Join the Next Generation of Engineering Leaders

Northeastern University
Graduate School of Engineering
Innovate. Experience. Lead.

The Graduate School of Engineering at Northeastern University is top-ranked, highly selective, and an R1 research institution. Combining rigorous, interdisciplinary academics with experiential learning and convergent research, we prepare the next generation of engineering leaders for the complex and ever-evolving challenges of the world to benefit society.

Our innovative approach to experiential education, including our flagship cooperative education program, and focus on multidisciplinary research has made us one of the top engineering schools in the world.

No. 1 in Cooperative Education/Internships
*U.S. News and World Report 2022*

Top 33 Engineering Graduate Schools
*U.S. News and World Report 2023*

No. 1 in Graduate Engineering Enrollment
*U.S. News and World Report 2023*
Personalize Your Path

Whether your goal is to advance in your career, transition to a new field, or conduct transformative research, Northeastern's graduate engineering programs can put you on your path to success. The College offers more than 45 Master of Science, Doctor of Philosophy and Graduate Certificates across five engineering departments, in traditional disciplines and applied areas of study. With flexible concentrations, tracks, and a variety of electives, you can personalize your experience to meet your individual goals.

Over 15 graduate certificates—in technology, business, and leadership—give you additional ability to customize your education. A certificate program can complement your graduate degree program or you can apply the course credits toward a Northeastern engineering master’s degree in the future.

Graduate Students Take Positions at Top Organizations

Sampling of Positions

Through an innovative curriculum you will be equipped with a solid foundation for technical and leadership positions in industry organizations, government laboratories, research laboratories, and educational institutions. Note: International students who graduate from STEM (Science, Technology, Engineering, Math) designated programs in the U.S. are eligible to apply for an optional practical training extension of 36 months. All of our College of Engineering graduate degree programs are STEM designated.

RESEARCH
National Institutes of Health
Boston Children’s Hospital
Brigham and Women’s Hospital
Draper Laboratory
NASA Jet Propulsion Lab
NASA Ames
MIT Lincoln Lab
Merck & Co.
Takeda
National Labs such as Argonne, Brookhaven, Oak Ridge, Pacific Northwest, Sandia
Pfizer
Children’s Hospital – Philadelphia
Massachusetts General Hospital
Novartis

ACADEMIA
University of California (Berkeley, Los Angeles, San Francisco)
Massachusetts Institute of Technology
Johns Hopkins University
Boston University
Rensselaer Polytechnic Institute
Harvard Medical School
Worcester Polytechnic Institute
University of Maryland
University of Minnesota
University of Wisconsin
University of Toronto
Baylor College of Medicine
University of Massachusetts, Lowell and Amherst
Columbia University

INDUSTRY
Google, Microsoft, Bristol-Myers Squibb,
Located in Innovation Hubs

Northeastern University’s College of Engineering in Boston, and with select engineering graduate degree programs also offered a regional campus locations such as Arlington, Virginia; Portland, Maine; Seattle; Silicon Valley in California; and Vancouver and Toronto, Canada; is part of a growing global university system for flexible learning and collaborative research.

111 YOUNG INVESTIGATOR AWARDS
64 NATIONAL SCIENCE FOUNDATION CAREER AWARDS

DAVID MEDINA, PHD’20
CHEMICAL ENGINEERING

David Medina, a chemical engineering doctoral student, made a pioneering discovery while working in the nanomedicine lab. He is using bacteria to produce nanoparticles that are particularly effective at killing whatever type of cell was used to create them, including strains of bacteria that are resistant to traditional antibiotics, as well as tumor cells. The research could provide a way to combat the rising number of antibiotic-resistant infections and also design nanoparticle-based cancer treatments.
Interdisciplinary Research

Northeastern is a top-tier research institution, rated with very high research activity by the prestigious Carnegie Classification of Higher Education. As such, you will have the opportunity to participate in many levels of interdisciplinary research working alongside highly accomplished faculty, in state-of-the-art facilities. You will also benefit from our collaborative partnerships, which span industry, government, research laboratories, hospitals, and academic institutions—locally and globally.

