

BIOENGINEERING (MINOR)

The Bioengineering minor connects engineering and biology to help solve major health problems. Open to undergrads in many majors across Notre Dame, the program offers flexible course options so you can tailor your training to your interests.

Graduates with this minor often go on to work in fields such as:

- Biotechnology fields
- Medical devices and diagnostics
- Pharmaceuticals and drug delivery
- Health Care fields

Combination Five-Year Programs with the College of Arts and Letters

In cooperation with the College of Arts and Letters of the University, the College of Engineering instituted a five-year program in 1952 that combined a liberal arts education with the requirements of the various engineering programs. Students who complete this combination program will earn two degrees: the bachelor of arts and the bachelor of science in the engineering major pursued. Dual-degree students are eligible to join the Reilly Program in Engineering and Arts and Letters described at reilly.nd.edu/undergraduate/dual-degree.

Students pursuing this program must have strong scholastic ability and be acceptable to both the dean of the College of Arts and Letters and the dean of the College of Engineering. Application to the program is normally done by the end of the second year, but choice of a particular field in Arts and Letters may be deferred until the end of the third year.

The general sequence of courses in the five-year engineering-liberal arts program is found under "Dual Degree Programs" later in this section of the Bulletin.

Code	Title	Hours
Biological Sciences		
BIOS 10172	Biology II: Molecules to Ecosystems	3
Engineering Courses		
Select one foundational course from the following:		3
AME/CBE 30386	Introduction to Bioengineering	
AME 40571	Biomaterials	
AME 40572	Introduction to Biomechanics	
AME 40573	Physiology for Engineers	
EE 30073	Biomedical Device Engineering	
CBE 30357	Biotransport	
Concentration Electives with BIOE course attribute		
Select nine credits		9
Total Hours		15

Introduction requirement

Select one of six *foundational courses* that are suitable for students with interests in differing areas of bioengineering. Some of these courses are at the senior elective level, and may build on previous courses. Others at the sophomore level, and provide an introduction to a field. The Foundations course can be taken at any point in the undergraduate curriculum.

Concentration area requirements

Complete the minor requirements with any three courses in the college that has the **BIOE** attribute. Students are advised to pursue course sequences that are thematic, either from a single department or in a topic area that spans departments. However, there are no restrictions on specific course groupings. Additional foundational courses can be included in these three courses.

Biological Sciences Requirements

Complete the course Biology II: Molecules to Ecosystems (BIOS 10172). This course covers the essential concepts of evolution, basic physiology, gene transcription and translation, and proteins and other signaling molecules. The course also addresses multi-organism systems, which is relevant for students interested in environmental engineering and epidemiology.

Non-engineering Majors

Students in the college of science are expected to complete a minimum of two semesters of physics and three semesters of mathematics, including at least Calculus I and II. They must also meet the prerequisites for any engineering courses they plan to take as part of the minor, which generally includes a course in differential equations. Credit for these courses does not apply to the requirements for the bioengineering minor. The course CHEM 20262 has been sufficient, but will limit some of the engineering courses you are prepared to take. Linear algebra and differential equations is preferred.

AP credits and double counted credits

Credit for BIOS 10172 could be satisfied for students who receive a 5 on the AP biology exam, consistent with Notre Dame policy.

Double counted credits

College of engineering students: Courses may be multi-counted to fulfill college/departmental requirements and minor requirements

College of science students: at least 50% (9 credits) of the credits applied to the minor must be unique to the minor.