | 3 SH |
| *Coreq.* CRIM 7205 | |
| CRIM 7205 Lab for CRIM 7204 | 1 SH |
| *Coreq.* CRIM 7204 | |
| Elective in the 5000 through 7000 range | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CRIM 7202 The Criminal Justice Process | 3 SH |
| CRIM 7206 Statistical Analysis | 3 SH |
| *Coreq.* CRIM 7207 | |
| CRIM 7207 Lab for CRIM 7206 | 1 SH |
| *Coreq.* CRIM 7206 | |
| Elective in the 5000 through 7000 range | 3 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| CRIM 7500 or elective in the 5000 through 7000 range | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CRIM 7400 Capstone | 3 SH |
| Two electives in the 5000 through 7000 range | 6 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MSCJ in Criminology and Criminal Justice—Thesis Option

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CRIM 7200 Criminology | 3 SH |
| CRIM 7204 Research and Evaluation Methods | 3 SH |
| *Coreq.* CRIM 7205 | |
| CRIM 7205 Lab for CRIM 7204 | 1 SH |
| *Coreq.* CRIM 7204 | |
| Elective in the 5000 through 7000 range | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CRIM 7202 The Criminal Justice Process | 3 SH |
| CRIM 7206 Statistical Analysis | 3 SH |
| *Coreq.* CRIM 7207 | |
| CRIM 7207 Lab for CRIM 7206 | 1 SH |
| *Coreq.* CRIM 7206 | |
| Elective in the 5000 through 7000 range | 3 SH |

### YEAR 1, SUMMER 1 SEMESTER

| | |
|---|---|
| CRIM 7500 or elective in the 5000 through 7000 range | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Elective in the 5000 through 7000 range | 3 SH |
| CRIM 7990 Thesis | 6 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## PhD in Criminology and Justice Policy—Advanced Degree Entrance

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CRIM 7202 The Criminal Justice Process | 3 SH |
| CRIM 7710 Criminology and Public Policy 1 | 3 SH |
| CRIM 7715 Multivariate Analysis 1 | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CRIM 7711 Criminology and Public Policy 2 | 3 SH |
| CRIM 7713 Advanced Research and Evaluation Methods | 3 SH |
| CRIM 7716 Multivariate Analysis 2 | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| CRIM 8960 Exam Preparation—Doctoral | 0 SH |
| Two electives in the 7000+ range | 6 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| CRIM 7706 Practicum in Writing and Publishing | 2 SH |
| Two electives in the 7000+ range | 6 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| CRIM 8986 Research | 0 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| CRIM 8986 Research | 0 SH |

### YEAR 4, FALL SEMESTER

| | |
|---|---|
| CRIM 9990 Dissertation | 0 SH |

### YEAR 4, SPRING SEMESTER

| | |
|---|---|
| CRIM 9990 Dissertation | 0 SH |

### YEAR 5, FALL SEMESTER

| | |
|---|---|
| CRIM 9996 Dissertation Continuation | 0 SH |

### YEAR 5, SPRING SEMESTER

| | |
|---|---|
| CRIM 9996 Dissertation Continuation | 0 SH |

### GENERAL REQUIREMENTS

| | |
|---|---|
| Annual review | 0 SH |
| Qualifying examinations | 0 SH |
| Doctoral dissertation | 0 SH |

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## PhD in Criminology and Justice Policy—Bachelor's Degree Entrance

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| CRIM 7202 The Criminal Justice Process | 3 SH |
| CRIM 7710 Criminology and Public Policy 1 | 3 SH |
| CRIM 7715 Multivariate Analysis 1 | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| CRIM 7711 Criminology and Public Policy 2 | 3 SH |
| CRIM 7713 Advanced Research and Evaluation Methods | 3 SH |
| CRIM 7716 Multivariate Analysis 2 | 3 SH |

## YEAR 2, FALL SEMESTER
Three electives in the 7000+ range                     9 SH

## YEAR 2, SPRING SEMESTER
Three electives in the 7000+ range                     9 SH

## YEAR 3, FALL SEMESTER
CRIM 8960 Exam Preparation—Doctoral                    0 SH
Two electives in the 7000+ range                       6 SH

## YEAR 3, SPRING SEMESTER
CRIM 7706 Practicum in Writing and Publishing          2 SH
Two electives in the 7000+ range                       6 SH

## YEAR 4, FALL SEMESTER
CRIM 8986 Research                                     0 SH

## YEAR 4, SPRING SEMESTER
CRIM 8986 Research                                     0 SH

## YEAR 5, FALL SEMESTER
CRIM 9990 Dissertation                                 0 SH

## YEAR 5, SPRING SEMESTER
CRIM 9990 Dissertation                                 0 SH

## GENERAL REQUIREMENTS
Annual review                                          0 SH
Qualifying examinations                                0 SH
Doctoral dissertation                                  0 SH

## PROGRAM TOTAL CREDITS                               50.0 SH

## ECONOMICS

**www.northeastern.edu/economics**

WILLIAM T. DICKENS, PHD
*University Distinguished Professor and Chair*
GREGORY H. WASSALL, PHD
*Graduate Program Director*

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*Graduate Programs Contact*
William Dirtion, *Student Services Secretary*

*Graduate Programs Booklet*
www.northeastern.edu/economics

The most distinctive feature of Northeastern University's graduate programs in economics is an emphasis on applied economics, coupled with attention to providing a solid grounding in microeconomic and macroeconomic theory and econometrics. Students come from all over the world, and the curriculum is designed with this in mind, striving for balance in coverage of economies that are rich and poor, large and small, mixed and market. This gives a unique flavor to the course of study, making it well suited to the analysis of the emerging global economy of the twenty-first century.

## Doctoral Degree Candidacy

For students entering with a master's degree in economics, degree candidacy is attained when (1) the PhD core curriculum (five required courses and one elective—24 semester hours) is completed; (2) the microeconomics and macroeconomics qualifying examinations are passed; and (3) the field and econometrics comprehensive examination is passed. For students entering without a master's degree, degree candidacy is attained when (1) the above three requirements are completed and (2) six additional courses are completed (four MA core courses plus two elective courses—an additional 24 semester hours for a total of 48 semester hours).

## MA in Economics

### GENERAL REQUIREMENTS
ECON 5105 Math and Statistics for Economists          4 SH
ECON 5110 Microeconomic Theory                        4 SH
ECON 5120 Macroeconomic Theory                        4 SH
ECON 5140 Applied Econometrics                        4 SH
Four elective s in the range ECON 5200 or above       16 SH

### PROGRAM TOTAL CREDITS                             32.0 SH

## PhD in Economics—Advanced Degree Entrance

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| ECON 7710 Microeconomic Theory 2 | 4 SH |
| ECON 7740 Applied Econometrics 2 | 4 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| ECON 7720 Macroeconomic Theory 2 | 4 SH |
| ECON 7763 or ECON 7771 | 4 SH |
| Elective course ECON 7200 through 7299, ECON 7976, or ECON 8982 | 4 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| ECON 7764 or ECON 7772 | 4 SH |
| ECON 8960 Exam Preparation—Doctoral | 0 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| ECON 9986 Research | 0 SH |

**YEAR 3, FALL SEMESTER**

| | |
|---|---|
| ECON 9990 Dissertation | 0 SH |

**YEAR 3, SPRING SEMESTER**

| | |
|---|---|
| ECON 9990 Dissertation | 0 SH |

**YEAR 4, FALL SEMESTER**

| | |
|---|---|
| ECON 9996 Dissertation Continuation | 0 SH |

**YEAR 4, SPRING SEMESTER**

| | |
|---|---|
| ECON 9996 Dissertation Continuation | 0 SH |

**YEAR 5, FALL SEMESTER**

| | |
|---|---|
| ECON 9996 Dissertation Continuation | 0 SH |

**YEAR 5, SPRING SEMESTER**

| | |
|---|---|
| ECON 9996 Dissertation Continuation | 0 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Annual review | 0 SH |
| Qualifying examinations in macroeconomic and microeconomic theory | 0 SH |
| Field examination in industrial organization or labor economics | 0 SH |
| Participation in department field lunches | 0 SH |
| Practical experience in applied economics program | 0 SH |
| Participation in academic seminar series | 0 SH |
| Doctoral dissertation | **0 SH** |

**PROGRAM TOTAL CREDITS**             **24.0 SH**

## PhD in Economics—Bachelor's Degree Entrance

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| ECON 5105 Math and Statistics for Economists | 4 SH |
| ECON 5110 Microeconomic Theory | 4 SH |
| Elective course ECON 7200 through 7299, ECON 7976, or ECON 8982 | 4 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| ECON 5120 Macroeconomic Theory | 4 SH |
| ECON 5140 Applied Econometrics | 4 SH |
| Elective course ECON 7200 through 7299, ECON 7976, or ECON 8982 | 4 SH |

**YEAR 2, FALL SEMESTER**

| | |
|---|---|
| ECON 7710 Microeconomic Theory 2 | 4 SH |
| ECON 7740 Applied Econometrics 2 | 4 SH |

**YEAR 2, SPRING SEMESTER**

| | |
|---|---|
| ECON 7720 Macroeconomic Theory 2 | 4 SH |
| ECON 7763 or ECON 7771 | 4 SH |
| Elective course ECON 7200 through 7299, ECON 7976, or ECON 8982 | 4 SH |

**YEAR 3, FALL SEMESTER**

| | |
|---|---|
| ECON 7764 or ECON 7772 | 4 SH |
| ECON 8960 Exam Preparation—Doctoral | 0 SH |

**YEAR 3, SPRING SEMESTER**

| | |
|---|---|
| ECON 9986 Research | 0 SH |

**YEAR 4, FALL SEMESTER**

| | |
|---|---|
| ECON 9990 Dissertation | 0 SH |

**YEAR 4, SPRING SEMESTER**

| | |
|---|---|
| ECON 9990 Dissertation | 0 SH |

**YEAR 5, FALL SEMESTER**

| | |
|---|---|
| ECON 9996 Dissertation Continuation | 0 SH |

**YEAR 5, SPRING SEMESTER**

| | |
|---|---|
| ECON 9996 Dissertation Continuation | 0 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Annual review | 0 SH |
| Qualifying examinations in macroeconomic and microeconomic theory | 0 SH |
| Field examination in industrial organization or labor economics | 0 SH |
| Participation in department field lunches | 0 SH |
| Practical experience in applied economics program | 0 SH |
| Participation in academic seminar series | 0 SH |
| Doctoral dissertation | **0 SH** |

**PROGRAM TOTAL CREDITS**             **48.0 SH**

## ENGLISH

**www.northeastern.edu/english**

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*Graduate Program Director*

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Melissa Daigle, *Administrative Assistant*

*Graduate Programs Booklet*
www.northeastern.edu/english/graduate/booklet

The graduate program in English encompasses the study of British and American literature, literary history and theory, and rhetoric and composition, as well as linguistics. At Northeastern University, graduate study in English takes full advantage of the opportunities that the greater Boston area affords as the site of rich cultural and educational resources.

## Academic Standing/Progress

- Master's students: must maintain a 3.000 minimum cumulative grade-point average. See the university's policy on academic standing on page 23 ("Minimum Cumulative Grade-Point Average").
- PhD students: must maintain a 3.500 minimum cumulative grade-point average.

## Doctoral Degree Candidacy

Students entering with a relevant BA must complete 42 semester hours; students entering with an MA must complete 21 semester hours. The PhD comprehensive examinations must be passed.

## MA in English

### YEAR 1, FALL SEMESTER
| | |
|---|---|
| ENGL 5103 Proseminar | 3 SH |
| Course work from the list "Year 1–Year 2 Course Work," below | 6 SH |

### YEAR 1, SPRING SEMESTER
| | |
|---|---|
| Course work from the list "Year 1–Year 2 Course Work," below | 9 SH |

### YEAR 2, FALL SEMESTER
| | |
|---|---|
| Course work from the list "Year 1–Year 2 Course Work," below | 9 SH |

### YEAR 2, SPRING SEMESTER
| | |
|---|---|
| One course from the list "Year 1–Year 2 Course Work," below | 3 SH |
| ENGL 6960 Exam Preparation—Master's | 0 SH |

### GENERAL REQUIREMENTS
| | |
|---|---|
| Language requirement | 0 SH |
| MA comprehensive examination | 0 SH |

**PROGRAM TOTAL CREDITS**    **30.0 SH**

## PhD in English—Advanced Degree Entrance

### YEAR 1, FALL SEMESTER
| | |
|---|---|
| ENGL 5103 Proseminar | 3 SH |
| ENGL 7392 Writing and the Teaching of Writing | 3 SH |
| ENGL elective or approved elective | 3 SH |

### YEAR 1, SPRING SEMESTER
| | |
|---|---|
| Three ENGL electives or approved electives | 9 SH |

### YEAR 2, FALL SEMESTER
| | |
|---|---|
| ENGL elective or approved elective | 3 SH |
| ENGL 8960 Exam Preparation—Doctoral | 0 SH |

### YEAR 2, SPRING SEMESTER
| | |
|---|---|
| ENGL 9986 Research | 0 SH |

### YEAR 3, FALL SEMESTER
| | |
|---|---|
| ENGL 9990 Dissertation | 0 SH |

### YEAR 3, SPRING SEMESTER
| | |
|---|---|
| ENGL 9990 Dissertation | 0 SH |

### YEAR 4, FALL SEMESTER
| | |
|---|---|
| ENGL 9996 Dissertation Continuation | 0 SH |

### YEAR 4, SPRING SEMESTER
| | |
|---|---|
| ENGL 9996 Dissertation Continuation | 0 SH |

### YEAR 5, FALL SEMESTER
| | |
|---|---|
| ENGL 9996 Dissertation Continuation | 0 SH |

### YEAR 5, SPRING SEMESTER
| | |
|---|---|
| ENGL 9996 Dissertation Continuation | 0 SH |

### GENERAL REQUIREMENTS
| | |
|---|---|
| Annual review | 0 SH |
| Language requirement | 0 SH |
| PhD comprehensive examination | 0 SH |
| Doctoral dissertation | 0 SH |