The College has 17 multidisciplinary research centers and university-wide institutes. Research addresses global challenges in health, sustainability, and security, as well as in enabling areas of focus, such as robotics and the internet of things.

A myriad of research opportunities are available. From regional poster competitions, travel scholarships, research assistantships, presenting at conferences, and being published in professional journals, you gain a rich education and real-world experience in your area of interest.

$82M EXTERNAL RESEARCH AWARDS (2021)

17 multidisciplinary research centers and institutes, funding by 8 federal agencies
Experience-Powered Learning

EXPERIENCE IS THE HEART OF A NORTHEASTERN EDUCATION.

Cooperative education. Our cooperative education program is world-renowned, integrating classroom study with professional work experience. With co-op, you have the opportunity to gain up to eight months of industry or research employment in your chosen field as part of the academic curriculum—giving you a competitive-edge upon graduation.

Find this and more graduate experiences on our YouTube channel

bit.ly/nucoegrad

NISHITA SIKKA
TELECOMMUNICATION NETWORKS

Nishita did her co-op at Volvo Group North American headquarters, gaining invaluable experience in automation, web development, and network infrastructure.

Students bring research to competitions and poster sessions

Aida Lopez Ruiz, MS in chemical engineering, won the award of People’s Choice and Top Poster for her poster titled “Silver Palladium and Silver Platinum Anti-Microbial and Anti-Cancer Agents” at the CaNCURE Poster Session, a partnership between Northeastern and Dana-Farber/Harvard Cancer Center, funded by the National Cancer Institute.

“I ended up choosing Northeastern because the program is well established, the location of Boston is a hub for the industry and the co-op program is really good for me as an international student because it helps me gain work experience in the U.S.”

Vineel Kondiboyina, MS Bioengineering
**Experiential PhD.** As a doctoral student, you can participate in Northeastern’s Experiential PhD program. It provides internships, fellowships, practicums, a leadership program, and special initiatives. You will benefit from challenging assignments inside partner organizations in industry, government, academia, and the non-profit sector. Additionally, the program offers the unique opportunity to conduct research outside of your primary research group.

Soroush Kamrava, mechanical engineering doctoral student, is researching ways to incorporate origami ideas with metamaterials to create objects that can collapse, absorb energy, and then spring back into place.

**Entrepreneurship.** With a supportive multidisciplinary research community designed to foster interdisciplinary collaboration across Northeastern and with industry, government, and academic partners, as well as a robust and entrepreneurial ecosystem across the university, several of our engineering faculty and students have launched spin-out companies from the research conducted in Northeastern labs. The college also offers an MS in Product Development through the Sherman Center for Engineering Entrepreneurship Education.

Chemical Engineering Associate Professor Edgar Goluch founded QSM Diagnostics to develop into a usable product what he discovered in his lab. The company’s sensor technology is able to diagnose bacterial infections in animals quickly, resulting in faster treatments.
With Northeastern, you join a diverse, vibrant, and welcoming community of talented students from around the world. The College of Engineering has over 60 student organizations in addition to university-wide activities and resources. There is a PhD Network, and opportunities to participate in research, numerous events and lectures, as well as regional and national competitions, to name a few.

Financial Assistance
As a full-time graduate student, you will be considered for various types of highly competitive funding awards based on merit, as well as prestigious fellowships.

Alumni with a bachelor’s degree from Northeastern are eligible for a Double Husky scholarship. The scholarship includes a 25% tuition waiver and an accelerated application process if enrolled in a full-time or part-time engineering master’s degree or graduate certificate program.

Admissions
There are multiple terms of entry. The graduate application process is entirely electronic. Some applicants are exempt from the GRE and/or TOEFL/IELTS/Duolingo English Exam (tests of English proficiency) requirements. Application fee waivers are offered periodically during special events and promotions.

Undergraduate degree requirement: Generally, applicants are required to hold (or be pursuing) an undergraduate engineering degree in a closely related major to their graduate program of interest. Some programs consider applicants with an undergraduate degree in science, mathematics, technology, computer science, and non-STEM fields.

