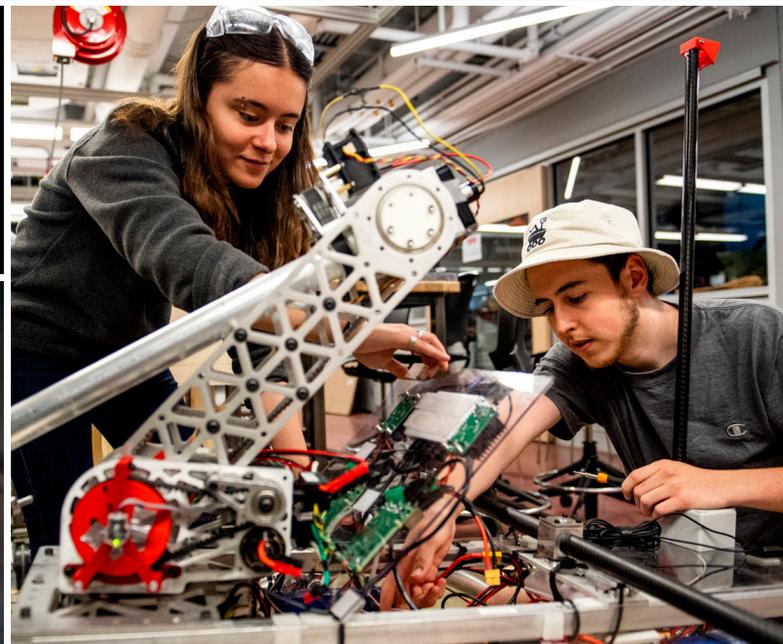
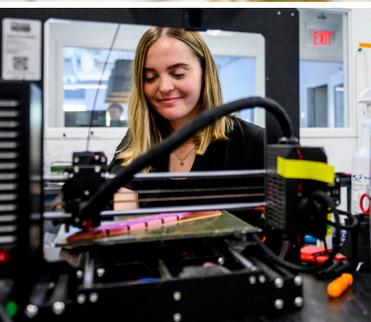


Northeastern University
College of Engineering



A Multidimensional Undergraduate Experience

Excellence in Academics, Experiential Learning, and Research



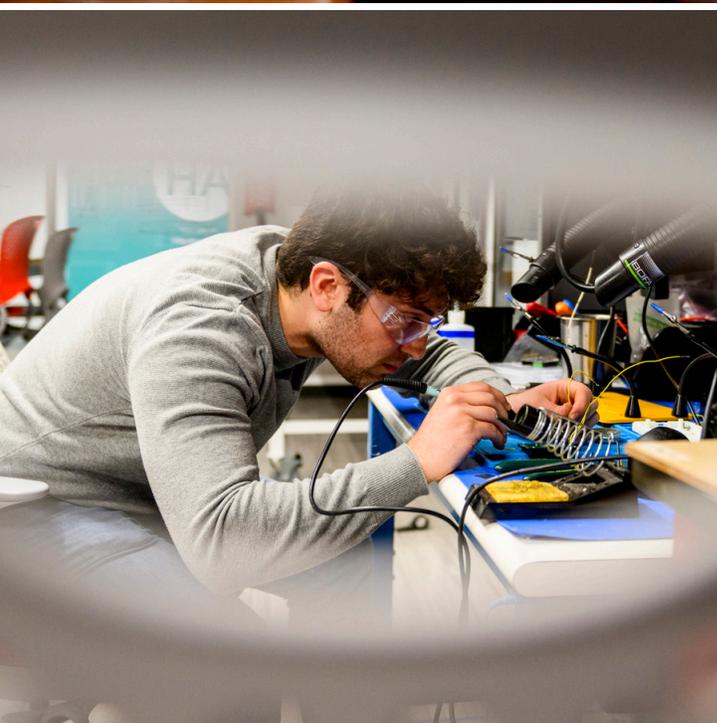


An **experiential** engineering education that prepares you for the real world



Engineering is an exciting and evolving field. Engineers pioneer discoveries that shape society and can have a transformative impact on the world. As a student in the College of Engineering at Northeastern University, you will have the opportunity to personalize your path with five engineering departments, interdisciplinary majors, over 70 minors across seven colleges, and the PlusOne accelerated master's program.

You will also have the opportunity for experiential learning—from laboratory exercises, senior capstone design projects, professional association activities, and research with highly accomplished faculty, to cooperative education where you gain industry experience as part of the curriculum.



In and outside of the classroom you will be engaged. Our students participate in the college's over 60 student organizations, national and global competitions, a vibrant entrepreneurship ecosystem, and a range of global experience options.



Learn more about our **transformative** engineering programs

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DEPARTMENT OF

Bioengineering



bioe.northeastern.edu

CURRICULUM CONCENTRATIONS

- Biomechanics and Mechanobiology
- Biomedical Devices and Bioimaging
- Molecular, Cell, and Tissue Engineering
- Systems, Synthetic, and Computational Bioengineering

RESEARCH AREAS

On completion of the core curriculum, students choose one of the four concentrations, providing the opportunity for them to develop a deep level of expertise in an important academic and research area of bioengineering.

REPRESENTATIVE CO-OP EMPLOYERS

- | | |
|---------------------|--------------------------|
| Abiomed | Moderna |
| Becton Dickenson | Pfizer |
| Boston Scientific | Selux Diagnostics |
| Brigham and Women's | Solid Biosciences |
| Dragonfly | Sunovion Pharmaceuticals |
| Hologic | Takeda |
| Johnson & Johnson | Thermo Fisher |
| Lyndra | |

EMPLOYER TYPES

- | | |
|----------------------|-----------------------|
| Biotechnology | Tissue Engineering |
| Alternative Biofuels | Imaging |
| Medical Devices | Healthcare Consulting |
| Pharmaceuticals | Computational Biology |

TYPICAL CO-OP JOBS

Medical device design, drug development, process development, bioinformatics, genetic engineering, synthetic biology, biomedical imaging, biomedical materials, biomedical device and product manufacturing



[View an in-depth video of the Bioengineering Department](#)

Bioengineering



The Department of Bioengineering offers students a broad education built on fundamentals in science, mathematics, and engineering, with a focus on the biological applications of engineering. The program provides a rigorous engineering training along with a comprehensive understanding of the biological constraints intrinsic to designing artificial systems to interface with, augment, replace, repair, or monitor living systems. These constraints depend on the properties of the biological system involved and the functionality that is being created.

