The Department of Electrical and Computer Engineering offers two distinct Bachelor of Science programs: Bachelor of Science in electrical engineering (BSEE) and Bachelor of Science in computer engineering (BSCompE). A combined major is available in electrical and computer engineering for students who complete the requirements of both majors. In addition, a minor in electrical engineering, a minor in computer engineering, and a minor in biomedical engineering are available to qualified students throughout the university, including majors within the department.

Successful engineers need to organize and adapt information to solve problems. They also must work effectively in teams and communicate well. Therefore, the goal of the electrical engineering and computer engineering programs is to help students develop these skills and provide the appropriate technical background for a successful career. The program educational objectives of the Bachelor of Science programs are that graduates should (1) obtain successful careers in electrical and computer engineering and related disciplines through substantial technical contributions, continued employment, professional recognition, advancement in responsibilities, a professional network, and personal satisfaction; and (2) pursue advanced study such as graduate study in engineering or related disciplines, if desired.

The curricula are continuously assessed to ensure that graduates can achieve these goals and go on to succeed as professional electrical or computer engineers. The Bachelor of Science programs allow students sufficient flexibility within the standard eight academic semesters to earn a minor in nearly any department in the university. Typical minors might include electrical engineering, computer engineering, physics, math, computer science, or business, but students might also organize their course of study to earn a minor in economics, English, or music.

The academic program is supported by extensive laboratory facilities for study and experimentation in computing, circuit analysis, electronics, digital systems, microwaves, control systems, semiconductor processing, very large-scale integration (VLSI) design, and digital signal processing. Students have access to state-of-the-art computing facilities, including numerous Linux-based workstations and Windows-based personal computers, all connected to the Internet. Many courses are taught in one of the four computer-based teaching classrooms, where students work online and practice the theory presented in lecture while still in the classroom.

More than 90 percent of department undergraduates take advantage of the cooperative education program. During the cooperative work phase of the program, the students’ levels of responsibility grow as they gain theoretical and technical knowledge through academic work. A sophomore might begin cooperative work experience as an engineering assistant and progress by the senior year to a position with responsibilities similar to those of entry-level engineers.

A senior-year design course caps the education by drawing on everything learned previously. Teams of students propose, design, and build a functioning electrical or computer engineering system—just as they might in actual practice.

Combined Major in Electrical and Computer Engineering

Students may choose to major in both electrical and computer engineering by following the combined-major program leading to a Bachelor of Science in Electrical Engineering or Bachelor of Science in Computer Engineering. Students take the required courses for both majors along with technical electives distributed among the areas of computer engineering; fields, waves, and optics; signals and systems; power engineering; and electronic circuits and devices. A general elective and electives in the arts and humanities and social sciences are also required.

BSEE or BSCompE—Bachelor of Science in Electrical/Computer Engineering

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified.

**NU CORE REQUIREMENTS**

See page Error! Bookmark not defined. for requirement list.

**MAJOR GPA REQUIREMENT**

2.000 minimum GPA required in EECE courses

**MATHEMATICS/SCIENCE REQUIREMENT**

Complete 37 semester hours in mathematics and science as indicated below.

**Required Mathematics/Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>SH</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1151</td>
<td>General Chemistry for Engineers</td>
<td>4 SH</td>
</tr>
<tr>
<td>or CHEM 1211</td>
<td>General Chemistry 1</td>
<td>4 SH</td>
</tr>
<tr>
<td>or CHEM 1214</td>
<td>General Chemistry 2</td>
<td>4 SH</td>
</tr>
<tr>
<td>CS 1800</td>
<td>Discrete Structures</td>
<td>4 SH</td>
</tr>
<tr>
<td>with CS 1801</td>
<td>Recitation for CS 1800</td>
<td>0 SH</td>
</tr>
<tr>
<td>MATH 1341</td>
<td>Calculus 1 for Science and Engineering</td>
<td>4 SH</td>
</tr>
<tr>
<td>MATH 1342</td>
<td>Calculus 2 for Science and Engineering</td>
<td>4 SH</td>
</tr>
<tr>
<td>MATH 2321</td>
<td>Calculus 3 for Science and Engineering</td>
<td>4 SH</td>
</tr>
</tbody>
</table>
ENGINEERING

Complete 68 semester hours in engineering as indicated below.