**PROGRAM TOTAL CREDITS**    **21.0 SH**

## PhD in English—Bachelor's Degree Entrance

### YEAR 1, FALL SEMESTER
| | |
|---|---|
| ENGL 5103 Proseminar | 3 SH |
| ENGL 7392 Writing and the Teaching of Writing | 3 SH |
| Course work from the list "Year 1–Year 2 Course Work," below | 3 SH |

### YEAR 1, SPRING SEMESTER
| | |
|---|---|
| Course work from the list "Year 1–Year 2 Course Work," below | 9 SH |

### YEAR 2, FALL SEMESTER
| | |
|---|---|
| Course work from the list "Year 1–Year 2 Course Work," below | 9 SH |

### YEAR 2, SPRING SEMESTER
| | |
|---|---|
| Course work from the list "Year 1–Year 2 Course Work," below | 9 SH |

### YEAR 3, FALL SEMESTER
| | |
|---|---|
| Two ENGL electives or approved electives | 6 SH |

### YEAR 3, SPRING SEMESTER
| | |
|---|---|
| ENGL 8960 Exam Preparation—Doctoral | 0 SH |

### YEAR 4, FALL SEMESTER
| | |
|---|---|
| ENGL 9990 Dissertation | 0 SH |

### YEAR 4, SPRING SEMESTER
| | |
|---|---|
| ENGL 9990 Dissertation | 0 SH |

### YEAR 5, FALL SEMESTER
| | |
|---|---|
| ENGL 9996 Dissertation Continuation | 0 SH |

### YEAR 5, SPRING SEMESTER
| | |
|---|---|
| ENGL 9996 Dissertation Continuation | 0 SH |

### GENERAL REQUIREMENTS
| | |
|---|---|
| Annual review | 0 SH |
| Language requirement | 0 SH |
| PhD comprehensive examination | 0 SH |
| Doctoral dissertation | 0 SH |

### PROGRAM TOTAL CREDITS 42.0 SH

### YEAR 1–YEAR 2 COURSE WORK
| | |
|---|---|
| Two rhetoric and composition courses (ENGL 7392 fulfills one) | 6 SH |
| Two theories and methods courses | 6 SH |
| Medieval/Renaissance course | 3 SH |
| Seventeenth–eighteenth-century course | 3 SH |
| Nineteenth–twentieth-century course | 3 SH |
| Two ENGL electives or approved electives | 6 SH |

## HISTORY

**www.northeastern.edu/history**

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TIMOTHY BROWN, PHD
*Graduate Program Director*

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*Graduate Programs Contact*
Bonne Knipfer, *Administrative Coordinator*

*Graduate Programs Booklet*
www.northeastern.edu/history/wp-content/uploads/Booklet.pdf

Graduate work in history focuses on global and world history, which study the interactions among geographical regions and historical processes around the globe. Students at both the master's and doctoral levels concentrate their work on the history of regions or peoples in Africa, Asia, Europe, Latin America, or the United States, with attention to the intersections and connections between national, regional, and global developments. The Department of History also offers a master's degree with a concentration in public history that emphasizes the study of topics such as material culture, historical exhibits and museums, historical agencies, and archival administration. Recent doctoral students have been the recipients of major fellowships for conducting dissertation research abroad, including Fulbright, Fulbright-Hays, Social Science Research Council, and Chateaubriand fellowships.

## Academic Standing/Progress

Master's students are expected to maintain a 3.000 GPA. Should the GPA drop below 3.000, the student will be placed on academic probation and will be allowed one more semester to bring his or her GPA to the 3.000 level. If the student is not able to bring his or her GPA to the 3.000 level by the end of the following semester, the student may be asked to leave the program.

PhD students are required to maintain an overall GPA of at least 3.500. In addition, the PhD annual review is based on a report by the student's advisor, with attention to (1) success in setting up a doctoral committee; (2) passing the departmental language examination in the language of their field; (3) successful performance of teaching assistant duties; (4) successful completion of courses in the tiered system (i.e., the required course sequence); (5) successful completion, where appropriate, of other required activities, including construction of the comprehensive examination list and the dissertation proposal and scheduling of comprehensive examinations.

## Doctoral Degree Candidacy

Students entering without an MA in history must complete 37 semester hours; students with an MA in history from outside Northeastern must complete 31 semester hours. Students must pass the qualifying examination by the end of the first semester of the third year in the program.

## MA in History

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| HIST 5101 Theory and Methodology 1 | 3 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| HIST 5102 Theory and Methodology 2 | 3 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| One course in the range HIST 7300 through HIST 7700 | 3 SH |
| Six history electives | 18 SH |
| Three Professionalization and Pedagogy for Historians courses (HIST 7550) (1 credit each) | 3 SH |

**GENERAL REQUIREMENT**

| | |
|---|---|
| Language proficiency requirement | 0 SH |

**PROGRAM TOTAL CREDITS** — **30.0 SH**

## MA in History with Concentration in Public History

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| HIST 5101 Theory and Methodology 1 | 3 SH |
| HIST 5237 Issues/Problems in Public History | 3 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Three Professionalization and Pedagogy for Historians courses (HIST 7550) (1 credit each) | 3 SH |
| One course in the range HIST 7300 through HIST 7700 | 3 SH |
| Three public history courses | 9 SH |
| Two history electives | 6 SH |
| HIST 8410 Fieldwork in History 1 | 3 SH |

**PROGRAM TOTAL CREDITS** — **30.0 SH**

## PhD in History—Advanced Degree Entrance

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| HIST 5101 Theory and Methodology 1 | 3 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| HIST 5102 Theory and Methodology 2 | 3 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Three courses in the range HIST 7300 through HIST 7702 | 9 SH |
| HIST 7314 Research Seminar in World History | 3 SH |
| HIST 8409 Practicum in Teaching | 1 SH |
| Four Readings (HIST 8982) or Directed Study (HIST 7976) courses | 12 SH |
| HIST 9990 Dissertation (taken twice) | 0 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Annual review | 0 SH |
| Language proficiency requirement | 0 SH |
| PhD qualifying examination | 0 SH |
| Doctoral dissertation | 0 SH |

**PROGRAM TOTAL CREDITS** — **31.0 SH**

## PhD in History—Bachelor's Degree Entrance

**YEAR 1, FALL SEMESTER**

| | |
|---|---|
| HIST 5101 Theory and Methodology 1 | 3 SH |

**YEAR 1, SPRING SEMESTER**

| | |
|---|---|
| HIST 5102 Theory and Methodology 2 | 3 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Three courses in the range HIST 7300 through HIST 7702 | 9 SH |
| HIST 7314 Research Seminar in World History | 3 SH |
| HIST 8409 Practicum in Teaching | 1 SH |
| Six Readings (HIST 8982) or Directed Study (HIST 7976) courses | 18 SH |
| HIST 9990 Dissertation (taken twice) | 0 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Annual review | 0 SH |
| Language proficiency requirement | 0 SH |
| PhD qualifying examination | 0 SH |
| Doctoral dissertation | 0 SH |

**PROGRAM TOTAL CREDITS** — **37.0 SH**

## POLITICAL SCIENCE

www.northeastern.edu/polisci

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*Professor and Chair*

*Graduate Program Directors*
 JOHN H. PORTZ, PhD
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 THOMAS J. VICINO, PhD
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*Graduate Programs Booklet*
www.northeastern.edu/polisci/graduates

Graduate training in political science and public administration seeks to prepare students to analyze the most important issues in world affairs and prepares students for a wide array of careers—from government and academia to the nonprofit and private sectors. Graduate programs in political science, public administration, security and resilience studies, and international affairs at Northeastern explore the theory and the practice of politics, public policy, and public management in the United States and throughout the world. In teaching and research, faculty members in the department cover a broad range of topics and issues in the field of political science and public administration. Core areas of inquiry within our department include national and international security, international public policy, U.S. public policy and administration, network science, European studies, Middle East studies, and democratization and development.

## Academic Standing/Progress

Satisfactory progress is defined as complying with the various procedures and requirements of the respective graduate programs. Among these requirements is grade-point average and, for the PhD program, timely progress in sitting for the comprehensive examination, completing an approved dissertation proposal, and submitting a dissertation. A student who fails to make satisfactory progress is placed on academic probation, which is a warning that the student may not be allowed to continue in the graduate program unless the deficiency is addressed.

As noted, satisfactory progress includes maintaining a specified grade-point average. All master's-level students must maintain an overall cumulative grade-point average of 3.000. All doctoral students must maintain an overall cumulative grade-point average of 3.500. In addition, students are expected to successfully complete a minimum of two-thirds of attempted semester hours. Any student who falls below the applicable standard in one academic semester will be placed on academic probation and must consult with his or her academic advisor. Any student who falls below any applicable standard for two consecutive semesters is subject to dismissal from the graduate program.

Additionally, receipt of financial support administered by the department, college, or university is contingent on satisfactory academic progress toward the degree and specific guidelines as published in the terms of award. Students who have ungraded courses or courses graded as incompletes risk no longer being eligible for financial aid awards.

## Doctoral Degree Candidacy

Students entering with a master's degree from outside Northeastern—minimum 30 semester hours required. Students entering with a Northeastern MA in political science—minimum 18 semester hours required. Students entering with a Northeastern MPA degree—minimum 6 semester hours required. Students currently in the MA or MPA program and accepted to the PhD before completing the MA or MPA—48 semester hours required. A 3.500 GPA is required. Students also must pass written and oral comprehensive examinations.

## MA in Political Science with Concentration in American Government and Politics

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7205 Seminar in American Government and Politics | 3 SH |
| Three American government courses in the range POLS 5100 through POLS 7999 | 9 SH |
| Five POLS electives in the range POLS 5100 through POLS 7999 | 15 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MA in Political Science with Concentration in Comparative Politics

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7206 Seminar in Comparative Politics | 3 SH |
| Three comparative courses in the range POLS 5100 through POLS 7999 | 9 SH |
| Five POLS electives in the range POLS 5100 through POLS 7999 | 15 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MA in Political Science with Concentration in International Relations

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7207 Seminar in International Relations | 3 SH |
| Three international relations courses in the range POLS 5100 through POLS 7999 | 9 SH |
| Five POLS electives in the range POLS 5100 through POLS 7999 | 15 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MA in Political Science with Concentration in Public Policy

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7204 Seminar in Public Policy | 3 SH |
| Three policy courses in the range POLS 5100 through POLS 7999 | 9 SH |
| Five POLS electives in the range POLS 5100 through POLS 7999 | 15 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## MA in Political Science with Concentration in Security Studies

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7207 Seminar in International Relations | 3 SH |
| POLS 7341 Security and Resilience Policy | 3 SH |
| Five POLS electives in the range POLS 5100 through POLS 7999 | 15 SH |
| Two security electives | 6 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## Master of Public Administration

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7203 Techniques of Policy Analysis | 3 SH |
| POLS 7301 Public Personnel Administration | 3 SH |
| POLS 7302 Organizational Theory and Management | 3 SH |
| POLS 7303 Public Budgeting and Financial Management | 3 SH |
| POLS 7304 Economic Institutions and Analysis | 3 SH |
| POLS 7305 Institutional Leadership and the Public Manager | 3 SH |
| POLS 7306 Capstone Seminar in Public Policy and Public Management | 3 SH |
| POLS 7407 (for preservice students) or elective course in the range POLS 7200 through POLS 7999 | 3 SH |
| Five electives in the range  7200 through 7999 | 15 SH |
| **PROGRAM TOTAL CREDITS** | **42.0 SH** |

## Master of Science in Security and Resilience Studies

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7341 Security and Resilience Policy | 3 SH |
| POLS 7342 Security and Resilience Policy Toolkit | 1 SH |
| POLS 7347 Controversial Issues in Security Studies | 1 SH |
| POLS 7369 International Security | 3 SH |
| POLS 7704 Critical Infrastructure Resilience | 4 SH |
| Capstone (pending approval) | 6 SH |
| Four approved electives | 12 SH |
| **PROGRAM TOTAL CREDITS** | **30.0 SH** |

## PhD in Political Science

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7200 Perspectives on Social Science Inquiry | 3 SH |
| POLS 7201 Research Design | 3 SH |
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7204 Seminar in Public Policy | 3 SH |
| POLS 7205 Seminar in American Government and Politics | 3 SH |
| POLS 7206 Seminar in Comparative Politics | 3 SH |
| POLS 7207 Seminar in International Relations | 3 SH |
| POLS 7215 Advanced Quantitative Techniques | 3 SH |
| Four primary field electives in the range POLS 7200 or above | 12 SH |
| Two secondary field electives in the range POLS 7200 or above | 6 SH |
| Two POLS electives in the range POLS 7200 or above | 6 SH |
| POLS 9990 Dissertation (taken twice) | 0 SH |
| POLS 9996 Dissertation Continuation | 0 SH |

### GENERAL REQUIREMENTS

| | |
|---|---|
| Annual review | 0 SH |
| Language proficiency requirement | 0 SH |
| PhD comprehensive examination | 0 SH |
| Doctoral dissertation | 0 SH |
| **PROGRAM TOTAL CREDITS** | **48.0 SH** |

## SCHOOL OF PUBLIC POLICY AND URBAN AFFAIRS

www.northeastern.edu/policyschool

MATTHIAS RUTH, PhD
*Professor and Interim Director of the School*

*Graduate Program Directors*
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*PhD Program, Law and Public Policy*
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www.northeastern.edu/policyschool/education

The School of Public Policy and Urban Affairs at Northeastern University offers programs that prepare students to use sophisticated analytical skills to understand the policy-making process. The master's degree programs provide experiential learning opportunities through internships and capstone projects. The interdisciplinary Law and Public Policy program offers the PhD, MS, and JD/MS degrees. It seeks to prepare students for careers in academia, research, government, nonprofit, or legal institutions. LPP examines law, legal institutions, and public policy from an interdisciplinary social science perspective using both quantitative and qualitative research methodologies. Students have an opportunity to engage in policy analysis and applied research in several fields, including sustainability, climate change, and environmental policy; health policy; and urban policy.