The living system may be the human body, an ecosystem, or, more broadly, a bioreactor, tissue culture system, or any system with living components. The presence of naturally occurring biological tissue places special constraints on the design and implementation of artificial constructs and their interface to living systems. Bioengineers are engineers with comprehensive understanding of the engineering requirements intrinsic to working within a biological context.

Bioengineering is a relatively new field driven by the recognition that engineering of biological systems or systems that interface with living systems requires a multidisciplinary approach that takes into account the mechanical, electrical, chemical, and materials properties of the biological system. With that in mind, the bioengineering program has been designed to provide a rigorous engineering education that endows a broad understanding of the quantitative analysis of biological systems and a deep expertise in one of four areas of bioengineering.

Students joining the Department of Bioengineering will have unique opportunities in the classroom, research labs, and experiential learning. The projects that they may be able to contribute to include bio-bandages that monitor bacterial growth or that help damaged ligaments heal faster; sheets of cells folded like origami to form a working kidney; and new materials that—like a leaf in the sun—automatically sense and adapt to changes in the environment. This is truly an exciting time!



TOP: Associate professors Jessica Oakes and Chiara Bellini are researching the effects of e-cigarettes and wildfire smoke on human health to help inform policies. **CENTER LEFT:** Minhal Ahmed, Mitchell Scholar, is pursuing an MD at Harvard Medical School. **CENTER RIGHT:** Kritika Singh, Rhodes Scholar, plans for a PhD at Oxford University, and then an MD. **BOTTOM LEFT:** Kerry Eller, a Goldwater Scholar, Harold D. Hodgkinson Award recipient, and Truman Scholar, studied, researched, and worked in four countries as a student. **BOTTOM RIGHT:** Jacob Potts, a Fulbright Fellow, studied mutations in DNA repair genes at Sorbonne University in Paris.

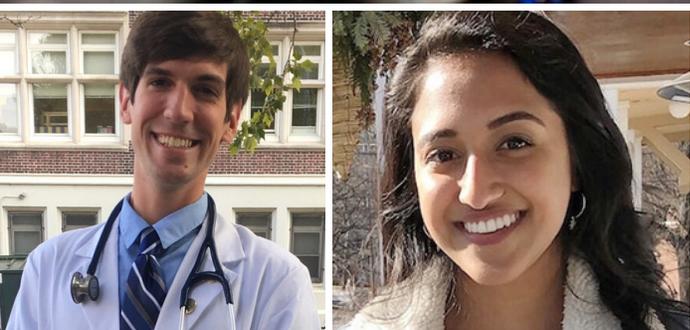
Chemical Engineering



The practice of chemical engineering integrates a wide range of disciplines—from physics to mathematics, biology, and chemistry—to create solutions to the world’s challenges. Chemical engineers constantly strive for ways to take discoveries from the lab and scale them up to improve life in the real world. Novel polymers for medical devices, battery technology for energy storage, systems for drug discovery and delivery, food production for global nutrition—these are just some of the ways that chemical engineering contributes to human health and a sustainable environment.

The Department of Chemical Engineering prepares students to join these efforts with a mix of rigorous academic study and practical experience in cutting-edge laboratory work. Undergraduate students are encouraged to participate in compelling research projects in biomolecular systems, complex and computational systems, engineering education and pedagogy, materials and nanomaterials, and energy and sustainability. The co-op positions available in chemical engineering span the areas of consumer products, plastics, biotechnology, nanotechnology, alternative energy, and petrochemicals, both domestically and internationally. Opportunities abound for students to enhance and apply their learning in student clubs and organizations—like the American Institute of Chemical Engineers—some of which participate in national competitions.

Our accomplished and diverse faculty are widely recognized for their research, educational impact, and leadership in the field by the National Science Foundation, National Institutes of Health, American Society for Engineering Education, and a variety of other government and professional organizations. They are committed to building and maintaining a strong, welcoming community for all in the department—particularly the students they advise, mentor, and inspire.



TOP: Professor Debra Auguste is collaborating with Boston Children’s Hospital to develop new treatments to target and treat patients with triple-negative breast cancer. **CENTER LEFT:** Through three co-ops, Jordan Harris, chemical engineering, found his interest in medical research and immunology and is pursuing an MD/PhD at University of Pennsylvania. **CENTER RIGHT:** Rachel Joseph, chemical engineering, was nominated for the Udall and Truman Scholarships. She plans to pursue graduate studies in law and public policy. **BOTTOM LEFT:** Sydney Morris, chemical engineering, received a National Science Foundation Graduate Research Fellowship and is pursuing a PhD in materials science and engineering at Brown University. **BOTTOM RIGHT:** Cameron Young, chemical engineering and biochemistry, co-authored 10 medical-related papers, conducted research at Boston Children’s Hospital and Mass General Brigham, and received both the Barry Goldwater and Churchill Scholarships.

DEPARTMENT OF

Chemical Engineering

che.northeastern.edu

RESEARCH AREAS

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

REPRESENTATIVE CO-OP EMPLOYERS

24M	Nano C
Abbvie	Ocular Therapeutix
Amgen	Pfizer
A123 Systems	Poly6
ASM NEXX	Rogers Corporation
CONTINUUS Pharmaceuticals	Sanofi Genzyme
Dragonfly	Nuvera Fuel Cells
Entegris	Via Separations
HH Technology	Waters Corporation

EMPLOYER TYPES

Biotechnology	Pharmaceuticals
Alternative Fuels/Energy Storage	Process Design
Chemical Manufacturing	Product Design
Coatings/Materials	Nanotechnology
Consulting	Semiconductors
Consumer Products	Sustainable Agriculture

TYPICAL CO-OP JOBS

Process engineering, biomaterials engineering, lab technician, equipment design, product development, process controls, data analysis, mixing and formulations, analytical chemistry, advanced materials, research and development



