

# BIOMEDICAL ENGINEERING



Biomedical engineering (BME) is a multidisciplinary field that applies engineering principles and design methods to improve the interaction and integration of engineering with medicine and biological sciences for advancing human health and solving healthcare challenges. The UK College of Engineering is pleased to offer a new four-year bachelor of science degree in BME that will provide students with a unique set of qualitative and quantitative healthcare problem definition, analysis and solution skills.

## FOR MORE INFORMATION, VISIT THESE WEBSITES:

**Biomedical Engineering:** [www.engr.uky.edu/bme](http://www.engr.uky.edu/bme)

**College of Engineering:** [www.engr.uky.edu](http://www.engr.uky.edu)

**Visit Engineering:** [www.engr.uky.edu/visit](http://www.engr.uky.edu/visit)

**University of Kentucky:** [www.uky.edu](http://www.uky.edu)

**Admissions:** [www.uky.edu/admission](http://www.uky.edu/admission)

**Scholarships:** [www.uky.edu/financialaid/scholarships](http://www.uky.edu/financialaid/scholarships)

## BIOMEDICAL ENGINEERING CURRICULUM SAMPLE

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

Note: This sample represents one of several paths to a biomedical engineering degree. Consult the departmental website for details on specific paths.

### Freshman Year

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

### Sophomore Year

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

### Junior Year

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

### Senior Year

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

## 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.

Most BME programs teach students how to solve problems, but they don't teach how to interact with people in ways that allow for a deeper understanding of the problem. Design Thinking emphasizes the people who will use what our students develop. College of Design faculty members' knowledge of user experience, user interface and more will help BME students empathize, detect and meet unarticulated needs.

## CAREER PROSPECTS IN BIOMEDICAL ENGINEERING

The undergraduate BME program is designed for students who aspire to engineer innovative treatments, devices, materials, technologies and processes that improve healthcare. This program was designed to provide lifelong benefits for students seeking careers in the medical products or services industry, healthcare professions, government regulatory agencies, non-profit healthcare-related foundations or advanced studies in biomedical engineering.

## UNDERGRADUATE RESEARCH IN BIOMEDICAL ENGINEERING

Biomedical engineering undergraduate students can work side-by-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.

As a new academic offering, the BME program will be eligible to apply for ABET accreditation in 2023. Once accreditation is received, it will apply to any student who has gone through the program.

**Revised August 2020.** Information subject to change. For the most up-to-date information on the UK College of Engineering, visit [www.engr.uky.edu](http://www.engr.uky.edu).