BIOENGINEERING (BS)

CIP: 14.0501

Program Description

The field of Bioengineering utilizes engineering principles into applications in biological and medical fields, and includes solving problems at multiple scales; ranging from the molecular and cellular levels to large-scale problems such as prosthetics and medical devices. Bioengineering is very broad by nature, which may include components from mechanical, chemical, computer, and electrical engineering, and elements from physics, chemistry, biology, and material sciences. Bioengineering slightly differentiates from Biomedical engineering in the sense that it includes not just biomedical devices, but biological devices that apply to basic science research and methods as well. The scope of Bioengineering is broader.

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 Bioengineering program at NYU Abu Dhabi is accredited by the Commission for Academic Accreditation (CAA). Graduates receive a Bachelor of Science degree.

The Bioengineering program will undergo an ABET accreditation review after the first graduating class for that program. If the ABET accreditation is granted, it is automatically retroactive for the first graduating class.

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
SCIEN-UH 1301:1304		4
SCIEN-UH 1401:1404		4
SCIEN-UH 1501:1503		4
SCIEN-UH 1601:1603		6
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 1023	Fundamentals of Linear Algebra	2
MATH-UH 1024	Fundamentals of Ordinary Differential Equations	2
ENGR-UH 2010Q	Probability and Statistics for Engineers	2
ENGR-UH 2026	Partial Differential Equations for Engineers	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
Bioengineering Required Courses		
CHEM-UH 3101	Physical Chemistry for the Life Sciences	2
ENGR-UH 1801	Bioengineering Principles	2
ENGR-UH 2810	Biomechanics	2
ENGR-UH 2811	Biotransport Phenomena	2
ENGR-UH 2812	Bioimaging	2
ENGR-UH 4810	Biomaterials	2
Bioengineering Elective Courses		
Select five elective courses [1]		20
Capstone Courses		
ENGR-UH 4011	Senior Design Capstone Project I	2
ENGR-UH 4020	Senior Design Capstone Project II	4
Other Elective Credits		3
Total Credits		**140**

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All tracks must take at least three engineering courses (12-cr); *Pre-med track are highly encouraged to take:* CHEM-UH 2010 Organic Chemistry 1 and CHEM-UH 3010 Organic Chemistry 2, exceeding the required credits by two.

Sample Plan of Study

Learning Outcomes

Upon graduation, NYU Abu Dhabi Bioengineering 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/).