The school, in affiliation with the Department of Political Science, offers a Master of Public Administration (MPA) degree. This accredited graduate program in public administration explores the theory and the practice of politics, public policy, and public management in the United States and other countries. The degree prepares students for a wide array of careers, from those in government to those in the nonprofit and private sectors.

The school also offers an interdisciplinary Master of Science in Urban and Regional Policy (MURP) that has students combine sophisticated analytical skills with a thorough understanding of how cities and regions work. Students prepare for careers in research and policy-making positions in an array of urban-focused public, nonprofit, and private-sector institutions. This program seeks to produce graduates who will be leaders with the ability to analyze global economic, technological, and social trends; develop policy responses designed to enable their respective cities and regions to adapt to those trends; and move those policies toward implementation.

Beginning in spring 2015, a Master of Science in Urban Informatics will be offered. The program builds on Northeastern's extensive resources in data analytics and its reputation for experiential education and real-world problem solving. Students have an opportunity to gain state-of-the-art skills in quantitative analysis, data mining, machine learning, and data visualization. These skills are applied to contemporary challenges faced by cities throughout the globe.

Three graduate certificates are also available. The Graduate Certificate in Public Policy Analysis provides students with the tools necessary to analyze and shape public policy at the local, state, and national levels. The Graduate Certificate in Urban Informatics trains students with the practical and theoretical knowledge necessary to understand the complexity of interconnected urban systems and to analyze how these systems work together to create sustainable, resilient, and just cities. The Graduate Certificate in Nonprofit Sector, Philanthropy, and Social Change enables social change professionals in all sectors to respond more effectively and distinguishes itself from other nonprofit certificate programs by focusing on the relationship between social program implementation and funding.

## Academic Standing/Progress for Master's Students

Students in the Master of Public Administration, the MS in Law and Public Policy, and the MS in Urban and Regional Policy programs are monitored for academic progress. Those students whose GPA falls below a 3.000 are notified by and meet with the director of academic programs. They are warned that if their GPA does not rise to a 3.000 or higher, they run the risk of not graduating and are advised on strategies for improvement. See the university's policy on academic standing on page 23 ("Minimum Cumulative Grade-Point Average") for details on probation and dismissal.

## Academic Standing/Progress for LPP PhD Students

A 3.333 grade-point average (GPA) or better in all core courses (LPSC 7305, 7308, 7310, 7311) and maintain an overall 3.33 average.

## Doctoral Degree Candidacy for LPP PhD Students

Complete all required course work with a minimum 3.500 GPA in the core courses and pass the comprehensive exams. Students entering with a bachelor's degree must complete 42 semester hours, and students entering with a JD or master's degree must complete 36 semester hours.

## Master of Public Administration

### GENERAL REQUIREMENTS

| | |
|---|---|
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7203 Techniques of Policy Analysis | 3 SH |
| POLS 7301 Public Personnel Administration | 3 SH |
| POLS 7302 Organizational Theory and Management | 3 SH |
| POLS 7303 Public Budgeting and Financial Management | 3 SH |
| POLS 7304 Economic Institutions and Analysis | 3 SH |
| POLS 7305 Institutional Leadership and the Public Manager | 3 SH |
| POLS 7306 Capstone Seminar in Public Policy and Public Management | 3 SH |
| POLS 7407 (for preservice students) or elective course in the range POLS 7200 through POLS 7999 | 3 SH |
| Five electives in the range 7200 through 7999 | 15 SH |
| **PROGRAM TOTAL CREDITS** | **42.0 SH** |

## MS in Urban Informatics

Program launches in spring 2015

### GENERAL REQUIREMENTS

| | |
|---|---|
| Four core data science courses (pending approval) | 16 SH |
| PPUA 5262 Big Data for Cities—Visual Data Mining Strategies | 3 SH |
| PPUA 5263 Geographic Information Systems for Urban and Regional Policy | 3 SH |
| PPUA 5266 Designing Participatory Urban Infrastructures | 3 SH |
| PPUA 6266 Research Practicum or PPUA 7673 Capstone | 3 SH |
| PPUA 7237 or PPUA 5261 | 3 SH |
| Urban informatics portfolio (pending approval) | 1 SH |
| **PROGRAM TOTAL CREDITS** | **32.0 SH** |

## MS in Urban and Regional Policy

Part-time students go at their own pace.

### GENERAL REQUIREMENTS

| | |
|---|---|
| LPSC 6313 Economic Analysis for Law, Policy, and Planning | 3 SH |
| LPSC 7311 Strategizing Public Policy | 3 SH |
| POLS 7202 Quantitative Techniques | 3 SH |
| POLS 7315 Urban Development and Politics | 3 SH |
| POLS 7318 Techniques of Program Evaluation | 3 SH |
| PPUA 6201 The Twenty-First Century City: Urban Opportunities and Challenges in a Global Context | 3 SH |
| PPUA 6205 Research Design and Methodology in Urban and Regional Policy | 3 SH |

| | |
|---|---|
| Three research toolkit courses in the range PPUA 6206 through PPUA 6212 | 3 SH |
| PPUA 6407 Internship in Urban and Regional Policy | 3 SH |
| PPUA 7673 Capstone Project in Urban and Regional Policy | 3 SH |
| Four approved electives | 12 SH |
| **PROGRAM TOTAL CREDITS** | **42.0 SH** |

## MS in Law and Public Policy

### GENERAL REQUIREMENTS

| | |
|---|---|
| LPSC 6313 Economic Analysis for Law, Policy, and Planning | 3 SH |
| LPSC 7305 Research and Statistical Methods | 3 SH |
| LPSC 7308 Law and Legal Reasoning | 3 SH |
| LPSC 7311 Strategizing Public Policy | 3 SH |
| PHIL 7240 Ethics and Public Policy | 4 SH |
| POLS 7318 Techniques of Program Evaluation | 3 SH |
| PPUA 7673 Capstone Project in Urban and Regional Policy | 3 SH |
| One research toolkit course in the range PPUA 6206 through PPUA 6213 | 1 SH |
| Law elective | 2 SH |
| Four approved electives | 12 SH |
| **PROGRAM TOTAL CREDITS** | **37.0 SH** |

## Juris Doctor/MS in Law and Public Policy

### GENERAL REQUIREMENTS

| | |
|---|---|
| LPSC 6313 Economic Analysis for Law, Policy, and Planning | 3 SH |
| LPSC 7305 Research and Statistical Methods | 3 SH |
| LPSC 7308 Law and Legal Reasoning | 3 SH |
| PHIL 7240 Ethics and Public Policy | 4 SH |
| POLS 7318 Techniques of Program Evaluation | 3 SH |
| PPUA 7673 Capstone Project in Urban and Regional Policy | 3 SH |
| Research toolkit courses in the range PPUA 6206 through PPUA 6213 | 3 SH |
| Approved elective | 3 SH |

### JD/MS COURSE WORK

| | |
|---|---|
| Course work toward JD and MS degrees | 12 SH |

The following courses count toward both the JD degree and the MS degree:

LPSC 7311 Strategizing Public Policy

12 quarter hours (equivalent to 9 semester hours) taken in the School of Law

| | |
|---|---|
| **PROGRAM TOTAL CREDITS** | **37.0 SH** |

## PhD in Law and Public Policy

**CREDIT REQUIREMENT**

Students entering without an advanced degree must complete 42 semester hours, as specified in the advising process.

**GENERAL REQUIREMENTS**

| | |
|---|---|
| ECON 7270 Economics of Law and Regulation | 4 SH |
| LPSC 7305 Research and Statistical Methods | 3 SH |
| LPSC 7308 Law and Legal Reasoning | 3 SH |
| LPSC 7310 Research Design and Analysis | 3 SH |
| LPSC 7311 Strategizing Public Policy | 3 SH |
| LPSC 9990 Dissertation (taken twice) | 0 SH |
| LPSC 9996 Dissertation Continuation | 0 SH |
| LW 7561 Strategic Litigation | 2 SH |
| PHIL 7240 Ethics and Public Policy | 4 SH |
| Public policy elective | 3 SH |
| Advanced methodology elective | 3 SH |
| Law elective | 2 SH |
| Approved elective | 3 SH |
| Economics elective in focus area | 3 SH |

**GENERAL REQUIREMENTS**

| | |
|---|---|
| Annual review | 0 SH |
| PhD comprehensive examination | 0 SH |
| Research seminar | 0 SH |
| Dissertation proposal defense | 0 SH |
| Doctoral dissertation | 0 SH |
| **PROGRAM TOTAL CREDITS** | **36.0 SH** |

## Graduate Certificate in Public Policy Analysis

**GENERAL REQUIREMENTS**

| | |
|---|---|
| LPSC 6313 Economic Analysis for Law, Policy, and Planning | 3 SH |
| LPSC 7305 Research and Statistical Methods | 3 SH |
| LPSC 7311 Strategizing Public Policy or POLS 7203 Techniques of Policy Analysis | 3 SH |
| POLS 7318 Techniques of Program Evaluation or PPUA 6205 Research Design and Methodology | 3 SH |
| **PROGRAM TOTAL CREDITS** | **12.0 SH** |

## Graduate Certificate in Nonprofit Sector, Philanthropy, and Social Change

Program launches in spring 2015

**GENERAL REQUIREMENTS**

| | |
|---|---|
| POLS 7308 Management of Nonprofit Organizations | 3 SH |
| POLS 7309 The Nonprofit Sector in Civil Society and Public Affairs | 3 SH |
| Two approved electives | 6 SH |
| **PROGRAM TOTAL CREDITS** | **12.0 SH** |

## Graduate Certificate in Urban Informatics

Program launches in spring 2015

**GENERAL REQUIREMENTS**

| | |
|---|---|
| PPUA 5262 Big Data for Cities—Visual Data Mining Strategies | 3 SH |
| PPUA 5263 Geographic Information Systems for Urban and Regional Policy | 3 SH |
| PPUA 5266 Designing Participatory Urban Infrastructures | 3 SH |
| Approved elective | 3 SH |
| **PROGRAM TOTAL CREDITS** | **12.0 SH** |

www.northeastern.edu/socant

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LINDA BLUM, PHD
*Graduate Program Director*

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617.373.4940
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*Graduate Programs Contact*
Joan Collins, *Administrative Coordinator*

*Graduate Programs Booklet*
www.northeastern.edu/socant/graduate

The Department of Sociology and Anthropology at Northeastern University offers MA and PhD degrees in sociology within a flexible program attractive to students interested in both academic and nonacademic careers. The MA program has two tracks—one academic (sample curriculum displayed below) and one applied (in which the student substitutes an additional research methods course for one of the required courses in social theory). Students pursuing the PhD earn the MA degree (academic version) en route to completing the doctorate, unless they earned the MA in sociology elsewhere. The program seeks to provide students with the theoretical foundation and research skills needed to engage in a career in teaching and research, in the public sector, or in industry. Thirty-two faculty members bring a wide range of substantive interests, organized around four concentration areas: the sociology of gender; globalization; environment and health; and urban sociology. Apart from these formal areas of concentration, the department has extraordinary strengths in inequality and social movements.

The Department of Sociology and Anthropology is a founding unit of Northeastern's School of Public Policy and Urban Affairs, which is dedicated to providing advanced research opportunities in a multidisciplinary environment. The department also maintains strong ties with the Brudnick Center for the Study of Conflict and Violence; the Women's, Gender, and Sexuality Studies program; the Kitty and Michael Dukakis Center for Urban and Regional Policy; the Northeastern Environmental Justice Research Collaborative; the Social Science Environmental Health Research Institute; and the Law and Public Policy program.

## Academic Standing/Progress
Evaluation of student progress is an essential feature of our graduate program. The fundamental purpose of the evaluation is to ensure that students complete the program in the most rewarding and successful way possible, by achieving the highest standards of excellence in their development as scholars. Such evaluation offers students substantive guidance about their projects and reminders to be timely in the completion of their work. In short, faculty members are committed to periodic evaluation as a constructive process.

The primary instrument for periodic evaluation is the annual Graduate Student Academic Progress (GSAP) process, which occurs annually at the end of the spring semester. The GSAP process considers the student's entire record—especially GPA, the quality of written work, and performance in core courses. After the GSAP meeting, the Committee on Graduate Studies (COGS) will either approve a graduate student's progress or, in rare cases when the record supports it, make a recommendation that the student be withdrawn from the program (see below).

Students are advised to periodically meet with their advisor to discuss their progress, accomplishments, and goals and plans for the next year.

The following specific criteria are used for evaluation:

1.  Course grades. Attention is given to both the student's distribution of grades and the overall GPA.
2.  Performance (and progress) on qualifying exam, comprehensive exams, and on the dissertation. The department will consider the quality of these aspects of the student's work and the timeliness with which they are completed.
3.  Incompletes. Carrying Incompletes, and/or a recurrent failure to complete course work on time, will be considered a cause for concern.
4.  Other factors. The faculty may also consider additional factors, including: a student's performance in core seminars, his or her ability to respond thoughtfully to faculty commentary on written work, the breadth of a student's course of study, and compliance with the university's code of ethics.

