# **BIOMEDICAL ENGINEERING**



Biomedical engineering (BME) is a multidisciplinary field that applies engineering principles and design methods to advance human health and solve healthcare challenges. The UK College of Engineering is pleased to offer a four-year bachelor of science degree in BME that will provide students with a unique set of engineering skills, design-thinking know-hows and clinical immersive experiences to enable them to identify unmet clinical needs and develop innovative solutions and technologies.

FOR MORE INFORMATION, VISIT:

www.engr.uky.edu/explore/biomedical-engineering

## **BIOMEDICAL ENGINEERING CURRICULUM SAMPLE**

This is a sample list of courses that a student will take to pursue a degree in biomedical engineering. As part of the biomedical engineering curriculum, students must complete the preengineering requirements, major requirements and general education coursework, called UK Core.

Note: This sample represents one of several paths to a biomedical engineering degree. More paths are under development to meet the demands of students' specific needs and interest.

## **Freshman Year**

Calculus I and II	8
Chemistry I and Physics I and Lab	9
Composition & Communication I and II	6
Engineering Exploration I and II	3
Fundamentals of Engineering Computing	2
Intro to Biology I	3
Total hours	31

## **Sophomore Year**

Calculus III and IV	7
Chemistry II	3
Guided Engineering Elective I and II	6
Human Anatomy for Design	3
Intro to Biomedical Engineering	3
Introduction to User Experience for Product Design	2
Physics II and Lab	5
Principles of Biology II	3
UK Core (Humanities)	3
Total hours	35

#### **Junior Year**

BME Basic Elective I	3
Computer-Aided Design: Solidworks	2
Design Strategies for Biomedical Engineering	3
Engineering Statistics – a Conceptual Approach	3
Ergonomics	1
Experimental Methods in Biomedical Engineering	3
Guided Engineering Elective III	3
Modeling of Complex Systems	4
Materials and Processes	3
User Experience & User Interface for Product Design	1
UK Core (Social Sciences)	3
UK Core (Citizenship)	3
Total hours	32

#### **Senior Year**

Biomedical Engineering Design I and II	6
BME Advanced Elective I and II	6
BME Basic Elective II, III and IV	9
Integrated Entrepreneurship in Product Design	2
Principles of Human Physiology	4
UK Core (Global Dynamics)	3
Total hours	30

#### **PURSUING BIOMEDICAL ENGINEERING AT UK**

This program begins with the First-Year Engineering experience, which grounds students in foundational engineering courses. The program culminates in a unique two-semester interdisciplinary Capstone Senior Design project that challenges students to creatively engineer a solution to a healthcare issue posed by collaborating industrial or healthcare partners. BME and product design courses jointly created and taught by BME and College of Design faculty build Design Thinking into students' approach to solving healthcare problems and form the backbone of the BME major.

## **CAREER PROSPECTS IN BIOMEDICAL ENGINEERING**

Our undergraduate BME program is designed for students who aspire to engineer innovative technologies, devices and processes to help patients. The program aims to develop competencies and cultivate lifelong learning habits in students at the interface of engineering and medicine. It aims to prepare students to embark on careers in the medical industry, healthcare professions, government agencies, nonprofit foundations, or advanced studies in biomedical engineering.

#### **UNDERGRADUATE RESEARCH IN BIOMEDICAL ENGINEERING**

Biomedical engineering undergraduate students can work sideby-side with BME faculty and graduate students as well as UK's clinicians on innovative, pioneering research projects. These opportunities allow BME students to apply their classroom education to real-world biomedical engineering problems. Such time-intensive projects allow the undergraduate researcher to make a meaningful contribution, sometimes reflected in the presentation of abstracts at regional and national meetings and submission of manuscripts for publication.

## CO-OPS

UK and the College of Engineering provide numerous opportunities to co-op with companies. Students can coop during the fall, spring or summer semesters. Those who complete three co-op rotations will receive formal recognition on their transcript and a special cord at graduation. Students work with the Co-op Director and their academic advisor to determine the best timing for their co-op experience.

As a new academic offering, the BME program will be eligible to apply for ABET following the first graduates of the program. Once accreditation is received, it will apply to any student who has gone through the program.

**Revised September 2021.** Information subject to change. For the most up-to-date information on the UK College of Engineering, visit www.engr.uky.edu.



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