

BIOMEDICAL ENGINEERING, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

Program Description

This interdisciplinary minor is designed for students interested in the application of engineering principles to medical and biological problems. The minor is particularly suitable for students pursuing an undergraduate degree in a different engineering major, physics, or other applied science who are seeking careers in health-related professions. Students interested in pursuing this minor should contact the Department of Biomedical Engineering with any questions or for more information.

What is Biomedical Engineering?

Biomedical engineering is the application of the life sciences, mathematics, and engineering principals to define and solve problems in biology, medicine, healthcare, and other related fields. Biomedical engineers work to design, create, and improve medical devices such as prosthetics, artificial organs and medical imaging devices. They also develop instrumentation, medical information systems, and health management and care delivery systems to improve health care organizations. Many graduates of the biomedical engineering Bachelor of Science program also go on to pursue advanced degrees in medicine, engineering and related fields such as biostatistics, public health, and health administration.

You Might Like This Program If...

- You like applying traditional engineering skills and analysis to understand biological systems.
- You want to emphasize the integration of classical and modern engineering principles with the life sciences and healthcare.
- You are passionate about bridging the gap between medical professionals and the engineering community.
- You're interested in medical research, teaching, industrial and government healthcare and medical practice.

Entrance to Minor

PHYS 211, PHYS 212, and calculus through differential equations (MATH 250 or MATH 251) are required for entrance to the minor. Additional prerequisites for prescribed and supporting courses may be required and should be researched prior to applying for the minor (e.g. CHEM 112 and CMPSC 200).

Program Requirements

| Requirement | Credits |
|-------------|---------|
|-------------|---------|

Requirements for the Minor 18-20

Requirements for the Minor

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10>).

In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

| Code | Title | Credits |
|--|--|---------|
| Additional Courses | | |
| <i>Additional Courses: Require a grade of C or better</i> | | |
| Physiology | | |
| Select 3-4 credits of the following: | | 3-4 |
| BIOL 141 | Introduction to Human Physiology | |
| BIOL 240W | Biology: Function and Development of Organisms | |
| BIOL 472 | Human Physiology | |
| Molecular/Cell Biology | | |
| Select 3-4 credits of the following: | | 3-4 |
| BIOL 230W | Biology: Molecules and Cells | |
| BMB 251 | Molecular and Cell Biology I | |
| BME 201 | Fundamentals of Cells and Molecules | |
| Supporting Courses and Related Areas | | |
| <i>Supporting Courses and Related Areas: Require a grade of C or better</i> | | |
| Select 9-12 credits of Biomedical Engineering (BME) coursework from 3-credit courses at the 400, or 500 level ¹ | | 9-12 |
| Select 0-3 credits of electives from Biomedical Engineering-related courses (department list) | | 0-3 |

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser; the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

University Park

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Career Paths

Careers

Medical device development; diagnostic and therapeutic tool design; physiological system modeling for the healthcare and pharmaceutical industries; medical school.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES WITH A MINOR IN BIOMEDICAL ENGINEERING (<https://career.engr.psu.edu/>)

Opportunities for Graduate Studies

The biomedical engineering graduate program is a part of the Penn State Intercollege Graduate Degree Program in Bioengineering. The highly flexible, mentored curriculum includes fundamental coursework in bioengineering and a number of ancillary areas including physics, chemistry, biology, materials research, esthesiology, orthopedics and rehabilitation, and more. Our students enjoy state-of-the-art research facilities and an exclusive partnership with the Penn State Hershey Medical Center. The unique landscape of the bioengineering graduate program fosters learning and collaboration among students, engineers, clinicians, and professionals in the biomedical industry.

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (<https://www.bme.psu.edu/students/graduate/>)

Contact

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<https://www.bme.psu.edu/index.aspx> (<https://www.bme.psu.edu/>)

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