Ideally, the faculty will reach a consensus evaluation of each student and, particularly, of those who are having difficulties. The faculty may vote to initiate a set of procedures designed to steer a student who is having problems back toward satisfactory progress and/or toward a clear assessment of his or her fit with the program. If, after a careful review, the student's progress is deemed unsatisfactory, COGS may be compelled to recommend that he or she be withdrawn from the graduate program. See also the university's policy on academic standing on page 23 ("Minimum Cumulative Grade-Point Average").

## Doctoral Degree Candidacy
Students must have an MA degree either outside Northeastern or at Northeastern; completion of 24 semester hours of required course work beyond the MA, including Advanced Research Methods (or equivalent as determined by the graduate committee); and pass the qualifying examination (taken by the end of the first year in the program) and pass the candidacy examination (two comprehensive exams, taken after completion of the PhD course work).

## MA in Sociology

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| SOCL 7200 Foundations of Social Theory 1 | 3 SH |
| SOCL 7211 Research Methods | 3 SH |
| Elective | 3 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| SOCL 7201 Foundations of Social Theory 2 | 3 SH |
| SOCL 7210 Statistical Methods of Sociology | 3 SH |
| Elective | 3 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Two electives | 6 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| Two electives | 6 SH |

### PROGRAM TOTAL CREDITS          30.0 SH

## PhD in Sociology

### YEAR 1, FALL SEMESTER

| | |
|---|---|
| Advanced methods course | 3 SH |
| Two electives | 6 SH |

### YEAR 1, SPRING SEMESTER

| | |
|---|---|
| Advanced methods course | 3 SH |
| Two electives | 6 SH |

### YEAR 2, FALL SEMESTER

| | |
|---|---|
| Two electives | 6 SH |

### YEAR 2, SPRING SEMESTER

| | |
|---|---|
| SOCL 8960 Exam Preparation—Doctoral | 0 SH |
| Comprehensive examination | 0 SH |

### YEAR 3, FALL SEMESTER

| | |
|---|---|
| SOCL 9986 Research | 0 SH |
| Comprehensive examination | 0 SH |

### YEAR 3, SPRING SEMESTER

| | |
|---|---|
| SOCL 9990 Dissertation | 0 SH |

### YEAR 4, FALL SEMESTER

| | |
|---|---|
| SOCL 9990 Dissertation | 0 SH |

### YEAR 4, SPRING SEMESTER

| | |
|---|---|
| SOCL 9996 Dissertation Continuation | 0 SH |

### GENERAL REQUIREMENTS

| | |
|---|---|
| Annual review | 0 SH |
| Two comprehensive examinations | 0 SH |
| Dissertation proposal defense | 0 SH |
| Doctoral dissertation | 0 SH |

### PROGRAM TOTAL CREDITS          24.0 SH

INTERDISCIPLINARY PROGRAMS

## Graduate Certificate in Data Science

### GENERAL REQUIREMENTS

| | |
|---|---|
| Introduction to Computational Statistics | 4 SH |
| Information Design and Visual Analytics | 4 SH |
| Introduction to Data Mining/Machine Learning | 4 SH |
| Collecting, Storing, and Retrieving Data | 4 SH |

### PROGRAM TOTAL CREDITS          16.0 SH

For more information on the certificate, please refer to the program's website: www.northeastern.edu/policyschool/education/graduate-certificates.

## PhD in Network Science

For information on the PhD in Network Science, please refer to the College of Science's interdisciplinary section on page 232 or the network science program website at www.northeastern.edu/networkscience.

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# *Code of Student Conduct*

**www.osccr.neu.edu**

Adopted November 12, 1971; last revised in March 2013. The purpose of the Code of Student Conduct is to set forth the university's expectations of behavior that promote the safety and welfare of the Northeastern University community. The university seeks to provide a supportive environment that is conducive to learning, the pursuit of truth, the exchange of knowledge, the intellectual development of students, and the general good of society. In those instances where violations of the behavioral expectations occur, Northeastern University has developed policies and procedures to protect the interests of members of the university community, individually and collectively.

## HONOR CODE

On my honor, I pledge to uphold the values of honesty, integrity, and respect that are expected of me as a Northeastern student .

## APPLICABILITY OF THE CODE ON AND OFF CAMPUS/ JURISDICTION OF THE CODE

The Code of Student Conduct applies to all registered Northeastern University students at all levels of study, in all colleges and programs, locally or abroad, who are enrolled at Northeastern University, as well as all student groups and organizations.

The Code of Student Conduct applies on campus as well as off campus. The university sets guidelines for the behavior of its students. The guidelines are established to promote student conduct that does not adversely affect the educational mission of the university or its relationship with the surrounding community, sister institutions, or members of the university community. Student behavior occurring off campus in violation of the Code or local, state, federal, or host country laws and that could affect the educational mission of the university or its relationship with the surrounding community  may subject students to discipline as noted in the Code of Student Conduct.

Violations of the Code of Student Conduct are handled through the Office of Student Conduct and Conflict Resolution. When a student withdraws or takes a leave of absence from the university after engaging in conduct that may violate any of the university's policies, rules, regulations, or standards of conduct, but before the alleged violation has been adjudicated through the conduct process, a hold will be placed on the student's record and the student will be banned from campus. The hold will prevent a student from reenrolling at the university until the alleged violations have been resolved.

## GENERAL EXPECTATIONS

As citizens and as members of an academic community, students enjoy the same basic privileges and are bound by the same responsibilities as all citizens. The campus is not a sanctuary from the general law. Northeastern University assumes that all students will abide by the policies, rules, and regulations of the university and by state, local, federal, and host country laws. The university reserves the right to inform police or other appropriate authorities when student behavior appears to violate criminal laws.

It is recognized that all members of an academic community, individually and collectively, have a right to express their views publicly on any issue; however, the university insists that all such expressions be peaceful and orderly; conducted in a manner consistent with the Code and university policies; and in such a way that university business and respectful academic discourse are not unduly disrupted. Moreover, students must clearly indicate that they are speaking as individuals and not for or on behalf of the university community.

Students are expected to display proper respect for the rights and privileges of other members of the university community and their guests. The atmosphere in classes, laboratories, and residence halls must be free from any sort of undue disruption. Furthermore, students must follow the reasonable directions of university personnel.

Students are expected to be honest and forthright in their course of dealings with the university. Falsification, distortion, or misrepresentation of information to the university or university officials will result in being charged with the appropriate violation of the Northeastern University Code of Student Conduct.

The Code of Student Conduct has been developed with the assistance of students, faculty, and staff of the university.

## STUDENT EXPECTATIONS

Each Northeastern student can expect:

1.  Written notification of any and all alleged Code of Student Conduct violations within a reasonable period of time from the filing of the complaint or incident report pertinent to those allegations. This notification will state the date, time, and place of the administrative hearing or prehearing meeting, in the case of a Student Conduct Board hearing. The date, place of incident, and the name of the complainant will also be included.

2. The opportunity to reschedule a hearing date up to one (1) business day prior to the hearing, due to academic or other reasonable* conflicts.
3. To request that an administrative hearing be suspended after the presentation of evidence should the student desire to reevaluate responsibility for the charges.
4. The hearing may proceed without the student's presence, consistent with the Code of Student Conduct.
5. To receive the decision letter within a reasonable* period of time from the conclusion of all hearings pertinent to the case.

*Reasonable as determined by OSCCR

In cases where a Student Conduct Board hearing is scheduled, the following procedural rights apply, as outlined in the Code of Student Conduct:

1. To review, in writing, all written information pertinent to the case a minimum of one (1) business day prior to the designated Student Conduct Board hearing date and to rebut unfavorable inferences that might be drawn from such statements during the Student Conduct Board hearing.
2. To a hearing with no fewer than five (5) Student Conduct Board members present. A student may waive this right if the student wishes to have a hearing convened with no fewer than three (3) Student Conduct Board members.
3. To request the removal of any number of names from the list of prospective conduct board members, with proper notification and explanation.
4. To question witnesses, to produce witnesses on the student's own behalf, and to present substantiating information and written personal statements on the student's own behalf. Witnesses are defined as individuals who were at the incident in question and/or have information pertinent to the incident in question.
5. To choose an advisor, as outlined within the Structure and Procedure section of the Code of Student Conduct, to serve as a guide throughout the Student Conduct Board process.
6. To choose to appeal any decision within five (5) business days of the date of the decision letter on the basis of: procedural error, new information that has arisen that was not available at the time of the hearing, or review of the imposed sanctions based on extraordinary circumstances.

Each Northeastern student has the responsibility:

1. To review and abide by the university's Code of Student Conduct and university Policies and Procedures.
2. To maintain their University email address† and respond to any Northeastern University notifications sent directly to the individual student .
3. To maintain their local address information and update it at the beginning of each semester when they are an active student.
4. To represent the university appropriately, both on and off campus.

5. To respect the differences of individuals and treat others in a civil and respectful fashion.
6. To carry their university ID with them at all times and present it to officials when requested.

†Northeastern considers and assumes any communications sent to a student's official Northeastern email account to be received by the student.

## DECISION-MAKING AUTHORITY

1. The vice president for student affairs is responsible for the overall administration of the Code of Student Conduct as well as the Student Conduct Process. Under the oversight of the vice president for student affairs, the director in the Office of Student Conduct and Conflict Resolution has been charged with the day-to-day responsibility for administering the Code of Student Conduct and the Student Conduct Process.
2. The Student Conduct Board and designated hearing administrators are authorized to take official disciplinary actions in accordance with the policies, regulations, and sanctions contained in the Code of Student Conduct and other policies and regulations of the university.
3. The policies and procedures outlined in the Northeastern University Code of Student Conduct will at all times govern the adjudication of matters relating to the Code.

## STANDARDS OF CONDUCT

What follows is a listing of the university policies, rules, and regulations that prescribe the standards of conduct the university requires of students. Students are required to become familiar with these policies and must comply with them. Violations of any of these policies will be handled in accordance with the appropriate university procedure.

The use and/or abuse of alcohol and/or drugs will not be considered a mitigating circumstance for any violation of the Code of Student Conduct. Rather, individuals may be additionally charged with the appropriate alcohol or drug violation.

Violations are listed in alphabetical order; the order of violations is not indicative of the seriousness of each violation. All violations are assigned a level representing the degree of seriousness of the violation. That level is listed next to each violation. It should be noted that while the level represents the degree of seriousness of the violation, other factors might be taken into consideration in applying sanctions. Such factors include, but are not limited to, the nature of the violation; severity of the damage, harm, or injury; or the student's past conduct history.

Experience demonstrates that inappropriate behavior will often involve violations of more than one standard of conduct listed in this Code. *Repeated violations, multiple violations, or the severity of the misconduct may heighten the university's response and may yield sanctions beyond those discussed in this Code or beyond the suggested seriousness listed in level definitions. Such*

*heightened response could include suspension or expulsion from the university and/or cancellation of the Residence Hall and Dining License Agreement. In addition, students may incur monetary fines of up to $200.* Information regarding specific sanctions can be found on beginning on page 280.

The university reserves the right to notify parents when a student has been referred to the Office of Student Conduct and Conflict Resolution (OSCCR).

The definition of each level follows:

**Level I:** Sanctions for the first violation of Level I are up to and including expulsion.
**Level II:** Sanctions for the first violation of Level II are up to and including deferred suspension.
**Level III:** Sanctions for the first violation of Level III are up to and including probation.
**Level IV:** Sanctions for the first violation of Level IV may be a written warning but can be up to and including probation.

## Abuse of Others

1. Bullying, defined as the repeated use of written, verbal, or electronic expression or communication or a verbal, electronic, or physical act or gesture or any combination thereof, that (i) causes or is intended to cause physical, psychological, and/or emotional harm to another person or damage to property; (ii) places a university community member in reasonable fear of harm to or damage to property; or (iii) creates a hostile, threatening, intimidating, humiliating, or abusive environment for a university community member or substantially interferes with academic performance, opportunities, or benefits. For purposes of this section, bullying may include, but is not limited to: social exclusion or isolation, humiliation or degradation, threats, intimidation, harassment, stalking, theft and/or damage/destruction of property, or the perpetuation of any of the conduct listed in this section by inciting, soliciting, or coercing others to demean, embarrass, humiliate, or cause emotional, psychological, or physical harm to a member of the university community. *(Level II or Level III*)*

2. Domestic violence, defined as the intentional infliction of physical, sexual, or psychological harm on a current or former roommate, partner, or spouse . Domestic violence includes dating, intimate partner, and relationship violence . *(Level II or Level III*)*

3. Harassment, defined as repeated and/or continuing unwanted behavior, coercion, or intimidation of an individual or group, either directly or indirectly, or on the basis of race, color, religion, religious creed, genetics, sex, gender identity, sexual orientation, age, national origin, ancestry, veteran, or disability status. *(Level II or Level III*)*

4. Verbal, written, graphic, or electronic abuse. *(Level II or Level III*)*

*The level of sanctioning will be dependent upon the nature of the incident with respect to the above description.

## Academic Integrity
As defined in the Academic Integrity Policy (page 30). *(Level II)*

## Aiding and Abetting
Knowingly aiding, abetting, or cooperating in an act or action that violates the Code of Student Conduct. A student may be held responsible as though the student was a direct participant in the violation, even if information indicates the student was not directly involved in the perpetration of the violation. *(Level I– Level IV*)*

*The level of the sanctioning for the student present may depend upon the actual violation committed.

## Alcohol Policy
The university expects that all of its students, whether on or off campus, abide by the law and abide by university regulations concerning alcohol and drug use. Where a student engages in conduct off campus that violates university regulations concerning alcohol and drug use and such violation results in behavior that, in the university's sole judgment, is destructive, abusive, or detrimental to the university's interests, the university's conduct process shall apply and such matters will be processed accordingly.