View an in-depth video of the
Chemical Engineering
Department

DEPARTMENT OF

Civil & Environmental Engineering



cee.northeastern.edu

RESEARCH AREAS

Civil Infrastructure Security
Coastal Engineering
Earthquake Engineering
Environmental Sustainability

New Materials
Smart Infrastructure
Sustainable Urban Engineering
Water Quality and Public Health

REPRESENTATIVE CO-OP EMPLOYERS

AECOM

Barletta

BlueWave Solar

City of Boston

City of Cambridge

CDM Smith

D.C. Beane and Associates

Disney Worldwide Services

DN Tanks

Environmental Partners

Faithful+Gould

HDR Engineering

HNTB Corporation

Howard Stein Hudson

Jacobs Engineering

LeMessurier

MassDOT

McCourt Construction

Nitsch Engineering

Panama Canal Authority

Parsons

Roux Associates

Simpson Gumpertz and Heger

Skanska

SMMA

Stantec

Suffolk Construction

Toole Design Group

Turner Construction

Vanasse Hangen Brustlin

WSP

EMPLOYER TYPES

Environmental Consulting

Geotech and Design

Government

Infrastructure Preservation

Smart Construction Design

Sustainable Energy

Transportation Planning
and Systems

Urban Development

TYPICAL CO-OP JOBS

Sustainable building and urban design, energy sector efficiency, environmental protection and design, clean water development, forensic engineering, infrastructure planning, design, and construction



View an in-depth video of the
Civil & Environmental
Engineering Department

Civil & Environmental Engineering



The coming decades will represent a crucial time in human history 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 overcrowded urban spaces, civil and environmental engineers work at the forefront of an ever-evolving and complex world.

Northeastern's civil and environmental engineering students prepare for lifelong engagement with the world through a flexible curriculum and exciting co-ops across the U.S. and around the world. Our program offers leadership opportunities through award-winning student groups like our chapter of the American Society of Civil Engineers, which leads community service projects throughout the region, and Engineers Without Borders (EWB), which builds schools, water systems, and other projects for communities in Africa and Central and South America.

One favorite way for students to enhance their classroom experience is through Dialogue of Civilizations, six-week immersive faculty-led summer programs which pair cultural experience with technical learning. Recent Dialogues include trips to the Netherlands to learn about sustainable transportation, to India to learn about climate change, and to Italy to learn about resource recovery or structural engineering of historic buildings.

For students interested in research, our outstanding faculty have a variety of projects to engage with in the lab or in the field, such as developing passive sensing techniques for aquatic contaminants, designing 3D-printed nutrient sensor networks for marine environments, designing and testing structures and their components for resilience and sustainability, and pioneering offshore wind power and nearshore wave mitigation systems.

Students are mentored by faculty to reach their highest potential. We are very proud of the successes of our students, including our alumna, Logan Jackson, who received a Rhodes Scholarship upon completing her civil engineering degree and subsequently received two master's degrees from Oxford University.

TOP: Professor and Distinguished Fellow Yang Zhang is leading the Intelligent Solutions to Urban Pollution for Equity and Resilience interdisciplinary research team, which is pairing low-cost, adaptable sensing technologies with novel pollution prediction models in Greater Boston to accurately identify hyperlocal pollution hot spots in real time. **CENTER LEFT:** Ben Lanava, environmental engineering, received a Udall Undergraduate Scholarship Honorable Mention. He is researching plant-based solutions as alternatives for PFAS, highly toxic fluorinated 'forever' chemicals, and for carbon sequestration efforts to address climate change. He is vice president of the New England Water & Environment Association student group, and design lead for the Engineers Without Borders student group. **CENTER RIGHT:** Alumna Louiza Wise, environmental engineering, is working as part of the National Science Foundation Emerald Tutu project, led by Assistant Professor Julia Hopkins, developing a floating marshland, which serves as a defense against ocean flooding. **BOTTOM LEFT:** As a Rhodes Scholar, Logan Jackson, civil engineering, completed two master's degrees from Oxford University. **BOTTOM RIGHT:** As a Marshall Scholar, Michael Tormey, civil engineering, is pursuing graduate studies at the London School of Economics and University of Leeds.



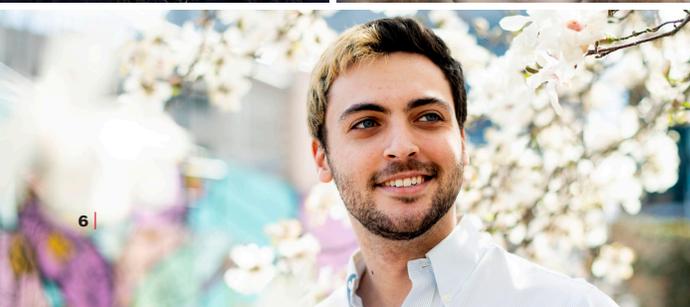
Electrical & Computer Engineering



Electrical and computer engineering is at the heart of nearly all modern engineered systems. Engineers in this field not only design and build electronic and electrical devices, they also innovate in the areas of computers, computational equipment, and communication equipment. Applications that are vital to society—from transportation to energy, communications, healthcare, and more—fundamentally depend on electrical and computer engineering.

The Department of Electrical and Computer Engineering spans a wide range of sub-disciplines, encompassing robotics (including control systems and embedded systems), the Internet of Things (including networking, communications, and computer systems, architectures, and security), and big data (including machine learning, signal processing, and enabling technologies for data centers). The department has notable strength in devices and microelectronics, RF/microwave materials, and power electronics and systems.

Students in electrical and computer engineering can customize their curriculum to focus on their specific areas of interest, advised by faculty mentors who are recognized leaders in their fields. Lectures are tightly integrated with lab work, supporting classroom learning with practical application. There are plentiful research opportunities for undergraduates as well—experience with state-of-the-art equipment in our labs, and on co-ops, set students up for professional success in industry, academia, and the public sector. Student clubs and organizations, such as IEEE Northeastern, also provide opportunities for leadership, fun, and community-building, as well as creative and compelling competitions, where Northeastern teams, like Northeastern Electric Racing and NU Robotics, have distinguished themselves nationally and internationally.



