COMPUTER ENGINEERING (BS)

CIP: 14.0901

Program Description

NYU Abu Dhabi's Computer Engineering program prepares graduates to apply knowledge of discrete mathematics, differential calculus, integral calculus, probability and statistics, sciences, computer science, and engineering topics necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components.

Computer Engineering majors study:

- machine architecture and logic design
- robotics
- multimedia
- computer networks
- operating systems
- database systems
- programming systems and languages
- digital devices and circuits

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.

Accreditation

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

Study Away

The study away pathway can be found on the NYUAD Student Portal at students.nyuad.nyu.edu/pathways (https://bulletins.nyu.edu/undergraduate/abu-dhabi/programs/computer-engineering-bs/students.nyuad.nyu.edu/pathways/). Students with questions should contact the Office of Global Education.

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		
Physical Education (2 courses)		
Quantitative Reasoning (1 course)		
Experimental Inquiry (1 course)		
Islamic Studies (1 course)		
First-Year Writing Seminar		4
Colloquia		4
Field Colloquia (2 J-Term courses)		6
Core Competencies		
Arts, Design, and Technology		4
Cultural Exploration Analysis		4
Data and Discovery		4
Structures of Thought and Society		4
Major Requirements		
Science Courses (12 credits)		
SCIEN-UH 1121EQ	Foundations of Science 1-2: Physics	1.5
SCIEN-UH 1122EQ	Foundations of Science 1-2: Chemistry	3
SCIEN-UH 1123EQ	Foundations of Science 1-2: Biology	1.5
SCIEN-UH 1124C	Foundations of Science 2 Lab: Chemistry	1
SCIEN-UH 1124P	Foundations of Science 1 Lab: Physics	1
PHYS-UH 2115	Electricity and Magnetism for Engineers	4
Mathematics Courses (18 credits)		
MATH-UH 1012Q	Calculus with Applications to Science and Engineering	4
MATH-UH 1020Q	Multivariable Calculus with Applications to Science and Engineering	4
MATH-UH 1022Q	Linear Algebra	4
CS-UH 1002	Discrete Mathematics	4
ENGR-UH 2010Q	Probability and Statistics for Engineers	2
Engineering Common Courses (17 credits)		
ENGR-UH 1000	Computer Programming for Engineers	4
ENGR-UH 1010	Engineering Ethics	1
ENGR-UH 1021	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
Computer Engineering Required Courses (28 credits)		
ENGR-UH 2350	Hardware Design	4
ENGR-UH 2510	Object-Oriented Programming	4
ENGR-UH 3510	Data Structures and Algorithms	4
ENGR-UH 3511	Computer Organization and Architecture	4
ENGR-UH 3512	Computer Networks	4
ENGR-UH 3520	Operating Systems	4
ENGR-UH 3530	Embedded Systems	4
Computer Engineering Electives (13 credits)		

Complete at least 13 credits from the following list:		13
ENGR-UH 2610	Fundamentals of Complex Variables	
ENGR-UH 2812	Bioimaging	
ENGR-UH 3331	Computer Vision	
ENGR-UH 3332	Applied Machine Learning	
ENGR-UH 3610	Signals and Systems	
ENGR-UH 3611	Electronics	
ENGR-UH 4112	Engineering Honors Research	
ENGR-UH 4142	Bio-sensors and Biochips	
ENGR-UH 4230	Applied Optimization	
ENGR-UH 4321	Introduction to Hardware Security	
ENGR-UH 4330	Robotics	
ENGR-UH 4560	Selected Topics in Information and Computational Systems	
ENGR-UH 4701	Electrochemical Energy Devices	
CS-UH 2012	Software Engineering	
CS-UH 2214	Database Systems	
CS-UH 2220	Machine Learning	
MUSIC-UH 2419	Computational Approaches to Music and Audio I	
Capstone		
ENGR-UH 4011	Senior Design Capstone Project I	2
ENGR-UH 4020	Senior Design Capstone Project II	4
Other Electives (4 credits)		
Complete enough courses to reach the minimum overall required 128 credits		4
Total Credits		**128**

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
First-Year Writing Seminar		4
MATH-UH 1012Q	Calculus with Applications to Science and Engineering	4
ENGR-UH 1000	Computer Programming for Engineers	4
Core Competency		4
Physical Education		
	Credits	**16**
2nd Semester/Term		
ENGR-UH 1021	Design and Innovation	2
	Credits	**2**
3rd Semester/Term		
MATH-UH 1020Q	Multivariable Calculus with Applications to Science and Engineering	4
SCIEN-UH 1121EQ	Foundations of Science 1-2: Physics	1.5
SCIEN-UH 1122EQ	Foundations of Science 1-2: Chemistry	3
SCIEN-UH 1123EQ	Foundations of Science 1-2: Biology	1.5
SCIEN-UH 1124C	Foundations of Science 2 Lab: Chemistry	1
SCIEN-UH 1124P	Foundations of Science 1 Lab: Physics	1
ENGR-UH 1010	Engineering Ethics	1
Colloquia		4
	Credits	**17**
4th Semester/Term		
MATH-UH 1022Q	Linear Algebra	4
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
CS-UH 1002	Discrete Mathematics	4
Physical Education		
	Credits	**16**
5th Semester/Term		
Field Colloquia (J-Term)		3
	Credits	**3**
6th Semester/Term		
ENGR-UH 2350	Hardware Design	4
ENGR-UH 2510	Object-Oriented Programming	4
ENGR-UH 3510	Data Structures and Algorithms	4
Core Competency		4
	Credits	**16**
7th Semester/Term		
ENGR-UH 3511	Computer Organization and Architecture	4
ENGR-UH 3512	Computer Networks	4
ENGR-UH 3530	Embedded Systems	4
Core Competency		4
	Credits	**16**
8th Semester/Term		
Field Colloquia (J-Term)		3
	Credits	**3**
9th Semester/Term		
Major Elective		3
Major Elective		4
Major Elective		4
General Elective		4
	Credits	**15**
10th Semester/Term		
ENGR-UH 3520	Operating Systems	4
ENGR-UH 4011	Senior Design Capstone Project I	2
PHYS-UH 2115	Electricity and Magnetism for Engineers	4
Major Elective		2
	Credits	**12**
11th Semester/Term		
ENGR-UH 4020	Senior Design Capstone Project II	4
ENGR-UH 2010Q	Probability and Statistics for Engineers	2
ENGR-UH 2011	Engineering Statics	2
Core Competency		4
	Credits	**12**
	Total Credits	**128**

Learning Outcomes

Upon graduation, NYU Abu Dhabi Computer 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

Program Policies

Foundations of Science Grading Policy

While each level of Foundations of Science is an integrated course, separate grades are provided for various components as a means to allow students to document their completion of the specific disciplinary and laboratory content that makes up these courses. Consistent with this integrated approach, students must earn an average grade of C for the components of each level of Foundations of Science to continue into the next level or to use the course to satisfy the prerequisites for other courses outside of Foundations of Science. Additionally, students majoring in biology, chemistry, or physics, must have grades of at least C in all Foundations of Science components in their specific, respective major fields. Finally, although continuation into other courses is based on the average performance in each level of Foundations of Science, students earn academic credits only for those graded components they pass or, for students subject to the transcript policy (see Academic Policies), only for those components with grades of at least C−. The number of earned credits for Foundations of Science components is particularly important for all engineering majors who must earn at least 16 credits in science.

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/).

NYU Policies

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