BIOMEDICAL ENGINEERING - DOCTOR OF PHILOSOPHY (PHD)

Biomedical Engineering PhD students have the opportunity to participate in cutting-edge research with engineering faculty in many different biomedical fields. Our program provides the scientific foundation to prepare students for careers in academia, healthcare, industry and government labs.

The PhD program is open to both first-time graduate students as well as those who hold master's degrees.

For more information, visit the Biomedical Engineering PhD Program (https://www.colorado.edu/bme/academics/phd-program/) page.

Requirements

All Biomedical Engineering PhD student must complete a minimum of 30 credit hours of coursework at the 5000 level or higher, plus 30 credit hours of dissertation credits. Some research advisors will require that their students complete more than 30 course credits, and the department recommends that specific course decisions should be agreed upon through individual faculty/student discussions. Students must receive a minimum grade of B- (2.7) in each class to count towards the degree. Students must also maintain a 3.0 cumulative GPA or higher to be in good standing with the graduate school.

Required Courses

Code	Title	Credit Hours
Core Required Course		
BMEN 5117	Anatomy and Physiology for Biomedical Engineering (Fall)	3
Additional Coursework		
Designated biomedical engineering courses [1]		15
Additional credit hours obtained, as needed, from other fields (e.g., business or other engineering electives) [1]		12
Total Credit Hours		**30**

[1] May be fulfilled by courses taken as part of a prior MS or PhD program.

Preliminary Examination

Biomedical Engineering PhD students are required to pass a preliminary examination. It consists of a comprehensive review of primary literature that supports the current and future research directions of the student. This must be completed within the first three semesters after matriculation into the program.

Comprehensive Examination

The Comprehensive Examination is an important second evaluation step required to advance the student to candidacy for the PhD degree, which is typically completed within the first three years after matriculation to the program and greater than one year prior to graduation. It consists of an NIH R21-style research proposal in addition to an oral exam with a selected committee of faculty advisors, both focusing on the proposed course of research. Students will also likely have completed one chapter of their dissertation for submission to a peer-reviewed journal before taking the Comprehensive Exam.

PhD Dissertation

Students must write a dissertation based on original research conducted under the supervision of a graduate faculty member. The dissertation must fulfill all Graduate School requirements. After the dissertation is completed, an oral final examination on the dissertation and related topics is conducted by the student's doctoral committee.

Time Limit

All degree requirements for the Biomedical Engineering PhD must be completed within six years of the date commencing coursework.

Learning Outcomes

By the completion of the program, students will be able to:

- Apply principles of engineering, biology, human physiology, chemistry, physics, mathematics and statistics to solve engineering problems relevant to bio/biomedical engineering or healthcare, including those associated with the interaction between living and non-living systems.
- Analyze, model, design, and realize devices, systems, components or processes relevant to bio/biomedical engineering.
- Make measurements on and/or interpret data from engineering or living systems relevant to bio/biomedical engineering.
- Provide foundational and advanced study in biomedical engineering subdisciplines that align with and help to accelerate student research goals.
- Conduct research and development projects independently.