TOP: Elizabeth Wig, electrical engineering, conducted research on co-op at NASA on the Mars Rover to discover a new method for detecting water underground on Mars. She is currently pursuing a PhD at Stanford University. **MIDDLE LEFT:** Aditi Purandare, electrical and computer engineering, conducts research in data science, high-performance computing projects, and artificial intelligence. She was awarded a Fulbright-Canada Globalink Mitacs Award, allowing her to conduct research at the University of Toronto. **MIDDLE RIGHT:** Jacob Kaplan, computer engineering and computer science, received a U.S. Fulbright for a teaching assistantship in Taiwan. He previously studied in Brazil and did a co-op in Tanzania. **BOTTOM:** Spencer Jacobs-Skolik, electrical engineering, received the prestigious Barry Goldwater Scholarship, published research in a peer-reviewed journal, and did research co-ops at Harvard Medical School.

DEPARTMENT OF

Electrical & Computer Engineering

ece.northeastern.edu

RESEARCH AREAS

AI: Computer Vision,
Machine Learning

Big Data and Algorithms

Communications

Controls

Computer Networks and Security

Computer Systems and Software

Electromagnetics, Plasma,
and Optics

Microsystems, Materials,
and Devices

Motion Control

Power Systems, Power Electronics

Robotics

Signal and Image Processing

REPRESENTATIVE CO-OP EMPLOYERS

Advanced
Micro Devices

Amazon Robotics

Apple

Bose Corporation

BAE Systems

CarGurus

Cisco Systems

Draper Laboratories

Dell Technologies

General Dynamics

Google/Nvidia

Hasbro

Intel

iRobot

Medtronic

MIT Lincoln
Laboratories

MIT Media Labs

NBC Universal

NASA Stennis
Space Center

Motorola Solutions

Raytheon

Red Sox Baseball

Samsung
Information Systems

Schneider Electric

Shark Ninja

SpaceX

Square Robotics

Starry

Tesla

Wayfair

ZOOX

EMPLOYER TYPES

Aerospace

Automotive/Transportation

Artificial Intelligence

Biotechnology

Consumer Electronics

Defense and Security

Electronics Research
and Development

Internet of Things

Medical Instruments/Technology

Power Generation/Distribution

Renewable Energy

Robotics

Semiconductor Design

Telecommunication

TYPICAL CO-OP JOBS

Software quality assurance, test and debug; hardware design; assistant substation engineer; digital signal processing; semiconductor design; embedded programming; project engineering; prototype assembly and test; power conversion design; research & development engineering support; software development; medical product design/test; robot design, test and development; circuit board design and testing; systems engineering



View an in-depth video of the
Electrical & Computer
Engineering Department

DEPARTMENT OF

Mechanical & Industrial Engineering



mie.northeastern.edu

RESEARCH THEMES

Biomechanics, Biofluids,
and Mechanobiology

Complex Fluids, Multiphase,
and Multiscale Matter

Data Analytics, AI,
and Operations Research

Energy Systems, Sustainability,
and Environmental Protection

Engineering Education

Human-Technology Integration

Intelligent and Additive
Manufacturing

Materials for the Future

Mechanics

Networks and Complex Systems

Resilient and Sustainable
Service Systems

Robotics and Control Systems

REPRESENTATIVE CO-OP EMPLOYERS

Abiomed

Amazon Robotics

Apple

Bosch Thermotechnologies

Bose Corporation

Boston Scientific Corporation

Desktop Metal

General Electric

Fikst Product Development

Fresenius Medical Care

Hasbro

Insulet Corporation

Johnson & Johnson

Lockheed Martin

NASA JPL

Philips North America

Raytheon

Recorded Future

SharkNinja

SpaceX

Tesla

Whoop

EMPLOYER TYPES

Automation

Aerospace

Automotive

Biomedical

Construction/HVAC

Consumer Products

Consulting

Defense

Energy / Renewable Energy

Financial Services

Government

Healthcare

Industrial Products

Robotics

TYPICAL CO-OP JOBS

Design, research and development, solid modeling/drafting, quality control, prototype/assembly, manufacturing, business intelligence, testing, data analysis/statistics, supply chain/logistics, sales engineering, project management, renewable energy, robotics, business consulting and systems engineering



View an in-depth video of the
Mechanical & Industrial
Engineering Department

Mechanical & Industrial Engineering



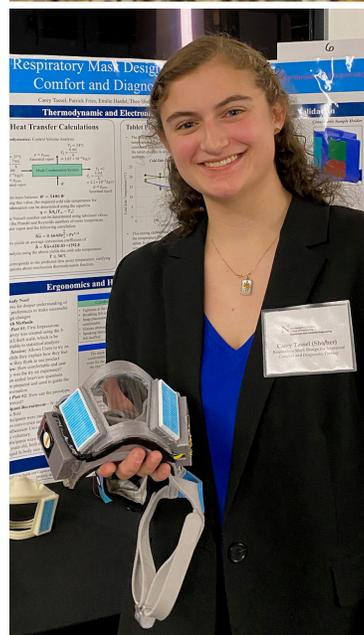
Mechanical and industrial engineering is one of the broadest engineering disciplines, encompassing aspects of electrical and computer engineering, bioengineering, and chemical engineering. Mechanical engineering applications in our society are ubiquitous, from building and enhancing infrastructure to designing and fabricating machinery and structures to innovating new technologies (and integrating them effectively with existing ones). Industrial engineering is focused on processes, supporting the development and operation of the supply chains, logistics systems, and data analytics that make contemporary life possible.

To meet global challenges in these areas, the Department of Mechanical and Industrial Engineering offers academic instruction and research with real-world impact. Transforming and modernizing manufacturing to remain competitive globally; applying artificial intelligence to healthcare problems to maximize patients' quality of life; preventing opioid addiction; combating human trafficking; using recycled materials to help homes stay cooler in warm weather; and developing robots able to learn and adaptively execute autonomous behaviors are just a few examples. There are many opportunities for students to assist in these efforts, strengthening classroom learning by applying it to practical work both in Northeastern's labs and on co-ops locally and around the world.