View admissions details at coe.northeastern.edu/admissions
Accelerated Master’s Degrees

The College of Engineering offers a PlusOne program for currently enrolled Northeastern bachelor’s degree students who would like to earn a master’s degree in a condensed time period. Undergraduate students accepted into the PlusOne program use some of their undergraduate courses to fulfill master’s degree requirements. This enables them to earn a master’s degree typically in one year after completing their bachelor’s degree.

Visit coe.northeastern.edu/plusone

Academic Programs

MASTER OF SCIENCE
Advanced and Intelligent Manufacturing
Bioengineering
Chemical Engineering
Civil Engineering
Cyber-Physical Systems
Data Analytics Engineering
Data Analytics Engineering - 1 year experiential
Data Architecture & Management
Data Science
Data Science ALIGN
(bridge program for non-technical backgrounds)
Electrical & Computer Engineering
Electrical & Computer Engineering Leadership
Energy Systems*
Energy Systems Academic Link*
(bridge program for non-engineering backgrounds)
Engineering Management*
Engineering Management - 1 year experiential
Engineering and Public Policy
Environmental Engineering
Human Factors
Industrial Engineering
Information Systems
Information Systems - Bridge (for nontechnical backgrounds)
Internet of Things
Mechanical Engineering
Operations Research
Pharmaceutical Engineering
Product Development
Robotics
Software Engineering Systems

Sustainable Building Systems
Telecommunication Networks
Wireless and Network Engineering

DOCTOR OF PHILOSOPHY
Bioengineering
Chemical Engineering
Civil and Environmental Engineering
Computer Engineering
Cybersecurity
Electrical Engineering
Industrial Engineering
Interdisciplinary Engineering
Mechanical Engineering

GRADUATE CERTIFICATES
Blockchain and Smart Contract Engineering
Broadband Wireless Systems
Climate and Engineering
Data Analytics Engineering
Energy Systems*
Energy Systems Management*
Engineering Economic Decision Making*
Engineering Management*
Gordon Engineering Leadership
IP Telephony Systems
Lean Six Sigma*
Process Safety Engineering
Renewable Energy*
Software Engineering Systems
Supply Chain Engineering Management*
Sustainability Engineering

* Programs have online completion options
DEPARTMENT OF BIOENGINEERING

Bioengineering is a rapidly growing sector of the engineering profession. The aging of the U.S. population and the nationwide focus on health issues is carving a central role for bioengineers in advancing our understanding of physiological processes in health and disease, and improving methods and devices for diagnosis and treatment. Biomedical advances are increasingly dependent on quantitative approaches that are exemplified by our bioengineering program. Recent high-profile reports on the high rate of failures in artificial hips, along with the rising demand for more sophisticated and cost-effective medical equipment and procedures only furthers the demand for biomedical engineers.

Currently, the convergence of advanced materials, genome-wide informatics, and ever-expanding computational power is producing a strong foundation for design and fabrication of biomedical devices. Single cell technologies combined with additive manufacturing techniques are making possible novel tissue on-a-chip platforms for pharmaceutical testing.

Location: Boston and one concentration in Portland, Maine

bioe.northeastern.edu

Master of Science. The Bioengineering MS program is designed for students with different backgrounds, including students with a BS within the STEM fields; students who would like to strengthen their academic credentials or portfolio prior to applying to medical school; and professionals within biotech industry looking to strengthen their technical background, redirect their specific expertise, and broaden future employment opportunities. As a student, you may also participate in Northeastern’s cooperative education program, gaining up to eight months of professional work experience as part of the academic curriculum.

Concentrations
• Cell and Tissue Engineering
• Biomechanics
• Biomedical Devices and Bioimaging
• Systems, Synthetic, and Computational Bioengineering

Doctor of Philosophy. The PhD in Bioengineering program is designed to take advantage of Northeastern’s considerable strengths in multiple areas across both traditional and bioengineering programs. You have the opportunity to develop a course of study tailored to your interests or take advantage of one of four core research areas. If you have a BS degree and are interested in doctoral studies, you may apply directly to the PhD program; or pursue the MS degree first and then apply to the PhD subsequently.

