ELECTRICAL ENGINEERING (BS)

Department Website (https://engineering.nyu.edu/academics/departments/electrical-and-computer-engineering/)

NYSED: 08817 **HEGIS:** 0909.00 **CIP:** 14.1001

Program Description

From the subway systems beneath our cities to the HD televisions on our walls to the smart phones in our pockets, innovations by electrical engineers touch every aspect of modern life. But this process of innovation is never complete, and new challenges await the electrical engineers of tomorrow.

Students in the BS in Electrical Engineering program train to become a member of this next generation. The curriculum builds on foundational mathematics and science courses with studies of analysis and design in electrical engineering. These studies often include hands-on coursework in state-of-the-art laboratories. In addition, the variety of specialized subjects students can investigate through elective coursework — from local area networks to wireless communication and deregulated power systems — ensures a highly flexible education suited to their particular interests. The BS in Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET.

Recognizing the need for well-rounded engineers, the program also emphasizes strong communication and interpersonal skills. Students develop these skills not only through required courses in the humanities and social sciences but also during team projects in design classes. Sponsored research and affiliate programs put students in a position to learn from faculty familiar with current issues.

Where possible, classroom work will challenge student to apply their knowledge to current design situations. Students also apply broad technical knowledge to practical problems through interdepartmental cooperation.

Students can apply their electrical engineering training across a wide spectrum of fields. They have launched careers in electronic design, bioengineering, city planning, and astronautics. Students also find opportunities in image processing, telemetry, computer design, and patent law. As graduates mature and develop their capabilities, their careers may move toward system engineering, management, sales, or education. Some graduates also pursue advanced studies toward a master's or doctorate degree.

Admissions

New York University's Office of Undergraduate Admissions supports the application process for all undergraduate programs at NYU. For additional information about undergraduate admissions, including application requirements, see How to Apply (https://www.nyu.edu/admissions/undergraduate-admissions/how-to-apply.html).

Program Requirements

The program requires the completion of 128 credits, comprised of the following:

Course	Title	Credits
General Education Requirements		
EXPOS-UA 1	Writing as Inquiry	4
EXPOS-UA 22	Advanced Writing for Engineers	4
Humanities and Social Sciences Electives (four 4-credit courses, for a total of 16 credits) [1]		16
Major Requirements		
MA-UY 1024	Calculus I for Engineers	4
MA-UY 1124	Calculus II for Engineers	4
MA-UY 1044	Linear Algebra	4
MA-UY 2114	Calculus III: Multi-Dimensional Calculus	4
MA-UY 4204	Ordinary Diff Equations [2]	4
CS-UY 1114	Intro To Programming & Problem Solving [3]	4
CS-UY 2163	Introduction to Programming in C	3
ECE-UY 1002	Introduction to Electrical and Computer Engineering [4]	2
ECE-UY 2004	Fund. Of Electric Circuits [3]	4
ECE-UY 2204	Digital Logic and State Machine Design [3]	4
ECE-UY 2233	Introduction to Probability	3
ECE-UY 4001	ECE Professional Development & Presentation	1
ECE-UY 3054	Signals and Systems [3]	4
ECE-UY 3604	Electromagnetic Waves	4
ECE-UY 3114	Fundamentals of Electronics I	4
EG-UY 1004	Introduction to Engineering and Design [4]	4
PH-UY 1013	Mechanics	3
PH-UY 2023	Electricity, Magnetism, & Fluids	3
PH-UY 2121	General Physics Laboratory I	1
Design Project		
ECE/CS-UY 4XX3	Design Project I	3
ECE/CS-UY 4XX3	Design Project II	3
Electives		
ECE Elective [5]		3
ECE/CS Elective [5,6]		3
ECE Restricted Electives (two 4-credit courses, for a total of 8 credits) [7]		8
Math/Science Electives (two 3-credit courses, for a total of 6 credits)		6
Free Electives (four 3- to 4-credit courses, for a minimum of 12 credits) [8]		12-16
Total Credits		**128**

[1] Choice of Humanities and Social Sciences courses must conform to university requirements. Students must complete at least ONE Advanced Seminar and ONE ethics course.

[2] Students may replace MA-UY 1044 Linear Algebra and MA-UY 4204 Ordinary Diff Equations with MA-UY 2034 Linear Algebra and Differential Equations, in which case a MA/SCI elective will be required.

[3] Grade of at least C- is required for this course.

[4] For transfer students and students changing major, ECE-UY 1002 is not required. EG-UY 1004 may also be excused depending upon transfer credits. Missing credit will be substituted with upper level engineering credit.

[5] Students interested in pursuing more CS classes can take CS-UY 1134 in place of CS-UY 2163.

[6] ECE/CS electives can be chosen from any ECE-UY or CS-UY prefixed course not already required by the major.

7   Choose two of the following courses:
   - ECE-UY 3064 Feedback Control
   - ECE-UY 3124 Fundamentals Of Electronics II
   - ECE-UY 3404 Fundamentals of Communication Theory
   - ECE-UY 3824 Electric Energy Conversion Systems
   - ECE-UY 4144 Introduction to Embedded Systems Design

8   Students may take up to 15 credits of free electives to count towards their degree.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
MA-UY 1024	Calculus I for Engineers	4
CS-UY 1114	Intro To Programming & Problem Solving	4
EG-UY 1004	Introduction to Engineering and Design	4
EXPOS-UA 1	Writing as Inquiry	4
	Credits	**16**
2nd Semester/Term		
MA-UY 1124	Calculus II for Engineers	4
PH-UY 1013	Mechanics	3
Math/Science Elective		3
ECE-UY 1002	Introduction to Electrical and Computer Engineering	2
EXPOS-UA 22	Advanced Writing for Engineers	4
	Credits	**16**
3rd Semester/Term		
PH-UY 2023	Electricity, Magnetism, & Fluids	3
PH-UY 2121	General Physics Laboratory I	1
ECE-UY 2004	Fund. Of Electric Circuits	4
ECE-UY 2204	Digital Logic and State Machine Design	4
MA-UY 1044	Linear Algebra	4
	Credits	**16**
4th Semester/Term		
MA-UY 2114	Calculus III: Multi-Dimensional Calculus	4
Math/Science Elective		3
ECE-UY 3114	Fundamentals of Electronics I	4
CS-UY 2163	Introduction to Programming in C	3
	Credits	**14**
5th Semester/Term		
MA-UY 4204	Ordinary Diff Equations	4
ECE-UY 2233	Introduction to Probability	3
ECE-UY 3054	Signals and Systems	4
ECE-UY 4001	ECE Professional Development & Presentation	1
Humanities and Social Sciences Course		4
	Credits	**16**
6th Semester/Term		
ECE-UY 3604	Electromagnetic Waves	4
ECE Restricted Elective		4
ECE Restricted Elective		4
Humanities and Social Sciences Course		4
	Credits	**16**
7th Semester/Term		
ECE 4XX3	Design Project I	3
ECE Elective		3
Humanities and Social Sciences Course		4
Free Elective		3-4
Free Elective		3-4
	Credits	**16**
8th Semester/Term		
ECE/CS 4XX3	Design Project II	3
ECE/CS Elective		3
Humanities and Social Sciences Course		4
Free Elective		3-4
Free Elective		3-4
	Credits	**18**
	Total Credits	**128**

Learning Outcomes

Students will be able to demonstrate the following (per ABET):

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. an ability to communicate effectively with a range of audiences.
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Policies

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

Tandon Policies

Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/undergraduate/engineering/academic-policies/).