1. A person under the age of twenty-one is prohibited from being in the presence of alcoholic beverages in the residence halls, with the following exception: an individual under the age of twenty-one who has a roommate of legal drinking age may be in the presence of an open container of alcohol in the room only if the roommate of legal drinking age is also present. Non-roommates who are under the age of twenty-one may not be in the room when alcohol is being consumed by the of-age roommate. *(Level IV)*

2. A person under the age of twenty-one is prohibited from possessing empty alcohol containers. *(Level IV)*

3. No postings, announcements, promotions, or ticket sales may be made, placed, or distributed on Northeastern University– owned or –leased property for non-university-sponsored events at which alcohol will be served or consumed. *(Level IV)*

4. On-campus possession of a keg, beer ball, alcohol by the case, other central sources of alcoholic beverages, or other unauthorized quantities of alcohol is not permitted. Personal possession of alcoholic beverages is limited to one twelve-pack of beer (144 ounces/4.26 liters) or one-half gallon (64 ounces/1.89 liters) of wine or one pint (16 ounces/470 milliliters) of hard liquor. *(Level III)*

5. Possession or consumption of alcoholic beverages in locations or under conditions prohibited by university policy or by law. *(Level III)*
   a. A person must be of legal drinking age to possess or consume alcoholic beverages. In the United States, the legal drinking age is twenty-one.

b. An individual twenty-one years of age or older may possess and/or consume alcohol only in the student's residence hall room or in the residence hall room of another resident who is twenty-one years of age or older and present in the room, provided alcohol is permitted in that residence hall for students of legal age.

c. Any person under twenty-one years of age may not transport or carry alcohol.

d. Prohibited locations include, but are not limited to: university hallways, lobbies, lounges, stairwells, classrooms, studios, technical facilities, auditoriums, bathrooms, outdoor areas, vehicles, or any other public areas without authorization.

6. The possession or use of items that encourage heavy alcohol consumption is prohibited (examples could include alcohol funnels, AWOL [Alcohol Without Liquid] generators or vaporizers, etc.), regardless of age. *(Level III)*

7. Providing alcohol to anyone under the legal drinking age and/or allowing anyone under the legal drinking age to consume alcohol in on- or off-campus residences. *(Level II)*

8. Requiring the consumption of alcohol by someone as a condition of initiation or admission into, affiliation with, or continued membership or participation in any group or organization.

9. Distribution, sale, or manufacture of alcohol.* *(Level I)*
   a. Manufacturing alcohol on Northeastern University–owned or –leased property.
   b. Selling alcohol without a liquor license, including, but not limited to, the sale of cups and/or any other form of container for the distribution of alcohol.
   c. Distributing alcohol includes providing a central source or large quantity of alcohol.

*Distribution or sale of alcohol could result in a saction of at least suspension from the university.

## SANCTION GUIDELINES FOR VIOLATING THE ALCOHOL POLICY

The sanctions set forth below provide hearing administrators with a starting point for sanctioning cases involving alcohol. Depending on the information obtained through the hearing and the severity of the harm, the imposed sanctions may be enhanced or lessened. Please be advised that students found responsible for violating these regulations risk the cancellation of their Residence Hall License and Dining Agreement.

### First Violation
• Disciplinary probation
• Mandatory completion of an alcohol education program
• Fine of $100

### Second Violation
• Deferred suspension from the university
• Mandatory attendance at an alcohol/other drug education program
• Fine of $200

### Third Violation
• Suspension from the university
• Mandatory alcohol counseling to be completed off campus
• Permanent notation to student transcript

**A letter may be sent home to a parent/legal guardian in all cases where there has been a violation of the Alcohol Policy.**

## Bias-Related Incidents

Conduct prohibited by this Code, including, but not limited to, harassment, bullying, abuse of others, disorderly conduct, and vandalism, which is motivated in whole or part by prejudice toward an individual's or group's real or perceived race, color, religion, religious creed, genetics, sex, sexual orientation, gender identity, age, national origin, ancestry, disability, or veteran status. *(Level I)*

## Breaking and Entering and/or Theft

1. The unauthorized use of ATM, phone, or credit cards; checks; Northeastern University ID cards; or computer systems (this may include any violation of the university's Appropriate Use of Computer and Network Resources Policy on beginning on page 31).
2. Attempted or actual forcible access to property. *(Level I)*
3. Possession of stolen property. *(Level II)*
4. Attempted or actual theft of property, identity, or services. *(Level I)*

## Dangerous Weapons

Possession or use of items that could be used or are used to threaten another individual with physical harm. Those items include, but are not limited to, nunchaku (karate sticks), pepper spray or mace, switchblades, knives, fake guns, tazers, BB guns, fireworks, ammunition, explosive devices, or firearms, except under official supervision as part of a recognized student activity. *(Level I)*

## Disorderly Conduct

Conduct that is inappropriate, disorderly, or disruptive in nature. Examples include, but are not limited to, disruptive behavior in the classroom, public urination, yelling, use of profanity, behavior that a reasonable person would consider disorderly. *(Level III)*

## Disruptive Gatherings

Hosting a disruptive gathering, whether on or off campus. Examples include, but are not limited to, gatherings that result in a noise complaint and/or police response, those that are disruptive to neighbors in any way, excessive attendance beyond what is safe and/or reasonable. *(Level II or Level III*)*

*The level of sanctioning will be dependent upon the nature of the incident with respect to the above description.

## Drug Policy

1.  Knowingly being in the company of anyone who is using illegal drugs. *(Level IV)*
2.  Possession or consumption of illegal drugs; salvia divinorum; prescription medications belonging to another individual; or over-the-counter substances, nitrous oxide, or other available substances to "get high" or induce a mind-altering state. *(Level II)*
3.  Possession, use, manufacture, distribution, or sale of drug paraphernalia or other items used in preparing or consuming illegal drugs. *(Level II)*
4.  Promotion of illegal drugs. *(Level IV)*
5.  Distribution, sale, or manufacture of drugs (marijuana, mushrooms, prescription drugs, and so on).\* This includes the sharing of drugs, cultivation of drugs, and any other form of distribution or intention of distribution. *(Level I)*

\*Distribution, sale, or manufacture of illegal drugs could result in a sanction of suspension or expulsion from the university.

### SANCTION GUIDELINES FOR VIOLATING THE DRUG POLICY

The sanctions set forth below provide hearing administrators with a starting point for sanctioning cases involving drugs. Depending on the information obtained through the hearing and the severity of the harm, the imposed sanctions may be enhanced or lessened. Please be advised that students found responsible for violating these regulations risk the cancellation of their Residence Hall License and Dining Agreement.

***First Violation***
• Deferred suspension from the university
• Mandatory attendance at a drug education program
• Fine of $200

***Second Violation***
• Suspension from the university
• Mandatory drug counseling to be completed off campus
• Permanent notation to student transcript

**A letter may be sent home to a parent/legal guardian in all cases where there has been a violation of the Drug Policy.**

## Endangering Behavior

Conduct demonstrating that the student constitutes a threat to self or others or to the proper functioning of the university, including, but not limited to, threats, excessive consumption, intoxication, bypassing security measures, dropping items from a window, and using any item to cause fear and intimidation and/or injury to another. *(Level II)*

## Excessive Consumption

Excessive consumption of alcohol is prohibited regardless of age. Being under the influence of and/or the abuse of drugs is prohibited. Behavioral symptoms frequently associated with excessive consumption or intoxication may include, but are not limited to, impaired motor-skill coordination, difficulty communicating, vomiting, glazed/red eyes, the smell of alcohol on one's breath, verbal and/or physical aggressiveness, destructive and/or disruptive behavior, and engaging in any behavior that may endanger oneself or others. *(Level III alcohol and/or drug)*

## Failure to Comply

1.  Failure to comply with or violation of the terms of an imposed disciplinary sanction.
2.  Failure to follow the reasonable directions of university officials (including public safety officers and faculty and staff at Northeastern), law enforcement agents, cooperative work assignment employers, or officials at other colleges and universities that are necessary for the proper conduct of the university and university community. *(Level III)*

## Fire Safety

Breaching campus fire safety or security through:

1.  Setting a fire (including charring, burning, lighting of papers, or any other act that could cause a fire), making a bomb threat, causing or creating a false alarm, or other such intentional or reckless conduct that causes harm or reasonable fear of harm to persons or property. *(Level I)*
2.  Misusing, tampering with, or damaging fire safety equipment (including alarm systems, alarmed fire safety doors, smoke detectors, or fire extinguishers). *(Level II)*
3.  Failure to vacate university buildings during or after a fire alarm. *(Level III)*
4.  Entering or reentering a building during a fire alarm. *(Level III)*

## Forgery

Forgery, alteration, or misuse of documents or records (including, but not limited to, parking permits, software and computer databases and/or systems, and/or email). *(Level I)*

## Gambling

On-campus gambling (the unlawful engaging in, playing, operating, or assisting in operating a game of chance for money or some other stake) or the sale of lottery or raffle tickets. *(Level IV)*

## Hazing

Hazing, as defined by Chapter 269 of the Massachusetts General Laws, or defined as follows: any action taken or situation created, whether voluntary or involuntary, for the purpose of initiation, admission into, affiliation with, or as a condition for continued membership in a group or organization that endangers the mental or physical health or safety of a student; creates risk of injury; causes mental or physical fatigue or distress, discomfort, embarrassment, harassment, ridicule, or intimidation; causes damage to or destruction of property; or that is a violation of law, university policy, or the Code of Student Conduct. Such activities include, but are not limited to, the following: striking another

student by hand or with any instrument; requiring or advocating alcohol or other drug use; late sessions/meetings that interfere with academic activities; tattooing, branding, or piercing; physical or psychological shocks; wearing of apparel in public that is embarrassing, humiliating, or degrading; or games/activities causing or resulting in fatigue, sleep deprivation, mental distress, panic, embarrassment, or humiliation. Activities that would not be considered hazing and therefore acceptable would include agreeing to maintain a specific GPA, comply with a dress code for a team/organizational function, participate in volunteer community service, participate in a team/organizational trip, take an oath, or sign a contract of standards. *(Level II)*

## Inappropriate Sexual Behavior/Sexual Violence

1. **Sexual Assault** (Level I)
   a. With penetration, defined as the oral, anal, or vaginal penetration by an inanimate object, penis, or other bodily part without consent, as defined below.
   b. Without penetration, defined as the unwanted touching of the intimate body parts of another (for example, breasts, buttocks, groin, genitals, or the clothing covering them without consent, as defined below).
2. **Sexual misconduct** is any unwanted act that is intended in a sexual manner or any unwanted touching of a body part not usually considered intimate. Examples include, but are not limited to, providing an unwanted back massage to another person; exposing one's genitals or other intimate body parts to a particular person or to the general public; repeated sexually charged verbal abuse related to one's gender; repeated obscene phone calls or mail; or the viewing, filming, photographing and/or recording in any manner or by any means transmitting and/or disseminating any recording of any type of sexual acts, partial or full nudity, inappropriate materials, sounds, or images of another person without the knowledge and consent, as defined below, of all parties involved. (Level II)

**CONSENT:** Appropriate sexual behavior requires consent from all parties involved. Consent means a voluntary agreement to engage in sexual activity proposed by another and requires mutually understandable and communicated words and/or actions demonstrating agreement by both parties to participate in all sexual activities.

Consent may never be given by minors (in Massachusetts, those not yet 16 years of age); mentally disabled persons; or those who are incapacitated as a result of alcohol or other drug consumption (voluntary or involuntary) or those who are unconscious, unaware, or otherwise physically helpless. Physical force, threats, intimidating behavior, duress, or coercion cannot be used to gain consent. A person who is incapacitated or intoxicated cannot give consent to sexual activity with that person. Incapacitation is a state where one cannot make a rational, reasonable decision because they lack the ability to

understand the who, what, when, where, why, or how of their sexual activities.

"Without consent" may be communicated by words and/or actions demonstrating unwillingness to engage in proposed sexual activity.

Additional clarifying notes for consent:

- Consent is mutually understandable when a reasonable person would consider the words and/or actions of the parties to have expressed a mutually understandable agreement between them to do the same thing, in the same way, at the same time, with one another.
- In the absence of mutually understandable words and/or actions, it is the responsibility of the initiator, or the person who wants to engage in the specific sexual activity, to make sure to obtain consent from the partner(s); both parties may be initiators at different points of sexual activity; a person's initiation of a sexual act constitutes consent to that act but not necessarily to subsequent acts.
- Consent to sexual activity may be withdrawn at any time, as long as the withdrawal is communicated in mutually understandable words and/or actions, and all sexual activity must cease.
- The person who is the object of sexual advances is not required to physically or otherwise resist.
- Silence, previous sexual relationships or experiences, and/or a current relationship may not, in themselves, be taken to imply consent.
- Use of alcohol or other drugs by the charged student does not mitigate a violation of the Inappropriate Sexual Behavior Policy.
- Coercion is pressure for unwanted sexual activity. When someone makes clear that they do not want to go past a certain point of sexual activity, continued pressure beyond that point may be considered coercive.

