Become a

Next-Generation
Engineering Leader
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 2023*

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

No. 1 in Master’s Degree 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 50 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.

Nearly 20 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 an eligible 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.

**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**
Located in Innovation Hubs

Northeastern University's College of Engineering offers graduate programs in Boston as well as across Northeastern's growing global university network of campuses for flexible learning and collaborative research. Some examples of locations include Arlington, Virginia; Oakland, California; Portland, Maine; Seattle, Washington; Silicon Valley in California; and Vancouver and Toronto, Canada, among others. See our website for the latest graduate programs offered by location.

David Medina Cruz, PhD Student
Chemical Engineering

David Medina Cruz, 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. He co-founded a company from this research and won a Massachusetts Innovation Network The Eddies award.
Interdisciplinary Research

Northeastern is an R1 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 18 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.

$92M EXTERNAL RESEARCH AWARDS (2022)

18 multidisciplinary research centers and institutes with funding by 8 federal agencies
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.

Nearly 1,000 graduate student co-op hires in 2022

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

NISHITA SIKKA
TELECOMMUNICATION NETWORKS

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

Doctoral student Sara Garcia Sanchez, electrical engineering, won the Best Paper Award at the International Workshop on Drone Assisted Wireless Communications for 5G and Beyond colocated with ACM MobiCom for her paper “Camera-enabled joint robotic-communication paradigm for UAVs mounted with mmwave radios.” Garcia Sanchez also did an internship at IBM which led to a full-time job, and she conducted cutting-edge research at Northeastern’s Institute for the Wireless Internet of Things.
**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.

**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.

Doctoral student Max Rome, civil and environmental engineering, is leading a team of Northeastern researchers to create a visually impactful floating wetland on the Charles River to serve as a model to support water ecosystems, including combating algae blooms.

Yi Zheng, associate professor of mechanical and industrial engineering, founded Panck Energies, from the research conducted in his lab at Northeastern. His “cooling paper” invention is created from a sustainable material that can be used to keep buildings or other objects cool without relying on conventional cooling systems.
Engaged and Welcoming Community

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 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 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 Business
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
Sustainable Energy Systems
Technology Systems Management

* Programs have online completion options

College of Engineering programs are STEM designated.
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

**DEPARTMENT OF BIOENGINEERING**

**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
The Department of Chemical Engineering offers Master of Science (MS) and Doctor of Philosophy (PhD) degrees in chemical engineering, as well as an MS in pharmaceutical engineering.

Chemical engineering students have opportunity to work on cutting-edge research that tackles pressing challenges facing our society and our planet in areas such as biomedicine, energy, security, and sustainability. Meanwhile, students pursuing graduate level coursework develop an in-depth understanding of the fundamental principles of chemical engineering and gain expertise in modern topics in the field through select elective courses.

The master's in pharmaceutical engineering program prepares students, through coursework and rich experiential learning, to meet the evolving and growing needs of the biotechnology 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
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 Civil and Environmental Engineering 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
- PROTECT Superfund Research Center
- 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
The Department of Electrical and Computer Engineering offers comprehensive research and educational programs for Master of Science (MS) and Doctor of Philosophy (PhD) students. In addition to MS and PhD programs in electrical and computer engineering, MS degrees are offered in the internet of things and in wireless and network engineering.

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. 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 experience.

Location: Boston, and select concentrations in Seattle and Portland, Maine.

ece.northeastern.edu

Research Areas

- Communications, Control, and Signal Processing
- Computer Networks and Security
- Computer Systems and Software
- Data Science
- Computer Vision, Machine Learning and Algorithms
- Electromagnetics and Optics
- Microsystems and Devices
- Power Electronics, Systems and Controls
- Robotics

Research Centers and Institutes

- Soft-target Engineering to Neutralize the Threat Reality (SENTRY)
- Institute for Experiential AI
- Center for Hardware and Embedded Systems Security and Trust (CHEST)
- Center for Integrative Biomedical Computing (CIBC)
- Center for Translational Applications of Nanoscale Multiferroic Systems (TANMS)
- Center for Ultra-wide-area Resilient Electric Energy Transmission Network (CURENT)
- Institute for Experiential Robotics
- Institute of Information Assurance (IIA)
- Institute for the Wireless Internet of Things
- Northeastern SMART

"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
DEPARTMENT OF MECHANICAL AND INDUSTRIAL 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.

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

mie.northeastern.edu

2265 GRADUATE STUDENTS (2022)

61 TENURED/TENURE-TRACK FACULTY

$37M EXTERNAL RESEARCH AWARDS (2020-'22)

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 the MS programs in the department can choose from one of three options: coursework only, project, or thesis. Students may pursue a program either on a full-time or part-time basis; however, certain restrictions may apply. Experiential one-year MS degree programs are offered for data analytics engineering and engineering management.

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 Themes
- Mechanics
- Materials of the Future
- Complex Fluids, Multiphase, and Multiscale Matter
- Energy Systems, Sustainability, and Environmental Protection
- Robotics and Control Systems
- Human Technology Integration
- Biomechanics, Biotechnology Integration, and Mechanobiology
- Intelligent and Additive Manufacturing
- Engineering Education
- Networks and Complex Systems
- Resilient and Sustainable Service Systems
- Data Analytics, AI, and Operations Research

Research Centers and Institutes
- Center for High Rate Nanomanufacturing
- Healthcare Systems Engineering Institute
- Institute for Experiential Robotics
Designed to prepare you for the workforce, the Multidisciplinary Master of Science (MS) programs integrate engineering solutions from the fields of technology and business. You will 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
With over 215 tenured/tenure-track faculty and 18 multidisciplinary research centers and institutes with funding by eight federal agencies, the College of Engineering is a leader in experiential education and interdisciplinary research focused on discovering solutions to global challenges to benefit society.

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.