ELECTRICAL ENGINEERING (BS)

CIP: 14.1001

Program Description

Electrical Engineering at NYU Abu Dhabi prepares graduates to apply knowledge of advanced mathematics, such as differential and integral calculus, linear algebra, complex variables and discrete mathematics, probability and statistics, sciences, and engineering topics (including computing science) necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components.

Electrical Engineering majors study:

- integrated circuits
- fabrication technology
- solid state devices
- digital and analog circuits analysis and design
- VLSI design
- computer-aided design and manufacturing
- embedded systems
- micro-electro-mechanical systems
- digital and analog communications
- signal processing
- systems design and optimization

NYU Abu Dhabi offers six engineering degree programs: General Engineering, Bioengineering, Civil Engineering, Computer Engineering, Electrical Engineering, and Mechanical Engineering.

Each program is designed to create technological leaders with a global perspective, a broad education, and the capacity to think creatively. The uniqueness of the program lies in the integration of invention, innovation, and entrepreneurship into all phases of study. Students enjoy a learning environment conducive to creativity, which is at the heart of tomorrow's technological innovations and enterprises.

The Electrical Engineering program at NYU Abu Dhabi is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org (https://www.abet.org/), and the Commission for Academic Accreditation (CAA). Graduates receive a Bachelor of Science 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

Course	Title	Credits
General Education Requirements		
Colloquia		8
First-Year Seminar		4
Arts, Design, and Technology		4
Cultural Exploration Analysis		4
Data and Discovery		4
Structures of Thought and Society		4
January Term Courses (3 courses)		12
Science Courses		
SCIEN-UH 1101:1104	Foundations of Science 1: Energy & Matter	4
SCIEN-UH 1201:1204		4
PHYS-UH 2115	Electricity and Magnetism for Engineers	4
Mathematics Courses		
MATH-UH 1012Q	Calculus with Applications to Science and Engineering	4
MATH-UH 1020	Multivariable Calculus with Applications to Science and Engineering	4
MATH-UH 1022	Linear Algebra	4
MATH-UH 2010	Ordinary Differential Equations	4
ENGR-UH 2010Q	Probability and Statistics for Engineers	2
ENGR-UH 2025	Fundamentals of Discrete Math	2
Engineering Common Courses		
ENGR-UH 1000	Computer Programming for Engineers	4
ENGR-UH 1010	Engineering Ethics	1
ENGR-UH 1021J	Design and Innovation	2
ENGR-UH 2011	Engineering Statics	2
ENGR-UH 2012	Conservation Laws in Engineering	2
ENGR-UH 2013	Digital Logic	2
ENGR-UH 2017	Numerical Methods	2
ENGR-UH 2019	Circuits Fundamentals	2
Electrical Engineering Required Courses		
ENGR-UH 2310	Advanced Digital Logic	2
ENGR-UH 2311	Advanced Circuits	2
ENGR-UH 2610	Fundamentals of Complex Variables	2
ENGR-UH 3110	Instrumentation, Sensors, Actuators	4
ENGR-UH 3610	Signals and Systems	4
ENGR-UH 3611	Electronics	4
ENGR-UH 3613	Electromagnetics	4
ENGR-UH 3620	Analog and Digital Communication Theory	4
ENGR-UH 4610	Control Systems Engineering	4
Electrical Engineering Elective Courses		
Select ten credits from the following list of courses:		10
ENGR-UH 1801	Bioengineering Principles	
ENGR-UH 2510	Object-Oriented Programming	
ENGR-UH 2812	Bioimaging	
ENGR-UH 3331	Computer Vision	
ENGR-UH 3332	Applied Machine Learning	
ENGR-UH 3510	Data Structures and Algorithms	
ENGR-UH 3511	Computer Organization and Architecture	

ENGR-UH 3512	Computer Networks	
ENGR-UH 3520	Operating Systems	
ENGR-UH 3530	Embedded Systems	
ENGR-UH 4112	Engineering Honors Research	
ENGR-UH 4141	Fundamentals and Applications of MEMS	
ENGR-UH 4142	Bio-sensors and Biochips	
ENGR-UH 4230	Applied Optimization	
ENGR-UH 4320	Hardware Security	
ENGR-UH 4330	Robotics	
ENGR-UH 4560	Selected Topics in Information and Computational Systems	
ENGR-UH 4620	Fundamentals of Photonics-I	
ENGR-UH 4660	Selected Topics in Communication and Electronic Systems	
ENGR-UH 4701	Electrochemical Energy Devices	
ENGR-UH 4770	Micro-power Generation	
CS-UH 1050	Data Structures	
CS-UH 1052	Algorithms	
CS-UH 2010	Computer Systems Organization	
CS-UH 2220	Machine Learning	
IM-UH 2310		
MUSIC-UH 2419	Computational Approaches to Music and Audio I	
PHYS-UH 3220	Imaging and Spectroscopy Lab	
Capstone		
ENGR-UH 4011	Senior Design Capstone Project I	2
ENGR-UH 4020	Senior Design Capstone Project II	4
Other Elective Credits		5
Total Credits		**140**

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
MATH-UH 1012		4
First-Year Writing Seminar		4
General Elective		4
ENGR-UH 1000	Computer Programming for Engineers	4
	Credits	**16**
2nd Semester/Term		
ENGR-UH 1021J	Design and Innovation	4
	Credits	**4**
3rd Semester/Term		
MATH-UH 1020	Multivariable Calculus with Applications to Science and Engineering	4
Colloquium		4
	Credits	**8**
4th Semester/Term		
MATH-UH 1023	Fundamentals of Linear Algebra	4
Core		4
MATH-UH 1024	Fundamentals of Ordinary Differential Equations	4
	Credits	**12**
5th Semester/Term		
General Elective		4
	Credits	**4**
6th Semester/Term		
ENGR-UH 2610	Fundamentals of Complex Variables	4
Core		4
ENGR-UH 2311	Advanced Circuits	4
ENGR-UH 2019	Circuits Fundamentals	4
ENGR-UH 2310	Advanced Digital Logic	4
ENGR-UH 2013	Digital Logic	4
ENGR-UH 2025	Fundamentals of Discrete Math	4
	Credits	**28**
7th Semester/Term		
ENGR-UH 2010		4
ENGR-UH 3610	Signals and Systems	4
Colloquium		4
ENGR-UH 3611	Electronics	4
ENGR-UH 2017	Numerical Methods	4
	Credits	**20**
8th Semester/Term		
General Elective		4
	Credits	**4**
9th Semester/Term		
ENGR-UH 3613	Electromagnetics	4
General Elective		4
Electrical Engineering Elective		4
ENGR-UH 3620	Analog and Digital Communication Theory	4
	Credits	**16**
10th Semester/Term		
ENGR-UH 4010		4
Core		4
Electrical Engineering Elective		4
ENGR-UH 3110	Instrumentation, Sensors, Actuators	4
ENGR-UH 4011	Senior Design Capstone Project I	4
	Credits	**20**
11th Semester/Term		
ENGR-UH 4020	Senior Design Capstone Project II	4
Core		4
ENGR-UH 4610	Control Systems Engineering	4
ENGR-UH 2011	Engineering Statics	4
ENGR-UH 2012	Conservation Laws in Engineering	4
	Credits	**20**
	Total Credits	**152**

Learning Outcomes

Upon graduation, NYU Abu Dhabi Electrical Engineering students will possess:

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/).

NYU Abu Dhabi Policies

A full list of relevant policies can be found on NYU Abu Dhabi's undergraduate academic policies page (https://bulletins.nyu.edu/undergraduate/abu-dhabi/academic-policies/).