Mechanical and industrial engineering students are also active in a wide array of clubs and organizations. These can be dedicated to building robots, launching rockets, assembling offroad vehicles to race in national competitions, or focused on professional development and networking with industry. In all cases, they enhance learning, build community, and connect students to opportunities and each other.

TOP: Each year, the Baja SAE Northeastern motor sports student team designs, fabricates, and races a custom off-road vehicle at the Baja SAE Collegiate Design Series competitions nationwide.

BOTTOM LEFT: For her capstone project, Carey Tassel, mechanical engineering, designed a mask for COVID and the flu that could collect condensed respiratory droplets for diagnostic testing. She gained leadership experience as president of the Society of Women Engineers and pursued a PlusOne master's degree in engineering management. **CENTER RIGHT:** Paola Kefallinos, mechanical engineering, received the highly selective U.S. Department of Defense Science, Mathematics, and Research for Transformation scholarship. **BOTTOM RIGHT:** Tyler Gogal, mechanical engineering, received a U.S. Fulbright Open Study/Research Award to pursue a master's degree in environmental engineering with a focus in water resources from the University of Iceland.



First-Year Engineering



TOP: Students in a first-year engineering design class construct bridges out of spaghetti and hot glue that will later be tested on an earthquake simulator.

BOTTOM: Northeastern's first-year engineering students' inventive projects, games, and exhibits that teach sustainability concepts, displayed at the annual Engineering Expo.

With a distinct focus on first-year engineering education, the First Year Engineering Program prepares undergraduate engineers with the fundamental building blocks needed for all College of Engineering majors. Emphasizing hands-on, integrated design, students gain an immersive experience in a state-of-the-art makerspace. Through the lens of the engineering design process, the program weaves engineering ethics and research into designs created with CAD and software development programs used by leading industry engineering firms. Student designs are brought to life through our makerspace's extensive fabrication tools with support from our upper-class engineering student mentors. Dedicated first-year teaching faculty, with expertise in engineering pedagogical research and a diverse array of engineering backgrounds, focus on creating and evolving teaching practices to ensure that the program scaffolds students in an authentic and fully integrated manner to excel in the rest of their academic scholarship.

Common First-Year Curriculum

Engineering students do not need to commit to an engineering major until the end of their first year. They typically take a common first-year curriculum as shown below and complete 34 credits (17 per semester).

MATH

Calculus 1 (4 credits)

Calculus 2 (4 credits)

ENGINEERING

GE1000: First-Year Seminar (1 credit)

Cornerstone of Engineering 1 (4 credits)

Cornerstone of Engineering 2 (4 credits)

SCIENCE

Chemistry (4 credits)

Physics 1 + Lab (5 credits)

HUMANITIES

College Writing (4 credits)

Elective (4 credits)

Advanced Placement and Transfer Credit

Credit for courses may be awarded for AP exam scores of 4 or greater and transfer courses appearing on an official college transcript with a grade of C or better. Also course credit may be awarded for scores of at least 5 on an IB higher-level exam. An academic adviser will work with students during summer orientation to determine the specific courses in the engineering curriculum for which credit can be awarded, to discuss the value of that credit in a specific program of study, and to make any necessary course schedule adjustments for the first semester.

Support for Engineering Students



Undergraduate Academic Advising

Academic advisors are available for support, advice, and referral services for all academic student issues and concerns. Engineering students are urged to talk to an advisor about any concern or issue before academic success is impeded. On the Boston campus, the College of Engineering Academic Advising Office is located in 147 Snell Engineering Center.

GE1000: First-Year Seminar

This 1 credit course, required for all new engineering students, focuses on decision-making and tools for success in studying engineering. Designed to facilitate the transition to the College of Engineering, this course is taught by academic advisors and often with assistance from upper-class engineering students. A student's GE1000 instructor typically serves as the student's advisor for their first year.

Engineering Faculty

The Cornerstone of Engineering courses are taught by professors who specialize in teaching first-year engineering courses to help new students meet the challenges of the transition to the College of Engineering.

University Honors Program

Honors sections of courses taken by first-year engineering students are available for those accepted into the Honors Program. For more information about the Honors Program, see: undergraduate.northeastern.edu/honors.

First-Year Engineering Residence Hall

First-year engineering students in Boston may be able to elect to reside with other first-year engineering students in the Engineering/Connections Living Learning Communities (dedicated floors in a first-year residence hall). Incoming students indicate this preference when registering for housing.

TOP: Taskin Padir, professor and director of the Institute for Experiential Robotics, works with Nicolas Binford, computer engineering, developing a hexi-copter drone project. **BOTTOM:** The First Year Learning and Innovation Center offers resources and a makerspace for students to work on projects as well as support from dedicated first-year faculty and "red vest" upper-class students.

Course Scheduling

First-year courses, whenever possible, are scheduled to facilitate the formation of study groups and new friendships.

Tutoring for Engineering Students

Upper-class students are available to provide free drop-in tutoring for first-year engineering students in calculus, physics, chemistry, and engineering courses. In Boston, tutoring services are also provided by the Physics department, Math department, Chemistry Central, the Writing Workshop, student organizations, and honor societies.

Women in Engineering

Special programs (e.g., mentoring and tutoring) designed to support women students in engineering are coordinated by the College of Engineering.

Multicultural Engineering Program

Special programs (e.g., mentoring and tutoring) designed to support under-represented students in engineering are coordinated by the Director of the Multicultural Engineering Program, Richard Harris (ri.harris@northeastern.edu).



Majors & Minors

Introduction to the various majors are accomplished within the first-year engineering courses, as well as in conversations with individual engineering faculty. The College of Engineering offers a variety of majors, combined majors, and minors, giving students the flexibility to personalize their path.