Research Areas
• Imaging, Instrumentation, and Signal Processing
• Biomechanics, Biotransport, and MechanoBiology
• Molecular, Cell, and Tissue Engineering
• Systems, Synthetic, and Computational Bioengineering

"Boston is the city if you want to make it in biotechnology or anything bioengineering related, and the fact that Northeastern has so many connections here is really invaluable—with Northeastern you’re pretty much set.”

Millicent Gabriel, MS Bioengineering
Master of Science in Chemical Engineering. The MS in Chemical Engineering is normally pursued by students with a BS degree 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 coursework. The non-thesis MS degree is offered as either a full-time or part-time program.

Master of Science in Pharmaceutical Engineering. This new interdisciplinary degree is available in Fall 2023.

Doctor of Philosophy. The PhD degree is offered as a full-time program. If you have a BS degree and are interested in doctoral studies, you may apply directly to the PhD program; or pursue the MS degree first and then apply to the PhD subsequently.

Research. As a graduate student, you are able to select thesis topics from a diverse range of faculty research interests. The department’s strategic research areas include:

- Biomolecular & Biomedical Systems
- Complex & Computational Systems
- Energy & Sustainability
- Engineering Education & Pedagogy
- Materials & Nanotechnology

With a premier location in downtown Boston, research in the department leverages the wealth of collaborations with neighboring universities, hospitals, medical centers, and industry.

Northeastern’s chemical engineering graduate program provides the best of both worlds: a rigorous curriculum coupled with cutting-edge research opportunities. In the heart of Boston, collaboration plays a key role in our success, both with academia and industry.”

Zach Rogers, PhD Chemical Engineering

Location: Boston

che.northeastern.edu
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

The coming decades will represent a crucial time as climate change, urbanization, and technological progress profoundly reshape the ways in which we live and work. From the opportunities of renewable energy and artificial intelligence to the threats of rising sea levels and vulnerable urban infrastructure, Northeastern is educating students to serve as leaders in an evolving and complex world.

With the department’s strategic focus on urban engineering, you will explore the unique ways in which the built and natural environments interact, preparing you for the great challenges of our time. Utilizing the latest advances in simulation, smart sensing, data and network science, and urban informatics, faculty are conducting critical research in civil infrastructure security, environmental health, and sustainable resource engineering.

Master of Science. With four degree options and five concentrations, MS degrees prepare full- and part-time students for advanced careers in all facets of civil and environmental engineering. You may also participate in Northeastern’s cooperative education program, gaining up to eight months of professional work experience as part of the academic curriculum.

MS Degrees
- Civil Engineering
- Environmental Engineering
- Engineering and Public Policy
- Sustainable Building Systems

Civil Engineering Concentrations
- Construction Management
- Data and Systems
- Geotechnical/Geoenvironmental Engineering
- Structures
- Transportation
- Water, Environmental, and Coastal Systems

Doctor of Philosophy. The Civil and Environmental Engineering PhD program is flexible and may be adapted to any subject area in civil and environmental engineering. The Graduate School of Engineering also offers an interdisciplinary PhD degree involving substantial work in two or more academic departments or disciplines.

Research Centers
- The Puerto Rico Testsite for Exploring Contamination Threats (PROTECT)
- Center for Research on Early Childhood Exposure and Development (CRECE)

My program taught me to take a statistical and broader perspective, rather than having a microscopic view on engineering problems. That was one of the major takeaways for me.”

Udit Bhatia, PhD Interdisciplinary Engineering

Location: Boston
cee.northeastern.edu
As an Electrical and Computer Engineering Master of Science and Doctor of Philosophy student, you will be engaged in innovative research areas. Research ranges from the design, analysis and optimization of high-performance computing systems, to the fabrication of cutting-edge microelectromechanical actuators, to new research frontiers on smart power grids, metamaterials, biomedical signal processing, and communication systems. Flexibility to specialize in an area of interest is provided through a range of programs, concentrations, and research areas. As part of the program, you will receive deep fundamental and practical knowledge in the various disciplines of electrical and computer engineering through a strong curriculum and research opportunities. The department educates the next generation of highly skilled engineers and researchers with necessary skills to address the future needs of industry, government, and humanity.