## Inappropriate Identification

1. The manufacturing, production, and/or distribution of any fake identification. *(Level I)*
2. Use of identification other than your own or possession of a false or altered ID. *(Level III)*
3. Representing yourself as someone other than who you are. *(Level III)*
4. Impersonating a university official. *(Level III)*

## Misrepresentation of Information

Falsification, distortion, or misrepresentation of information to the university or its officials (including public safety officers and faculty and staff at Northeastern), law enforcement agents, cooperative work assignment employers, or officials at other colleges and universities that is intended to mislead in investigations or administrative processes or could adversely affect the mission of the university. *(Level III)*

## Misuse of Electronic Resources

Misuse of electronic systems or methods (for example, email, "hacking," and so on) to steal, misrepresent, threaten, harass, or bully (including online aggression or cyberbullying) or violations of the Appropriate Use of Computer and Network Resources Policy (page 31) and/or any other computer or system use. *(Level III)*

## Noise

Noise disturbances in residence halls, on campus, or in neighborhoods. *(Level IV)*

## Physical Abuse

Physical abuse of others, including, but not limited to, fights and/or injury caused by endangering behavior. *(Level I)*

## Retaliation

Any intentional or attempted act against a person who in good faith makes a report, serves as a witness, or participates in an investigation or hearing regarding a violation of the Code of Student Conduct or other university policy . *(Level III)*

## Rioting

Rioting, defined as inciting, participating in, or encouraging any disturbance for purposes of committing any action that presents a clear and present danger to self or others, causes physical harm to persons, or vandalism to or destruction of property. *(Level I)*

## Stalking

Stalking, defined as a willful and/or malicious pattern of conduct or series of acts directed at a specific person, which seriously alarms or annoys that person and would cause a reasonable person to suffer substantial emotional distress . Examples of stalking include, but are not limited to, conduct, acts, or threats conducted in person or by mail, phone, electronic communication, or social media . *(Level II)*

## Unauthorized Access

Unauthorized access or entry to, into, or onto any property owned or operated by the university or any private or restricted property. *(Level II)*

## Unauthorized Use/Possession of Other's Property

Unauthorized use or possession of another's property. *(Level IV)*

## Unauthorized Use of University Identification Marks

Unauthorized use of the university's name or other identifying mark, including, but not limited to, postings, letterhead, websites, pamphlets, social media, etc. *(Level II)*

## University Guest Policy

Failure to control guests on campus or at university-sponsored events. Refer to the Residence Hall and Dining License Agreement and/or *A Guide to Residence Hall Living* for specific regulations regarding guests in residence halls. If a guest violates university policy, the host may be held accountable for actions of the guest. The level of sanctioning for the host may be dependent upon the nature of the incident(s). *(Level I– Level IV)*

## Vandalism

Destruction or defacement of public or private property. *(Level III)*

## Violation of *Guide to Residence Hall Living*

Failure to abide by the rules and regulations set forth for all on-campus students and stated in *A Guide to Residence Hall Living. (Level IV)*

## Violation of the N.U.*in* Program Supplemental Guide to Participant Conduct

Failure to abide by the rules and regulations set forth for all N.U.in participants and/or established in conjunction with N.U.in partner institutions . *(Level I–Level IV)*

## Violation of University Policies

Violation of any university policy, rule, or regulation published in hard copy or available electronically on the university website. *(Level IV)*

## SANCTIONS

Sanctions imposed for a responsible finding will be based on a consideration of the following factors:

1. Nature of the violation(s)
2. Severity of the damage, injury, or harm resulting therefrom
3. Student's past disciplinary record
4. Mitigating circumstances
5. Aggravating circumstances, which may include bias-motivation

The following list of sanctions is meant to be illustrative rather than exhaustive. The university reserves the right to create other sanctions as well as choose more than one sanction based on the nature of the misconduct. The university's sanctions include:

1. Expulsion, which is the permanent separation of the student from the university. Students are permanently banned from entering all university property and prohibited from participating in any university-sponsored activities. A permanent notation, "Withdrawn Expelled (WE)," will appear on the student's transcript.
2. Suspension, which is the separation of the student from the university for a specified period of time, after which the

student is eligible to return. Conditions for readmission may be specified. During the period of suspension, students are banned from entering all university property, may not live in university housing, and are prohibited from participating in any university-sponsored activities. Students are expected to adhere to all university policies while on suspension and will be held accountable for any violations during the period of suspension. Students will not be granted credit for any academic work during the period of suspension (including a cooperative work assignment). A permanent notation, "Withdrawn Disciplinary Action (WDA)," will appear on the student's transcript. A student will continue on disciplinary probation for a specified period of time following the completion of deferred suspension .

3.  Deferred suspension, which is the most serious formal warning for violation of university rules/regulations that affects the student's good standing with the university. Students on deferred suspension may be limited in their ability to attend university programs, including those outside the country, during the period of deferred suspension. Deferred suspension is for a designated period of time. If the student is found responsible for violating any additional university rule/regulation during the period of deferred suspension, suspension may become effective and the student may be subject to additional sanctions for the additional violation. Restrictions and/or conditions regarding participation in university-sponsored activities may be imposed. Students on deferred suspension may be members of organizations but may not hold any elected or appointed position in any recognized student organization or group, represent the student body on any university committee, or serve the university in other leadership positions. A student will continue on disciplinary probation for a specified period of time following the completion of deferred suspension.

4.  Disciplinary probation, which is a formal warning for violation of university rules/regulations, affects the student's good standing with the university. Probation is for a designated period of time and includes the probability of more severe sanctions to be imposed if the student is found in violation of any university rules/regulations during the period of probation. Students on probation may be members of organizations but may not hold any elected or appointed position in any recognized student organization or group, represent the student body on any university committee, or serve the university in other leadership positions. Students may run for office while on probation, but they may not take office while still on probation.

5.  Letter of warning, which is a formal warning for violation of university rules/regulations, including a statement that continuation or repetition of prohibited conduct may result in more serious sanctions.

6.  Cancellation of the Residence Hall and Dining License Agreement, which results in the separation of the student from university residence facilities either permanently or for a definite period of time. Upon the cancellation of the agreement, the student is banned from entering all university residence facilities during the specified period of separation.

7.  Loss of ability to hold any office or position, either by election, petition, or appointment, in any recognized student organization or group for a specified amount of time.

8.  Loss of membership in teams, clubs, and/or officially recognized organizations.

9.  Loss of access to university buildings, facilities, or resources for a specified period of time or permanently.

10. Mandated service.

11. Restitution, which requires the student to make payment to the university or to specified individuals, groups, or organizations for costs incurred as a result of violation of university rules/regulations.

12. Loss of guest privileges on campus or in residence halls.

13. Submittal of letter of apology to complainant/victim.

14. Educational sanction, which may include attending a program, counseling, developing a program, writing a paper, or other educational sanction. Students may be charged a fee to attend an educational program.

15. Fines as outlined in the Code of Student Conduct.

The university also reserves the right to sanction any student found responsible, who pleads no contest, or is found guilty in a court of law for a violation of law. In these instances, disciplinary action will be administered through the Office of Student Conduct and Conflict Resolution and will not be processed by the Student Conduct Board.

Students who are suspended, expelled, or have their Residence Hall and Dining License Agreement canceled are subject to refund policies found in this handbook and the Residence Hall and Dining License Agreement refund policy found in *A Guide to Residence Hall Living*. In addition, students should review their financial aid and scholarship information to get clarification on those policies.

## Medical Amnesty Policy

In cases of a drug or alcohol emergency, the primary concern is the health and safety of the individual(s) involved. Students/organizations are strongly encouraged to call for medical assistance (617.373.3333) for themselves or for another student who they observe to be or feel is dangerously intoxicated/under the influence of drugs. If a student/organization calls on behalf of another student, that student/organization is required to remain with the student experiencing the emergency until medical assistance arrives. Neither the caller nor the student requiring medical assistance for an alcohol or other drug-related emergency will be subject to university disciplinary action for the violation of possession or

consumption of alcohol or drugs. This policy shall extend to the referring student/organization who called for medical assistance.

The student requiring medical assistance (and possibly the referring student(s)/organization) will receive medical amnesty and will have a confidential "check-in" meeting with a staff member from the Office of Prevention and Education at Northeastern (O.P.E.N.). As long as the student(s)/organization complies with all directives, there will be no disciplinary action taken related to the violation of possession or consumption of alcohol or drugs and no disciplinary record of the incident kept in the Office of Student Conduct and Conflict Resolution. This policy applies only to those students or organizations who seek emergency medical assistance in connection with an alcohol- or drug-related medical emergency and does not apply to individuals experiencing an alcohol- or drug-related medical emergency who are found by university employees (e.g., Northeastern University police, faculty, administrative staff, or residence hall staff) or where the reporting student(s)/organization did not stay with them.

The Medical Amnesty Policy is not intended to shield or protect those students or organizations that repeatedly violate the Code of Student Conduct. When repeated instances of drug or alcohol emergencies occur, the university reserves the right to take disciplinary action on a case-by-case basis regardless of the manner in which the incident was reported.

Medical amnesty applies only to alcohol- or other drug-related emergencies but does not apply to other conduct violations such as, but not limited to, assault, property damage, or distribution of illicit substances. If other violations occur, then a student will face disciplinary charges for those violations. The use or abuse of alcohol or drugs is not considered a mitigating circumstance for any other violations of the Code of Student Conduct.

Medical amnesty applies only to the university response to a medical emergency. Criminal/police action may still occur separately from the Office of Student Conduct and Conflict Resolution.

## Temporary Measures Administrative Directive

If a student or student organization is acting in such a way that may prove to be a violation of the Code of Student Conduct, the vice president for student affairs, or designee, may issue an administrative directive prohibiting the continuation of such behavior. It is not necessary for there to be current ongoing proceedings or even charges against the student or student organization when an administrative directive is issued. A designated university administrator may issue an administrative directive, according to the guidelines listed, when harm is deemed to be occurring and immediate action is deemed necessary. The Office of Student Conduct and Conflict Resolution will enforce the directive.

1. A designated university administrator may issue an administrative directive:
   a. to prevent a student from acting in specified ways that may result in violations of the Code of Student Conduct. The designated university administrator may also prevent a student or student organization from committing an act that would negatively impact or interfere with the Office of Student Conduct and Conflict Resolution proceedings or any other similar proceedings.
   b. to restrain a student or student organization from assuming or exercising privileges granted to them by the university, pending action, until a final judgment can be rendered.
2. In order to receive an administrative directive, the prohibited action must be within the jurisdiction of the administrator issuing such an order or such administrator's designee.
3. The designated administrator determines the date that the administrative directive expires, a period that initially will not exceed ten days. The ten-day period may be extended for cause or if the restrained party consents to an extension.
4. Administrative directives will specify the reasons for the directive, the act or acts that are prohibited, and the student or organization bound by such directive.

## Interim Suspension

The vice president for student affairs or his or her designee may impose an interim suspension to a student if sufficient facts indicate that the student presents a threat to the university community. In most instances, a student who has been interimly suspended from the university will be immediately banned from the university community. Interim suspension may include restrictions on class attendance, access into residence halls, and/or access to or use of university-owned or -operated property. The vice president of student affairs or his or her designee may remove the interim suspension .

Students who have been interimly suspended from the university will have a hold placed on their record and will need to make advance arrangements with the Office of Student Conduct and Conflict Resolution for approval any time they may need to be on campus to take care of university-related business during the period of the interim suspension.

In cases involving interim suspension, every effort will be made to conclude the hearing and obtain a decision from the hearing board within ten business days after the interim suspension was imposed.

## STRUCTURE AND PROCEDURE OF THE CONDUCT PROCESS

Any academic or administrative official, university staff member, faculty member, law enforcement agency, aggrieved member of the community, or student may file a complaint against any student or student organization for misconduct. The role of the Office of Student Conduct and Conflict Resolution is to resolve complaints or alleged violations of the Code of Student Conduct; it does not represent either party. From time to time, the office may conduct an investigation to gather information about the alleged violations.

### Initiating a Complaint

Any person* wishing to initiate a complaint regarding any Northeastern student may do so by submitting the following information, in writing, to the Office of Student Conduct and Conflict Resolution, if available:

1. Name(s) of the student(s) alleged to have violated the Code of Student Conduct
2. Description of the incident
3. Names and contact information of witnesses
4. Names and contact information of those filing the complaint

Incident reports can be submitted by clicking on the "Reporting an Incident" link found online at northeastern .edu/osccr.

*In general, the person who submits a complaint will serve as the complainant in the conduct process.

### Reviewing a Complaint

Once received, the director of the Office of Student Conduct and Conflict Resolution reviews the complaint to determine if a violation of the Code of Student Conduct allegedly occurred. If so, the case is assigned to a staff member. Once a case is assigned and necessary documentation is received, the staff member will determine the appropriate type of hearing to which the student will be assigned (administrative or Student Conduct Board). The student will receive notification via email identifying the incident, charge(s), complainant, and meeting time to discuss the resolution of the case.

### Hearing Options

Residential life staff will typically process incidents occurring in the residence halls or involving resident students. Hearings heard in residential life typically result in sanctions less than suspension.

The Office of Student Conduct and Conflict Resolution reserves the right to determine if the incident can be disposed of by alternative means of resolution, by mutual consent of the parties involved, or on a similar basis acceptable to the office. Such disposition shall be final and there shall be no subsequent proceedings.

*Please note:* The university reserves the right to resolve cases involving illegal use and/or distribution of drugs, or cases where the safety of the university community is judged to be at risk, administratively rather than through the Student Conduct Board, if necessary, to expediently respond to such violations.

### ADMINISTRATIVE HEARING

When the severity of the incident would not result in suspension or expulsion from the university, the student(s) involved will attend an administrative hearing with a hearing administrator from either the Office of Student Conduct and Conflict Resolution or residential life.