MAJORS

Bioengineering
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Environmental Engineering
Industrial Engineering
Mechanical Engineering
Bioengineering & Biochemistry
Chemical Engineering & Biochemistry
Chemical Engineering & Bioengineering
Chemical Engineering & Computer Science
Chemical Engineering and Data Science
Chemical Engineering & Environmental Engineering
Chemical Engineering & Physics
Civil Engineering & Architectural Studies
Civil Engineering & Computer Science
Computer Engineering & Computer Science
Computer Engineering & Physics
Electrical & Computer Engineering
Electrical Engineering & Music Technology
Electrical Engineering & Physics
Environmental Engineering & Health Science
Environmental Engineering & Landscape Architecture
Mechanical Engineering & Bioengineering
Mechanical Engineering & Design
Mechanical Engineering & History
Mechanical Engineering & Physics

Additional information about each major can be found at: coe.northeastern.edu

The BS programs in bioengineering, chemical engineering, civil engineering, computer engineering, electrical engineering, environmental engineering, industrial engineering, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET.



MINORS

In many cases, a student can earn a minor without course overloading. There are over 70 minors across seven colleges. Some of the popular minor choices for engineering students include:

Aerospace Engineering
Architectural Engineering
Biochemical Engineering
Biology
Biomechanical Engineering
Biomedical Engineering
Business Administration
Chemistry
Civil Engineering
Design and Innovation in Engineering
Entrepreneurship
Environmental Engineering
Computer Engineering
Computer Science
Data Analytics
Electrical Engineering
Global Perspectives in Engineering
Industrial Engineering
Mechanical Engineering
Materials Science & Engineering
Mathematics
Music
Physics
Psychology
Robotics
Sustainable Energy Systems

PlusOne Program

Select from over 475 program pathways to earn a master's degree in just one additional year of study. **LEARN MORE:**



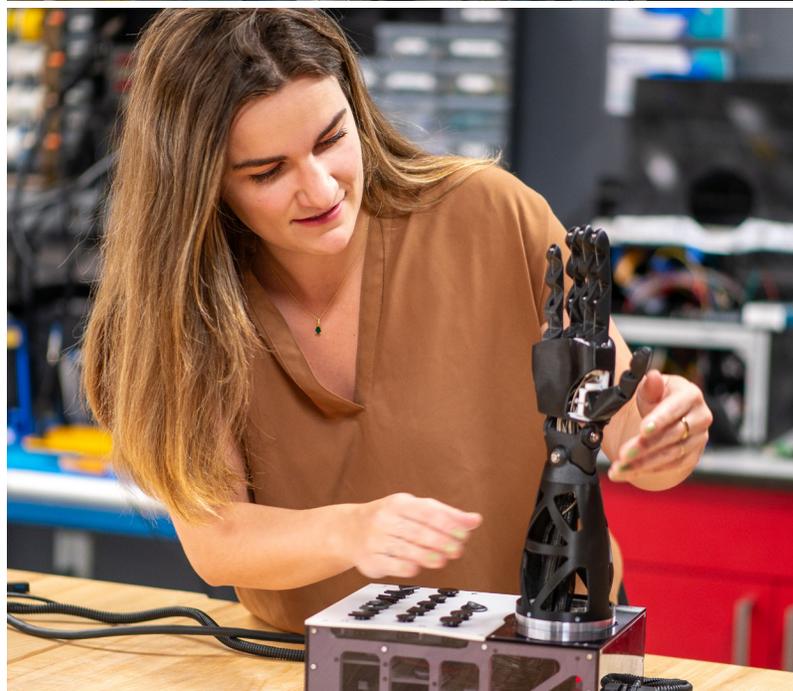
Research

Northeastern is an R1 top-tier research institution as rated by the Carnegie Classification of Institutions of Higher Education. The College of Engineering is engaged in a wide array of exciting and highly innovative research areas to address global challenges and advance society. These include 18 state-of-the-art multidisciplinary research centers and institutes with funding by eight federal agencies. When combined with numerous other research efforts at Northeastern, engineering external research awards exceed \$115 million annually. See: coe.northeastern.edu/coe-research. This creates a vibrant research community of faculty, graduate and undergraduate students, and collaborative government, industry, medical institution, and academic partners.

First-year students may become involved in research programs as UPLIFT Scholars. These select groups of students attend faculty research presentations during their first year and then are matched up with faculty to begin research projects. Additionally, first-year students with a GPA above 3.0 are encouraged to apply for summer REUs (Research Experience for Undergraduates) which enable them to conduct original research during a 10 week on-campus paid internship. As an upper-class student, there are additional opportunities to perform independent research working both in a university setting and/or with industry partners during their six month co-op period.

These undergraduate research opportunities provide a unique window into graduate research for students wishing to continue their education in graduate school at Northeastern or other excellent graduate programs from MIT to Stanford.

TOP: Giona Kleinberg, a recipient of the Barry Goldwater Scholarship, researched neurological diseases while pursuing a combined major in bioengineering and biochemistry and a minor in data science, and has plans for both a medical degree and a PhD. **UPPER MIDDLE:** Purnima Ratilal-Makris (center), professor of electrical and computer engineering, and her undergraduate and PhD students participated in an experiment on real-time oceanic acoustic monitoring at sea, aboard research vessel Endeavor. **LOWER MIDDLE:** As an undergraduate bioengineering student, Samantha Johnson conceived of a robotic device that could sign for DeafBlind people. By the time she began her masters, she had built her first prototype and ultimately founded Tatum Robotics. **BOTTOM:** Sofia Catalina, chemical engineering, researches new materials and architectures for energy storage advised by DiPietro Assistant Professor Joshua Gallaway. She received a GEM Fellowship and National Science Foundation Graduate Research Fellowship and is pursuing a PhD at Stanford University.



Cooperative Education

Co-op has been the centerpiece of the College of Engineering’s education since 1909, and Northeastern is ranked No. 1 in co-op/internships by U.S. News and World Report (2024).

After their first year, students typically alternate periods of classes with relevant, paid employment. Students graduate with six to 18 months of relevant work experience and a strong set of technical and professional skills, as well as a clear understanding of the career they have chosen.

There are nearly 1000 undergraduate co-op employers. Students have been hired on co-op in 47 states and 32 countries. They can work in Boston (and live on campus), set up a co-op in their hometown, or work elsewhere in the U.S. or around the world.

Students prepare for the co-op search with a one-credit professional development course. During the co-op search process, students are supported in applying and interviewing for co-ops by one of our more than 30 engineering co-op advisors.

