CIVIL ENGINEERING (BS)

CIP: 14.0801

Program Description

The Civil Engineering major prepares graduates to apply knowledge of mathematics through differential equations, calculus-based physics, and chemistry; apply knowledge of four technical areas appropriate to civil engineering: transportation, structures, environment, and project management; conduct civil engineering experiments and analyze and interpret the resulting data; design system, component, or process in more than one civil engineering context; explain basic concepts in management, business, public policy, and leadership; and explain the importance of professional licensure.

Civil Engineering majors study:

- workflow networks
- smart buildings
- unmanned vehicles
- infrastructure security
- organic disaster management networks and sustainable eco-systems
- environmental engineering
- geo-engineering
- structural engineering
- mechanics and materials
- transportation engineering

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.

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/civil-engineering-bs/students.nyuad.nyu.edu/pathways/). Students with questions should contact the Office of Global Education.

Accreditation

The Civil 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.

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 (10 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
ENGR-UH 3130	Quantitative Synthetic Biology	2
Mathematics Courses (20 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
MATH-UH 2010Q	Ordinary Differential Equations	4
or ENGR-UH 2710	Differential Equations for Engineers	
ENGR-UH 2010Q	Probability and Statistics for Engineers	2
ENGR-UH 2027	Introduction to Data Analysis 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
Civil Engineering Required Courses (27 credits)		
ENGR-UH 2211	Solid Mechanics	2
ENGR-UH 2212	Fluid Mechanics	3
ENGR-UH 3120	Engineering Materials	2
ENGR-UH 3210	Advanced Solid Mechanics	2
ENGR-UH 3410	Structural Systems	2
ENGR-UH 3411	Environmental Engineering	4

ENGR-UH 3412	Geotechnical Engineering	4
ENGR-UH 3413	Transportation and Traffic Engineering	4
ENGR-UH 3420	Project Management	2
ENGR-UH 4433	Structure and Properties of Civil Engineering Materials	2
Design Electives (4 credits)		
Complete at least 4 credits from the following list:		4
ENGR-UH 3430	Steel Structures Design	
ENGR-UH 3431	Concrete Structures Design	
ENGR-UH 3432	Water and Wastewater Systems Design	
ENGR-UH 3433		
ENGR-UH 4431	Foundation Engineering Design	
ENGR-UH 4434	Water Desalination Engineering	
Civil Engineering Electives (10 credits)		
Complete at least 10 credits from the following list (or the list of Design Electives above)		10
ENGR-UH 3111	Analysis of Chemical and Biological Processes	
ENGR-UH 3230	Finite Element Modeling and Analysis	
ENGR-UH 3332	Applied Machine Learning	
ENGR-UH 4112	Engineering Honors Research	
ENGR-UH 4230	Applied Optimization	
ENGR-UH 4423	Production and Logistics Management	
ENGR-UH 4424	Information Management and Modeling for Construction	
ENGR-UH 4460	Selected Topics in Urban Systems	
ENGR-UH 4712	Mechanics of Composite Materials	
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
General Elective		4
Physical Education		
	Credits	**16**
2nd Semester/Term		
ENGR-UH 1021	Design and Innovation	2
	Credits	**2**
3rd Semester/Term		
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
MATH-UH 1020Q	Multivariable Calculus with Applications to Science and Engineering	4
ENGR-UH 1010	Engineering Ethics	1
Colloquia		4
	Credits	**17**
4th Semester/Term		
MATH-UH 1022Q	Linear Algebra	4
ENGR-UH 2011	Engineering Statics	2
ENGR-UH 2012	Conservation Laws in Engineering	2
ENGR-UH 2013	Digital Logic	2
ENGR-UH 2019	Circuits Fundamentals	2
Core Competency		4
Physical Education		
	Credits	**16**
5th Semester/Term		
Field Colloquia (J-Term)		3
	Credits	**3**
6th Semester/Term		
MATH-UH 2010Q or ENGR-UH 2710	Ordinary Differential Equations or Differential Equations for Engineers	4
ENGR-UH 2211	Solid Mechanics	2
ENGR-UH 2212	Fluid Mechanics	3
ENGR-UH 3130	Quantitative Synthetic Biology	2
ENGR-UH 3210	Advanced Solid Mechanics	2
ENGR-UH 3411	Environmental Engineering	4
	Credits	**17**
7th Semester/Term		
ENGR-UH 3120	Engineering Materials	2
ENGR-UH 3410	Structural Systems	2
ENGR-UH 3412	Geotechnical Engineering	4
ENGR-UH 3413	Transportation and Traffic Engineering	4
ENGR-UH 3420	Project Management	2
ENGR-UH 4433	Structure and Properties of Civil Engineering Materials	2
	Credits	**16**
8th Semester/Term		
Field Colloquia (J-Term)		3
	Credits	**3**
9th Semester/Term		
Core Competency		4
Design Elective		2
Major Elective		3
Major Elective		3
	Credits	**12**
10th Semester/Term		
ENGR-UH 4011	Senior Design Capstone Project I	2
ENGR-UH 2010Q	Probability and Statistics for Engineers	2
ENGR-UH 2027	Introduction to Data Analysis for Engineers	2
Design Elective		2
Major Elective		2
Core Competency		4
	Credits	**14**

11th Semester/Term		
ENGR-UH 4020	Senior Design Capstone Project II	4
ENGR-UH 2017	Numerical Methods	2
Major Elective		2
Core Competency		4
	Credits	**12**
	Total Credits	**128**

Learning Outcomes

Upon graduation, NYU Abu Dhabi Civil 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/).