Additionally, you may participate in Northeastern’s cooperative education program, gaining up to eight months of professional work experience as part of the academic curriculum.

Location: Boston and one concentration in Portland, Maine

ece.northeastern.edu

The questions that were asked during the interview [at Toyota Research] were the same things that were in my robotics class. There were a lot of hands-on projects and tools they used in class that were practical.”

Amanda Zhu, MS Computer Engineering
The Department of Mechanical and Industrial Engineering offers comprehensive research and educational programs for both Master of Science (MS) and Doctor of Philosophy (PhD) students. As a student, you will work with world-renowned faculty to achieve research experience and your career goals. Northeastern’s cooperative education (co-op) program offers you a unique opportunity to integrate your academic knowledge with industry experience. Providing up to eight months of full-time work experience, co-op can build your resume and give you a competitive edge upon graduation. Recent co-op partners have included: Tesla, Bose, Mathworks, Wayfair and Dana Farber Cancer Institute.

**Master of Science.** MS degree programs are offered in both mechanical engineering with concentrations, and in industrial engineering. MS degree programs in targeted fields such as advanced and intelligent manufacturing, energy systems, engineering management, human factors, operations research, data analytics engineering, and robotics are also offered. These extensive programs and concentrations allow for the selection of a degree that meets a wide variety of personal and professional goals.

Students accepted into any of the MS programs in the department can choose from one of three options: coursework only, project, or thesis. Students may pursue any program either on a full-time or part-time basis; however, certain restrictions may apply. Additionally, the MS in Energy Systems and MS in Engineering Management degree programs have online options to meet the needs of working professionals.

**Doctor of Philosophy.** Cutting-edge and vibrant doctoral programs include PhDs in industrial engineering, mechanical engineering, and an interdisciplinary PhD (offered by the Graduate School of Engineering).

**Research Areas and Institutes**
- Biomechanics and Soft Matters—Solids and Fluids
- Energy Systems
- Healthcare Systems
- Impact Mechanics
- Mechatronics and Systems – Control, Robotics, and Human Machines
- Multi-phase Structured Matter
- Multifunctional Composites
- Resilient Systems
- Smart and Sustainable Manufacturing

**Research Centers**
- Center for High Rate Nanomanufacturing
- Healthcare Systems Engineering Institute
- Institute for Experiential Robotics

Location: Boston; Data Analytics Engineering also in Seattle; and Vancouver, Canada
Energy Systems – online options; Engineering Management – online options

mie.northeastern.edu
Designed to prepare you for the workforce, the Multidisciplinary Master of Science (MS) programs integrate engineering solutions from the fields of technology and business. They develop technical and engineering skills through advanced coursework and complex technical projects in the areas of software, data, and network systems. Each program focuses on the application of knowledge and skills to business and industrial settings. Faculty come from industry, and programs continually evolve to align with the latest technologies and market needs.

The programs blend academic and corporate experience to enable you to enhance your professional capabilities, thereby facilitating career transformation. Given an applied focus, each program provides learning opportunities to develop the skills needed to create innovative, practical, and effective solutions that can be easily applied to current professional challenges.

coe.northeastern.edu/mgen
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With over 195 tenured/tenure-track faculty, 17 multidisciplinary research centers and institutes, and funding by eight federal agencies, the College of Engineering is a leader in experiential education and interdisciplinary research, with a focus on discovering solutions to global challenges to benefit society.

Northeastern University

Founded in 1898, Northeastern is a global research university and the recognized leader in experiential lifelong learning. Our approach of integrating real-world experience with education, research, and innovation empowers our students, faculty, alumni, and partners to create worldwide impact.

Northeastern’s comprehensive undergraduate and graduate programs lead to degrees through the doctorate in nine colleges and schools across our global system of campuses. Learning is personalized and experiential, with a curriculum that emphasizes the intersection of data, technology, and human literacies—uniquely preparing graduates for lives of fulfillment and accomplishment.

Our research enterprise, with an R1 Carnegie classification, is solutions-oriented and spans the world. Our faculty scholars work in teams that cross not just disciplines, but also sectors—aligned around today’s highly interconnected global challenges and focused on transformative impact for humankind.