Students do not typically take classes or pay tuition while on co-op. The median hourly co-op salary ranges from \$22 (first co-op) to \$30 (last co-op). Nearly 55% of our students receive a job offer from a co-op employer. 96% of our graduates are employed full time or enrolled in graduate school within nine months of graduation.

There are several co-op schedule choices for completing a Bachelor of Science (BS) degree as well as an option with the PlusOne program.

The options include:

- 4-year BS program with one or two 6-month co-ops (two co-ops shown in Figure 1)
- 5-year BS program with three 6-month co-ops (Figure 2)
- PlusOne accelerated master’s program (4-year BS plus additional two semesters of classes as a graduate student); the third co-op can be taken during the PlusOne program.

More info at: coe.northeastern.edu/undergradcoop

1st YEAR	Fall: SCHOOL		
	Spring: SCHOOL		
	Summer 1: SCHOOL – NU Term		
	Summer 2: VACATION		
	Sample Schedule A	Semester	Sample Schedule B
2nd YEAR	SCHOOL	Fall	SCHOOL
	SCHOOL	Spring	CO-OP 1
	SCHOOL	Summer 1	
		Summer 2	SCHOOL
3rd YEAR	CO-OP 1	Fall	SCHOOL
	SCHOOL	Spring	CO-OP 2
	SCHOOL	Summer 1	
		Summer 2	SCHOOL
4th YEAR	CO-OP 2	Fall	SCHOOL
	SCHOOL	Spring	SCHOOL

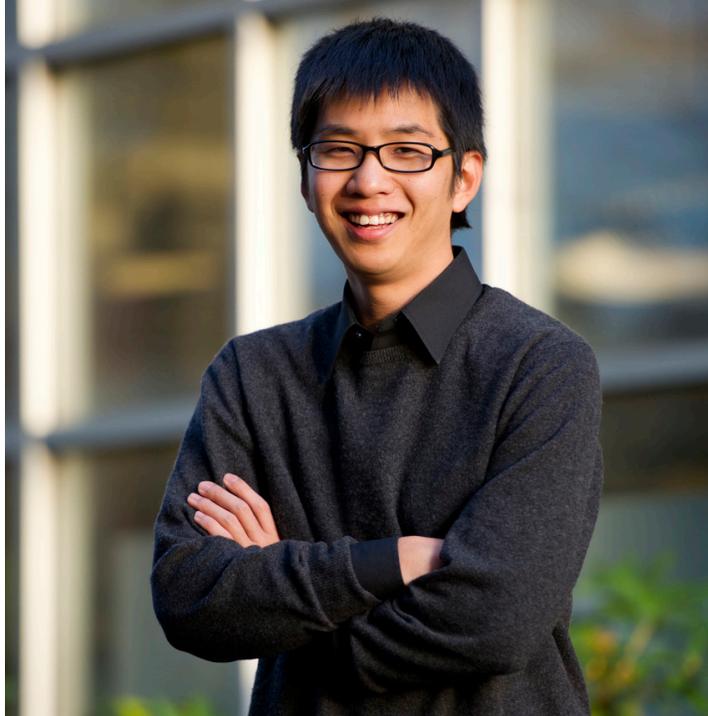
Figure 1

1st YEAR	Fall: SCHOOL		
	Spring: SCHOOL		
	Summer: VACATION		
		Sample Schedule A	Semester
2nd YEAR	SCHOOL	Fall	SCHOOL
	SCHOOL	Spring	CO-OP 1
	VACATION	Summer 1	
		Summer 2	VACATION
3rd YEAR	CO-OP 1	Fall	SCHOOL
	SCHOOL	Spring	CO-OP 2
	SCHOOL	Summer 1	
		Summer 2	SCHOOL
4th YEAR	CO-OP 2	Fall	SCHOOL
	SCHOOL	Spring	CO-OP 3
	SCHOOL	Summer 1	
		Summer 2	SCHOOL
5th YEAR	CO-OP 3	Fall	SCHOOL
	SCHOOL	Spring	SCHOOL

Figure 2

The **co-op program** helps students:

- Connect and apply classroom theory
- Grow personally and professionally
- Find careers that suit their interests and abilities
- Build an impressive resume
- Meet potential employers
- Develop valuable job search and interviewing skills
- Gain self-confidence
- Prepare to be lifelong learners



TOP: Shuntaro Okuzawa, industrial engineering, took his last co-op with IBM in the Philippines and is currently a Senior Finance Manager at Amazon. **MIDDLE LEFT:** Ella Strzegowski, bioengineering, spent one of her co-ops working at Moderna on quality control measures to examine the molecules in the messenger RNA (mRNA) vaccine. **MIDDLE RIGHT:** On co-op as an electrical engineering intern at NASA's Kennedy Space Center in Florida, Jonah Saunders routinely delivered payloads to a SpaceX Dragon spacecraft before it would take off for delivery to the International Space Station. **BOTTOM LEFT:** On co-op, Andrea Griffin, who is a chemical engineering major with a minor in marketing, was a material verification engineer at Nuvera Fuel Cells and a technical marketing researcher at Rogers Corporation. After graduation, she plans to get an MBA. **BOTTOM RIGHT:** Isabelle Brandicourt, electrical engineering, spent her co-op in Antarctica conducting research of Emperor penguins and tagging them with RFID chips for tracking.

Engineering Entrepreneurship

Through the Michael J. and Ann Sherman Center for Engineering Entrepreneurship Education (Sherman Center), Northeastern University Center for Entrepreneurship Education, and a mosaic of entrepreneurial resources across the university, students have the opportunity to pursue entrepreneurship opportunities of their choice. The Sherman Center provides education on tools, concepts, and resources to foster creativity and the ability to develop commercially viable ideas. It offers a host of programs, including semester-long courses in product innovation and design, an entrepreneurial engineering minor, an entrepreneurial mentor program, a student-run product development studio, events and professional networking, and a co-op program where students are funded while working full time on their startup ventures.



TOP: *Generate*, the student-run product development studio, offers an annual presentation showcase of collaborative projects developed throughout the year. **BOTTOM:** Recent alumnus Keith Corso, founder of BusRight, who raised \$2.5 million in funding, used *Generate* to develop his software platform. He also participated in two venture co-ops, which funded him to work full-time on his startup through the *Sherman Center*.