**Required Courses**

- **EECE 2150** Circuits and Signals: Biomedical Applications 4 SH
- **EECE 2160** Embedded Design Enabling Robotics 3 SH
- **EECE 2161** Lab for EECE 2160 1 SH
- **EECE 2412** Fundamentals of Electronics 4 SH
- **EECE 2520** Fundamentals of Linear Systems 4 SH
- **EECE 2530** Fundamentals of Electromagnetics 4 SH
- **EECE 2322** Fundamentals of Digital Design and Computer Organization 4 SH
- **EECE 2540** Fundamentals of Networks 4 SH
- **EECE 2560** Fundamentals of Engineering Algorithms 4 SH
- **EECE 4790** Electrical and Computer Engineering Capstone 1 4 SH
- **EECE 4792** Electrical and Computer Engineering Capstone 2 4 SH

**Electrical Engineering Fundamentals**

- **EECE 2150** Lab for EECE 2150 1 SH
- **EECE 2160** Lab for EECE 2160 1 SH
- **EECE 2412** Lab for EECE 2412 1 SH
- **EECE 2520** Lab for EECE 2520 1 SH
- **EECE 2530** Lab for EECE 2530 1 SH

**Computer Engineering Fundamentals**

- **EECE 2322** Lab for EECE 2322 1 SH
- **EECE 2540** Lab for EECE 2540 1 SH
- **EECE 2560** Lab for EECE 2560 1 SH

**Capstone Courses**

- **EECE 4790** Electrical and Computer Engineering Capstone 1 4 SH
- **EECE 4792** Electrical and Computer Engineering Capstone 2 4 SH

**EECE Technical Electives**

Complete four of the following courses. Up to two courses may be in CS:

- **EECE 2750** Enabling Engineering 4 SH
- **EECE 3392** Electronic Materials 4 SH
- **EECE 4993** Independent Study 4 SH
- **EECE 4512 to EECE 4534** 4 SH
- **EECE 4574 to EECE 4626** 4 SH
- **EECE 4630 to EECE 4698** 4 SH
- **EECE 5576 to EECE 5698** 4 SH

**Supplemental Credit**

Partial credit from the following courses counts toward the mathematics/science requirement:

- **EECE 3468** Noise and Stochastic Processes 4 SH
- **GE 1111** Engineering Problem Solving and Computation 4 SH

**Supplemental Credit**

Partial credit from the following courses counts toward the engineering requirement:

- **EECE 3468** Noise and Stochastic Processes 4 SH
- **GE 1110** Engineering Design 4 SH
- **GE 1111** Engineering Problem Solving and Computation 4 SH

**PROFESSIONAL DEVELOPMENT**

**Required Professional Development**

- **GE 1000** Introduction to the Study of Engineering 1 SH
- **EECE 2000** Introduction to Engineering Co-op Education 1 SH
- **EECE 3000** Professional Issues in Engineering 1 SH

**Additional Required Courses**

Partial credit for the following courses counts toward requirements above:

- **GE 1110** Engineering Design 4 SH
- **GE 1111** Engineering Problem Solving and Computation 4 SH
- **EECE 3468** Noise and Stochastic Processes 4 SH

**ADDITIONAL NU CORE COURSES**

**Writing**

A grade of C or higher is required:

- **ENGW 1111** First-Year Writing 4 SH
- **ENGW 3302** Advanced Writing in the Technical Professions 4 SH
- **ENGW 3315** Interdisciplinary Advanced Writing in the Disciplines 4 SH

**Arts/Humanities Level 1**

Complete one course from the NU Core arts/humanities level 1 domain, as described on page Error! Bookmark not defined..

**Social Science Level 1**

Complete one course from the NU Core social science level 1 domain, as described on page Error! Bookmark not defined..

**REQUIRED GENERAL ELECTIVES**

Complete two academic, nonremedial, nonrepetitive courses, each equivalent to 4 semester hours.
COURSE WORK THAT DOES NOT COUNT TOWARD THE ENGINEERING DEGREE
Students in engineering are allowed to count a maximum of two pass/fail courses toward their degree program. Only general electives outside the College of Engineering may be taken on a pass/fail grading basis. A maximum of one pass/fail course is allowed per semester.

GENERAL ELECTIVES
Additional courses taken beyond college and major course requirements to satisfy graduation credit requirements.

COOPERATIVE EDUCATION

RESIDENCY REQUIREMENT
Students must earn a minimum of 64 Northeastern University semester hours in order to receive a bachelor’s degree.

UNIVERSITY-WIDE REQUIREMENTS
133 total semester hours required
Minimum 2.000 GPA required