

BIOLOGICAL ENGINEERING MINOR

College of Engineering

Program Website (https://beadvised.bee.cornell.edu/minors-abroad/#Minor_in_Biological_Engineering)

Program Description

Students may pursue either the Biological Engineering (BEE) minor or the Biomedical Engineering (BME) minor, but not both.

Students in all engineering majors except Biological Engineering may pursue the BEE minor. Students should meet with the BEE Undergraduate Coordinator when they decide to pursue the minor. At that time, they will be assigned a BEE faculty advisor, who will guide them in completing the minor program.

Program Educational Objectives

Biological engineering is the application of engineering to living systems. Examples of engineering efforts in this field include the development of new biosensor technologies, study and control of biologically based matter transformation systems, and development of engineered devices to study and regulate fundamental biological processes. The biological engineering minor is an opportunity for students to further their understanding of living systems and to increase their knowledge of the basic transport processes that occur within these systems. Courses in the minor provide opportunities to analyze and manipulate living systems at the molecular, cellular, and system levels.

Academic Standards

At least C– in each course in the minor and a GPA ≥ 2.0 in all courses in the minor.

Minor Requirements

At least six (6) courses (minimum of 18 credits), with at least three courses and 9 credits taught in BEE, chosen as follows:

Biological Foundation

Code	Title	Hours
Select at least one but no more than two courses:		
BIOMG 3300	Principles of Biochemistry, Individualized Instruction	4
BIOMG 3310 & BIOMG 3320	Principles of Biochemistry: Proteins and Metabolism and Principles of Biochemistry: Molecular Biology	3
BIOMG 3350	Principles of Biochemistry: Proteins, Metabolism, and Molecular Biology	4
BIOMG 3850	Developmental Biology	3
BIOMG 4320	Survey of Cell Biology	3
BIOMI 4850	Bacterial Genetics	2-3

Biological Engineering Core

Code	Title	Hours
At least one but no more than two courses:		
BEE 2600	Principles of Biological Engineering	3

BEE 3310	Bio-Fluid Mechanics	4
BEE 3400	Design and Analysis of Biomaterials ¹	3
BEE 3500	Heat and Mass Transfer in Biological Engineering	4
BEE 3600	Molecular and Cellular Bioengineering	3

¹ BEE 3400 Design and Analysis of Biomaterials and BEE 3600 Molecular and Cellular Bioengineering may be taken as either a focus area elective or a core course.

Biological Engineering Focus Area Electives

Choose at least three courses from the focus area course lists (<https://beadvised.bee.cornell.edu/>). Courses appearing in more than one focus area do not double count.

Graduation Requirements for Engineering Minor Degree Programs Requirements

Students may pursue minors in any department in any college that offers them, subject to limitations placed by the department offering the minor or by the students' major. Completed minors will appear on the student's transcript. Not all departments offer minors. Additional information on specific minors can be found above, in the *Engineering Undergraduate Handbook*, in the undergraduate major office of the department or school offering the minor, and in Engineering Advising.

An engineering minor recognizes formal study of a particular subject area in engineering normally outside the major. Students undertaking a minor are expected to complete the requirements during the time of their continuous undergraduate enrollment at Cornell. Completing the requirements for an engineering minor (along with a major) may require more than the traditional eight semesters at Cornell. However, courses that fulfill minor requirements may also satisfy other degree requirements (e.g., distribution courses, advisor-approved, or major-approved electives), and completion within eight semesters is possible.

An engineering minor requires:

- successful completion of all requirements for an undergraduate degree.
- enrollment in a major that approves participation in the minor.
- satisfactory completion of six courses (at least 18 credits) in a college-approved minor.

Students may apply for certification of a minor at any time after the required course work has been completed in accordance with published standards. An official notation of certification of a minor appears on the Cornell transcript following graduation.