1. Notification: The charged student is emailed an administrative hearing notice to the student's university email account, which notifies the student of the alleged violation(s), the date of the incident, the location of the incident, and the name of the complainant. The email also notifies the student of the date and location of the hearing. If the student is unable to attend the hearing due to an academic or other reasonable conflict, the student must contact the hearing administrator no later than one (1) business day prior to the hearing date to request the hearing be rescheduled.
2. Hearing: In an administrative hearing, the hearing administrator and student meet one-on-one to discuss the incident resulting in the student's attendance at the hearing. The hearing administrator reviews the documentation concerning the incident with the student and the student provides an account of the incident. Third parties, including, but not limited to, witnesses, lawyers, parents, guardians, and advisors, are not permitted to attend an administrative hearing. The student can present written statements from witnesses, however. The student may request that the administrative hearing be suspended for a brief and agreed-upon amount of time after the presentation of evidence should the student desire to reevaluate responsibility for the charges. Based on a review of the information available (which may be delayed if continued review of the incident is required for a decision), the hearing administrator determines if the student is responsible for the alleged violation(s) by using a preponderance of the information or a "more likely than not" standard of proof. If the student is found responsible, the hearing administrator renders a sanction(s).
3. Failure to appear: If a student fails to appear for the scheduled meeting, then the hearing administrator has the option to dismiss the action with or without prejudice to either party, set a new hearing date, or make a decision based on the information available.
4. The decision letter: After the hearing administrator makes a determination and applies necessary sanctions, the student will receive a decision letter via email to the student's university email account. The letter will include the rationale for the finding(s), sanctions (if applicable), and information on the appeal process (if applicable). Unless otherwise noted in a student's records, the university reserves the right to notify parents in the outcome of all cases.

<div style="background-color:red; color:white">

### STUDENT CONDUCT BOARD HEARINGS
</div>

When the severity of the incident would result in suspension or expulsion from the university, or if the facts of the incident are so complex that an administrative hearing is not appropriate, the student(s) involved participate in a Student Conduct Board hearing.

## Composition of the Student Conduct Board Hearing

1. The Student Conduct Board shall hear cases involving undergraduate, graduate, online, law, and professional studies students and shall consist of student board members (resident and nonresident students). In cases involving graduate and professional studies students, a simple majority of the board members will be graduate and/or professional studies students. A hearing may go forward with less than a simple majority of graduate/professional studies students if the charged student(s) give written agreement to move forward.
2. The chair will be a student whose responsibilities during the hearing will be to act as presiding officer at hearings and in all voting procedures.
3. A hearing administrator from the Office of Student Conduct and Conflict Resolution will be present during the hearing and all deliberations. The hearing administrator's role is to ensure the procedures are followed during the hearing of all cases. The hearing administrator does not vote or represent either party.
4. The board will consist of five student members. A hearing may go forward with a board of three student members provided the charged student(s) give written agreement to move forward.

## Prehearing Meeting

The Student Conduct Board hearing begins with a prehearing meeting between the student and hearing administrator.

1. Notification: The charged student is emailed a prehearing meeting notice to the student's university email account, which notifies the student of the alleged violation(s), the date of the incident, the location of the incident, and the name of the complainant. The email also notifies the student of the date and location of the prehearing meeting. If the student is unable to attend the prehearing meeting due to an academic or other reasonable conflict, the student must contact the hearing administrator no later than one (1) business day prior to the prehearing meeting date to request that the prehearing meeting be rescheduled.
2. In the prehearing meeting, the hearing administrator reviews the incident and the charges against the student and shares the written documentation that forms the basis of the complaint. Third parties, including, but not limited to, witnesses, lawyers, parents, guardians, and advisors, are not permitted to attend a prehearing meeting. During the prehearing meeting, the hearing administrator explains the process for resolving the case to the student. The student can either elect to accept responsibility for the charges or contest responsibility for the charges and have the Student Conduct Board hearing scheduled. Upon request, a student can delay this decision for no more than two (2) business days after the prehearing meeting.

   During the prehearing meeting, the hearing administrator will share a list of current Student Conduct Board members. The charged student can request the elimination of an unlimited number of potential Student Conduct Board members from the hearing. An explanation for this request must be supplied and will be approved at the discretion of the hearing administrator.

   a. Accept responsibility: Students who accept responsibility for the charges are scheduled for an admitted responsibility meeting. At this meeting, a hearing administrator presents the student's acceptance of responsibility, along with the written documentation, to at least two members of the Student Conduct Board. The student may provide a verbal statement as well as additional written documentation to the board. The members of the Student Conduct Board then determine the sanctions.

   b. Contest responsibility: Students who contest responsibility for the charges are scheduled for a Student Conduct Board hearing at the next available hearing date by an administrator in the Office of Student Conduct and Conflict Resolution (see "Student Conduct Board Hearings Procedures" on page 285). A student's request for an extension must be supplemented by written documentation. An extension will be granted only under extreme circumstances and at the discretion of the Office of Student Conduct and Conflict Resolution.
3. Hearing advisors: Each party may have any one member of the university community serve as a hearing advisor. During the prehearing meeting, the hearing administrator will provide a list of members from the university community who have volunteered to serve as a hearing advisor and have been trained in the conduct process. Staff or faculty who are hired as a student's legal counsel outside the conduct process may not also act as a student's advisor in the university process. The charged student or complainant may act without an advisor if the student wishes.

   The role of the advisor includes:

   a. Assisting the advisee in understanding how the hearing will proceed.

   b. Assisting the advisee with understanding the resolution process.

   c. Attending the hearing (administrative, Student Conduct Board, or admitted responsibility), if the advisee prefers and if schedules permit.

   d. Providing emotional support before, during, and after a hearing. At no time is the advisor permitted to address the board directly.

The hearing advisor can request of the hearing administrator to adjust the hearing's time line should the case warrant such a change .

4. The Office of Student Conduct and Conflict Resolution reserves the right to refer all students from the same incident to a Student Conduct Board hearing for a resolution, regardless of an individual student's preference regarding acceptance or contesting of responsibility.

5. Should more than one student be involved in an incident going before a Student Conduct Board, then all students involved may be assigned to the same hearing.

## End-of-Semester Prehearing Meetings

Incidents that may result in suspension or expulsion and occur during the last two weeks of classes or finals may be resolved by one of the following:

1. An administrative hearing held prior to the end of the semester or

2. A Student Conduct Board hearing for the following semester.

Please note: The Office of Student Conduct and Conflict Resolution will take into account the severity of the incident when determining the most appropriate method of resolving end-of-semester cases .

## End-of-Semester Administrative Hearings

Incidents that occur during the last two weeks of classes or finals and will not result in suspension or expulsion may be resolved by one of the following:

1. An administrative hearing held prior to the end of the semester, or

2. An administrative hearing held immediately following the end of the semester . When distance precludes a student from having a face-to-face administrative hearing with a member of OSCCR, the case may be resolved via a Skype or phone hearing.

## Preparing for the Student Conduct Board Hearing

1. Attendance at hearings is limited to parties involved and university officials as deemed necessary by the board and/or by the Office of Student Conduct and Conflict Resolution. Attorneys, parents, or guardians are not permitted in Student Conduct Board hearings.

2. Written documentation: All parties involved have the opportunity to submit written documentation no later than two (2) business days prior to the hearing.

3. Witnesses may be presented by the complainant or the charged student provided that a witness list is submitted to the Office of Student Conduct and Conflict Resolution two (2) business days prior to the hearing. Live character statements are not permitted. A written request requiring the appearance of an individual before the Student Conduct Board may be issued by a staff member of the Office of

Student Conduct and Conflict Resolution if it is determined that the person's appearance is necessary in providing information for the board to make a decision regarding a student's case.

## Failure to Appear

If either party fails to appear when the case is called for a hearing, the Student Conduct Board or hearing administrator, in their sole discretion, may dismiss the action with or without prejudice to either party, set a new hearing date, or continue the hearing without that party present and/or represented. In the last instance, the board or hearing administrator may make decisions regarding responsibility and sanction the charged student as appropriate. In most cases, off-campus legal proceedings will not be grounds for delay. However, if either party has concerns about this, the party should communicate such concerns with the hearing administrator.

## STUDENT CONDUCT BOARD HEARING PROCEDURES

1. Presentation of information shall generally proceed as follows:
   a. Complainant's (complainant is the individual or the office that initiated a complaint to the Office of Student Conduct and Conflict Resolution) opening statement and perspective.
      • Questioning of complainant (charged student and conduct board members)
   b. Charged student's (a charged student is the individual(s) charged with a violation of the Code of Student Conduct) opening statement and perspective.
      • Questioning of charged student (complainant and conduct board members)
   c. Statements from complainant's witnesses.
      • Questioning of complainant's witnesses (complainant, charged student, and conduct board members)
   d. Statements from charged student's witnesses.
      • Questioning of charged student's witnesses (charged student, complainant, and conduct board members)
   e. Final questions from the Student Conduct Board.
   f. Complainant's closing statement.
   g. Charged student's closing statement, including any statement as to mitigating circumstances.
   h. The board may ask questions at any time during the hearing.

2. During the course of a hearing, all points of clarification shall be determined by the hearing administrator or a majority vote of the Student Conduct Board members.

3. Student Conduct Board proceedings are audio-recorded for the purpose of appeals only. Students who appeal may request to listen to the recording of the hearing in the Office of Student Conduct and Conflict Resolution. Recordings are not to be removed from the Office of Student Conduct and

Conflict Resolution. Recordings are destroyed upon expiration of the appeal period.

4. Determinations of responsibility are made based on a preponderance of information or a "more likely than not" determination and a simple majority vote by the board.

5. All records of the case will be confidential.

6. Members of the Northeastern University Police Department or other law enforcement agency may be requested to be present at hearings when the case warrants it.

7. Determinations to impose a Level I sanction for any violation other than a Level I violation shall require a simple majority vote.

8. Determinations made by a Student Conduct Board or an administrator for all hearings will be recommended to the director/vice president for student affairs, or designee, for final approval.

9. The decision letter: After the Student Conduct Board makes a determination and applies necessary sanctions, the student will receive a decision letter. The letter will include the rationale for the finding(s), sanctions (if applicable), and information on the appeal process (if applicable). The university reserves the right to notify parents of the outcome of cases, consistent with applicable law.

In cases involving sexual violence, abuse of others, physical abuse, and academic integrity, the administrator will notify both parties of the decision of the hearing via written communication. The letter to the charged student will include the rationale for the finding, sanctions (if applicable), and information on the appeal process (if applicable). Unless otherwise noted in a student's records, the university reserves the right to notify parents of the outcome of all cases. The letter to the complainant and/or the affected party will include the charged student's name, the violation committed, the sanctions that directly relate to the complainant, and information on the appeal process (if applicable). The rationale for the outcome will also be shared with all parties in cases that involve sexual violence, abuse of others, and physical abuse.

## PROCEDURES FOR STUDENT APPEALS

Students may appeal disciplinary actions based on the following:

a. The student asserts a procedural error that impaired the student's right to a fair opportunity to be heard.

b. Information has arisen that could not reasonably have been made available during the original hearing and may be sufficient to alter the original Student Conduct Board/officer's decision.

c. The student requests a review of the sanction(s) because of extraordinary circumstances.

Students may appeal disciplinary actions as follows:

1. Appeals of Student Conduct Board or administrative hearings must be made in writing, by the charged student, and received by the Office of Student Conduct and Conflict Resolution no more than five (5) business days after the receipt date of the decision letter. It is the student's responsibility to obtain a copy of the decision letter, as well as submit a rationale for the appeal letter that specifically addresses the reason for the appeal. The appeals process is primarily a paper process and will not typically involve a meeting with the charged student or other persons unless requested by the Appeals Board. The Appeals Board will review the paper appeal submitted by the appealing party, the documentation from the original case, and any other information deemed necessary by the Office of Student Conduct and Conflict Resolution and will make a decision. The audio recording of the original hearing (in the case of Student Conduct Board hearings) will be made available to the Appeals Board as well.

In cases involving sexual violence, sexual harassment, stalking, domestic violence, dating/intimate partner violence, abuse of others, physical abuse, and academic integrity, the charged student and the complainant have the right to an appeal based on the three reasons stated above.

If either party involved in cases involving sexual violence, sexual harassment, stalking, domestic violence, dating/intimate partner violence, abuse of others, or physical abuse files an appeal, the following procedure will take place:

a. The appeal will be reviewed by the director in the Office of Student Conduct and Conflict and passed on to the original hearing administrator.

b. The nonappealing party will be notified, provided with a copy of the appeal, and given the opportunity to submit a written response to the appeal within two (2) business days.

c. The Appeals Board will review all available documentation, including the documents provided for the original hearing and all appeal-related documents/statements submitted by all parties.

2. All conduct hearing appeals will be heard by the Appeals Board. Appeals Board members are individuals who were not involved in the original hearing. The Appeals Board will consist of three voting members (one of whom will be the chair). The board will be comprised of two representatives from Academic Affairs and Enrollment Management and Student Affairs and a Student Conduct Board member. The director of the Office of Student Conduct and Conflict Resolution or designee will serve as an ex-officio member of the Appeals Board.

3. The Appeals Board will take one of the following actions:
   a. Concur with original action.
   b. Refer the matter to the appropriate hearing body if based on a procedural error. In this case, the entire case may be reheard, as if it had not been heard before.

    c. Refer the matter back to the original hearing board if based on the grounds of new information. The original board; complainant; charged students; and, if required, witnesses, will be reconvened to review only the new information. The board will then render a decision based on the new information.

    d. Mitigate the sanctions. Students should understand that this option would be exercised only in rare circumstances. The university reserves the right to take any action necessary to corroborate the student's statements.

4. All decisions of the Appeals Board will be recommended to the vice president of student affairs or designee for final approval.

## MAINTENANCE OF DISCIPLINARY RECORDS

1. The university will permanently maintain the conduct records of those students separated from Northeastern by suspension or expulsion. A notation will be placed on the transcript of any student expelled from the university. A hold will be placed on the account of any student that withdraws prior to the resolution of disciplinary charges. Such hold may not be lifted until the pending charges are resolved.