Student Organizations

Students have an opportunity to develop leadership skills and engineering experience through participation in a wide variety of student clubs, organizations, and professional societies. Some highlights include:

AerospaceNU

American Institute of Chemical Engineers

American Society of Civil Engineers

American Society of Mechanical Engineers

BioMedical Engineering Society

Black Engineering Student Society

Enabling Engineering

Engineers Without Borders

FIRST Robotics - NUTRONS

Generate Product Development Studio

Institute of Electrical & Electronics Engineers

Institute of Industrial & Systems Engineers

International Society for Pharmaceutical Engineers

NU Baja SAE All-Terrain Vehicle

Northeastern Electric Racing

NU Institute of Transportation Engineers

NU New England Water Environment Association

NU Robotics

NUSound

oSTEM

Students for the Exploration and Development of Space

Society of Asian Scientists & Engineers

Society of Automotive Engineers

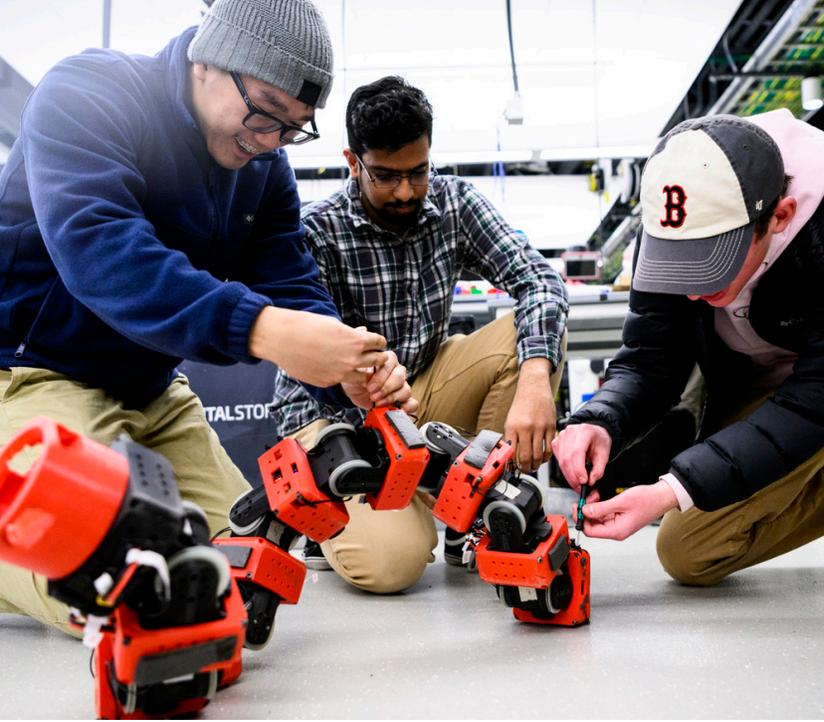
Society of Hispanic Professional Engineers

Society of Women Engineers

Solar Decathlon

STEMout

Wireless Club



TOP LEFT: The *Students for the Exploration and Development of Space* team won first place at NASA's BIG Idea Challenge by developing the "COBRA: Crater Observing Bio-inspired Rolling Articulator," whose snake-like design allows the robot to traverse the extreme terrains on the moon's surface. **TOP RIGHT:** Students in the *AerospaceNU* club work in teams designing, building, and launching a rocket from scratch. **MIDDLE LEFT:** Yajing Wang, a first-year computer engineering student, works on the Adaptive Guitar project in the *Enabling Engineering* Lab. **MIDDLE RIGHT:** The *Northeastern Electric Racing* team placed second in the all-electric vehicle category at the 2022 Formula Hybrid+Electric Competition. **BOTTOM LEFT:** The *Society for Women Engineers* at Northeastern volunteer as the Green Team, collecting recyclables from fans at a Boston Red Sox game. **BOTTOM RIGHT:** The *Black Engineering Student Society* at Northeastern ready for their annual Black Soirée event.

Global Opportunities

With a focus on developing the next generation of engineers capable of addressing global challenges, the College of Engineering supports the opportunity for students to go global by participating in one of many programs at Northeastern. These range from studying abroad at a university for a semester to summer Dialogue of Civilizations, which are six-week faculty-led programs that pair class study with in-country experience. Global co-ops provide additional opportunities for students. Locations have included: Switzerland, Singapore, Germany, Tanzania, Costa Rica, Italy, Netherlands, Chile, Ireland, Turkey, Madagascar, China, and more. Additionally, engineering student organizations, such as Engineers Without Borders (EWB) and Innovators for Global Health, enable students to apply their engineering skills in other countries. EWB builds schools, water systems, and other projects for communities in countries such as Uganda, Honduras, and Panama. Students in Innovators for Global Health use their engineering, science, and medical knowledge to improve healthcare in developing countries such as Ethiopia and Ghana. Many students accepted into our N.U.in, Global Scholars, or London Scholars programs have the unique opportunity to begin their Northeastern experience in another country before coming to the Boston campus.



LEFT: Students participated in a Dialogue of Civilizations to study Climate Change Science and Policy in India. **TOP RIGHT:** Hannah Boyce, chemical engineering, is a recipient of the prestigious Harold D. Hodgkinson Achievement Award, and spent her third co-op at ETH Zurich in Switzerland researching extracellular vesicles. She is now pursuing her PhD at MIT. **MIDDLE RIGHT:** **Innovators for Global Health** student group traveled to Ghana to design medical devices using local resources, including leading students at the University of Ghana through a course in Arduino, an open-source platform used to build low-cost scientific instruments. **BOTTOM RIGHT:** The **Engineers Without Borders** student group traveled to Honduras where they designed and constructed a system to supply clean drinking water to the town of Los Planes.

Undergraduate Admissions

For a variety of helpful information such as the admissions process and requirements, campus tours and events, financial aid information, and to Apply with the Common Application, visit Northeastern's Undergraduate Admissions website.



For questions, prospective undergraduate engineering students can contact:

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