2. The university will expunge the conduct records of those students who received sanctions other than suspension or expulsion three (3) years after the student's withdrawal or immediately upon their graduation date from Northeastern.

3. Students have the right to submit any documentation in their conduct file to amend a record they believe to be inaccurate or misleading.

## INTERPRETATION AND APPLICATION

1. Any question of interpretation or application of the Code of Student Conduct shall be referred to the director of the Office of Student Conduct and Conflict Resolution.

2. The Code of Student Conduct and its related procedures do not preempt or supplant any similar rules and regulations maintained by individual colleges, programs, departments, or offices. For example, student-athletes and members of student organizations must abide by the policies of the athletics department and the Center for Student Involvement, respectively. Any proceedings under such policies may run concurrently with those described herein.

3. Nothing in this handbook limits the university's right to take any action it deems necessary to comply with applicable local, state, and federal law.

# *Statements of Accreditation*

## ACCREDITATION

Northeastern University has maintained its status as a member in good standing of the New England Association of Schools and Colleges (NEASC) Commission on Institutions of Higher Education (CIHE) since it was awarded its initial accreditation in 1940. The university was last reviewed by NEASC in 2008 and will be reviewed again in fall 2018.

Northeastern University possesses degree-granting authority in Massachusetts, under the auspices of the Massachusetts Board of Higher Education.

| Program | Accrediting Agency |
| --- | --- |
| Northeastern University | New England Association of Schools and Colleges (NEASC) |

### Bouvé College of Health Sciences

| Program | Accrediting Agency |
| --- | --- |
| BS in Athletic Training | Commission on Accreditation of Athletic Training Education (CAATE) |
| MS in Speech-Language Pathology and Audiology | Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language-Hearing Association (ASHA), Massachusetts Board of Education* |
| BS in Nursing | Commission on Collegiate Nursing Education (CCNE) and Massachusetts Board of Registration in Nursing** |
| MS in Physician Assistant Studies | Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA) |
| MS in Nursing | Commission on Collegiate Nursing Education (CCNE) and Massachusetts Board of Registration in Nursing** |
| MS in Nursing in Anesthesia | Council on Accreditation of Nurse Anesthesia Educational Programs (COA); Commission on Collegiate Nursing Education (CCNE) and Massachusetts Board of Registration in Nursing** |
| Registered Nurse/BSN*** | Commission on Collegiate Nursing Education (CCNE) and Massachusetts Board of Registration in Nursing** |

| Program | Accrediting Agency |
| --- | --- |
| Post BS Doctor of Nursing Practice US Army Program in Anesthesia Nursing (USAGPAN) | Council on Accreditation of Nurse Anesthesia Educational Programs (COA) |
| DPT in Physical Therapy | Commission on Accreditation of Physical Therapy Education (CAPTE) |
| MS/MBA (two-year program) | Commission on Collegiate Nursing Education (CCNE) and Massachusetts Board of Registration in Nursing**; Commission on Collegiate Nursing Education (CCNE) and the Association to Advance Collegiate Schools of Business (AACSB International) |
| MS and CAGS in Applied Educational Psychology— School Psychology | Massachusetts Department of Education (DOE) and National Association of School Psychologists (NASP) |
| MS in Applied Educational Psychology— School Counseling | Massachusetts Department of Education (DOE) |
| AuD in Audiology | Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language- Hearing Association (ASHA), Massachusetts Board of Education* |
| MPH Master of Public Health in Urban Health | Council on Education for Public Health |
| PharmD | Accreditation Council for Pharmacy Education (ACPE) |
| PhD in Counseling and School Psychology | American Psychology Association (APA) |

### College of Arts, Media and Design

| Program | Accrediting Agency |
| --- | --- |
| Master of Architecture (Urban Architecture) | National Architectural Accreditation Board (NAAB) |

| Program | Accrediting Agency |
|---|---|
| **D'Amore-McKim School of Business** | |
| BS in Business Administration | AACSB International—The Association to Advance Collegiate Schools of Business |
| BS and MS in International Business | AACSB International—The Association to Advance Collegiate Schools of Business |
| MBA | AACSB International—The Association to Advance Collegiate Schools of Business |
| MS in Finance | AACSB International—The Association to Advance Collegiate Schools of Business |
| MS in Taxation | AACSB International—The Association to Advance Collegiate Schools of Business |
| MS in Accounting | AACSB International—The Association to Advance Collegiate Schools of Business |
| MS in Accounting/MBA | AACSB International—The Association to Advance Collegiate Schools of Business |
| MS in Finance/MBA | AACSB International—The Association to Advance Collegiate Schools of Business |
| MS in Technological Entrepreneurship | AACSB International—The Association to Advance Collegiate Schools of Business |
| **College of Computer and Information Science** | |
| BS in Computer Science | Computing Accreditation Commission of ABET (Accreditation Board for Engineering & Technology) |
| **College of Engineering** | |
| BS in Computer Engineering | Engineering Accreditation Commission of ABET |
| BS in Chemical Engineering | Engineering Accreditation Commission of ABET |
| BS in Civil Engineering | Engineering Accreditation Commission of ABET |
| BS in Electrical Engineering | Engineering Accreditation Commission of ABET |
| BS in Industrial Engineering | Engineering Accreditation Commission of ABET |
| BS in Mechanical Engineering | Engineering Accreditation Commission of ABET |

| Program | Accrediting Agency |
|---|---|
| **College of Professional Studies** | |
| AS and Certificate in Paramedic Technology | Massachusetts Department of Public Health, Office of Emergency Medical Services |
| BS in Finance and Accounting Management*** | AACSB International—The Association to Advance Collegiate Schools of Business |
| BS in Management*** | AACSB International—The Association to Advance Collegiate Schools of Business |
| BS and AS in Computer Engineering Technology | Accredited by the Technology Accreditation Commission of ABET, 111 Market Place Suite 1050 Baltimore, MD 21202-4012 Telephone: 410.347.7700 |
| BS and AS in Electrical Engineering Technology | Accredited by the Technology Accreditation Commission of ABET, 111 Market Place Suite 1050 Baltimore, MD 21202-4012 Telephone: 410.347.7700 |
| BS and AS in Mechanical Engineering Technology | Accredited by the Technology Accreditation Commission of ABET, 111 Market Place Suite 1050 Baltimore, MD 21202-4012 Telephone: 410.347.7700 |
| Education Programs in: | |
| Teacher of Biology, 8–12 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of Chemistry, 8–12 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of Earth Science, 5–8, 8–12 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of Mathematics, 5–8, 8–12 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of Physics, 8–12 | Massachusetts Department of Elementary and Secondary Education |
| Elementary Education, 1–6 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of English, 8–12 | Massachusetts Department of Elementary and Secondary Education |

| Program | Accrediting Agency |
| --- | --- |
| Teacher of Foreign Language: Spanish, 5–12 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of History, 8–12 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of Political Science/Political Philosophy, 8–12 | Massachusetts Department of Elementary and Secondary Education |
| Teacher of Students with Moderate Disabilities Pre-K–8, 5–12 | Massachusetts Department of Elementary and Secondary Education |
| MS in Leadership with Project Management | Project Management Institute's Global-Accreditation-Center |
| MS in Technology Commercialization | AACSB International—The Association to Advance Collegiate Schools |

**College of Social Sciences and Humanities**

| | |
| --- | --- |
| BS in Criminal Justice | Massachusetts Board of Education* |
| MS in Criminal Justice | Massachusetts Board of Education* |
| PhD in Criminal Justice | Massachusetts Board of Education* |
| Master of Public Administration | National Association of Schools of Public Affairs and Administration |

**School of Law**

| | |
| --- | --- |
| JD | American Bar Association Association of American Law Schools**** |

*The Massachusetts Board of Education approves (not accredits) programs.

**The Massachusetts Board of Registration in Nursing approves (not accredits) programs.

***Accredited under the aegis of the "sponsoring" full-time college.

****The Association of American Law Schools is an elected membership organization, not an accrediting body.

## STATE APPROVALS, AUTHORIZATIONS, AND EXEMPTIONS

Some states require that universities authorized to operate in their state make public disclosures. See the corresponding addendum at www.northeastern.edu/online/about-northeastern-online/state-agreements.php for up-to-date, state-prescribed regulatory information.

# *Institutional Calendars and Online Resources*

The online resources listed below supplement this catalog.

## INSTITUTIONAL CALENDARS

**University events:**
www.curry.neu.edu

**Academic calendars:**
www.northeastern.edu/registrar/calendars.html

## OTHER ONLINE RESOURCES

**Course descriptions:**
www.northeastern.edu/registrar/banner-catalog.html

**Class schedules:**
www.northeastern.edu/registrar/banner-schedule.html

**Campus maps:**
www.northeastern.edu/campusmap

The *Northeastern University Graduate Catalog* contains the university's primary statements about these academic programs and degree requirements, as authorized by the president or the Board of Trustees. For information about other academic policies and procedures; student responsibilities; student academic and cocurricular life; faculty rights and responsibilities; or general personnel policies, benefits, and services, please refer to the *Cooperative Education Student Handbook*, *Faculty Handbook*, and related procedural guides, as appropriate.

*Accreditation.* Northeastern University is accredited by the New England Association of Schools and Colleges, Inc.

*Delivery of Services.* Northeastern University assumes no liability for delay or failure to provide educational or other services or facilities due to causes beyond its reasonable control. Causes include, without limitation, power failure, fire, strikes by university employees or others, damage by natural elements, and acts of public authorities. The university will, however, exert reasonable efforts, when it judges them to be appropriate, to provide comparable services, facilities, or performance; but its inability or failure to do so shall not subject the university to liability.

The *Northeastern University Graduate Catalog* contains current information about the university calendar, admissions, degree requirements, fees, and regulations; however, such information is not intended and should not be regarded to be contractual.

Northeastern University reserves the sole right to promulgate and change rules and regulations and to make changes of any nature in its program; calendar; admissions policies, procedures, and standards; degree requirements; fees; and academic schedule whenever necessary or desirable, including, without limitation, changes in course content and class schedule, the cancellation of scheduled classes and other academic activities, and the substitution of alternatives for scheduled classes and other academic activities. In any such case, the university will give whatever notice is reasonably practical.

Northeastern University will endeavor to make available to its students a fine education and a stimulating and congenial environment. However, the quality and rate of progress of an individual's academic career and professional advancement upon completion of a degree or program are largely dependent on his or her own abilities, commitment, and effort. In many professions and occupations, there are also requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These requirements may change while a student is enrolled in a program and may vary from state to state or country to country. Although the university stands ready to help its students find out about requirements and changes in them, it is the student's responsibility to initiate the inquiry.

*Tuition Default Policy.* In cases where the student defaults on his/her tuition, the student shall be liable for the outstanding tuition and all reasonable associated collection costs incurred by the university, including attorneys' fees.

*Emergency Closing of the University.* Northeastern University posts emergency announcements, including news of weather-related closings, on its homepage, at www.northeastern.edu, and notifies members of the community individually through the NU ALERT system. In addition, the university has made arrangements to notify students, faculty, and staff by radio and television when it becomes necessary to cancel classes because of extremely inclement weather. AM stations WBZ (1030), WILD (1090), and WRKO (680), and FM station WBUR (90.9) are the radio stations authorized to announce the university's decision to close. Television stations WBZ-TV4, WCVB-TV5, and WHDH-TV7 will also report cancellations. Since instructional television courses originate from live or broadcast facilities at the university, neither the classes nor the courier service operates when the university is closed. Please listen to the radio or television to determine whether the university will be closed.

If a storm occurs at night, the announcement of university closing is given to the radio stations at approximately 6 a.m. Classes are generally canceled for that entire day and evening at all campus locations unless stated otherwise. When a storm begins late in the day, cancellations of evening classes may be announced. This announcement is usually made between 2 and 3 p.m.

*Equal Opportunity Policy.* Northeastern University does not discriminate on the basis of race, color, religion, sex, sexual orientation, age, national origin, disability, or veteran status in admission to, access to, treatment in, or employment in its programs and activities. In addition, Northeastern University will not condone any form of sexual harassment. Handbooks containing the university's nondiscrimination policies and its grievance procedures are available in the Office of Institutional Diversity and Inclusion, 125 Richards Hall. Inquiries regarding the university's nondiscrimination policies may be directed to:

Office of Institutional Diversity and Inclusion
125 Richards Hall
Northeastern University
Boston, Massachusetts 02115
617.373.2133

Inquiries concerning the application of nondiscrimination policies may also be referred to the Regional Director, Office for Civil Rights, U.S. Department of Education, 8th Floor, 5 Post Office Square, Boston, MA 02109-3921.

*Disability Resource Center.* The Disability Resource Center provides a variety of disability-related services and accommodations to Northeastern University's students and employees with disabilities.

Northeastern University's compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 are coordinated by the senior director of the Disability Resource Center. Persons requiring information regarding the Disability Resource Center should contact the center at 617.373.2675 or, if using TTY, via Relay 711.

*Family Educational Rights and Privacy Act.* In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it is necessary to do so. Specific details of the law as it applies to Northeastern are printed in the *Undergraduate Student Handbook* and *Graduate Student Handbook* and are distributed annually at registration for the university's colleges and graduate schools.

*Cleary Act.* Northeastern is committed to assisting all members of the university community in providing for their own safety and security. Information regarding campus security and personal safety, including topics such as crime prevention, university police law enforcement authority, crime reporting policies, crime statistics for the most recent three-year period, and disciplinary procedures, is available upon request from the Northeastern University Director of Public Safety, 360 Huntington Avenue, Boston, MA 02115, or by calling 617.373.2696.

*Mission Statement:*
To educate students for a life of fulfillment and accomplishment.
To create and translate knowledge to meet global and societal needs.

NU 08.28.14