Biomedical Engineering

J. Tan, Chair
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The Department of Bioengineering, which is home to the undergraduate biomedical and biological engineering degree programs, seeks to educate the next generation of bioengineering leaders who integrate engineering and biological sciences in the contexts of health, sustainability, and environmental stewardship, thus preparing them for productive careers characterized by continual professional growth. Our undergraduates are part of a diverse and vibrant department with over one hundred years of excellence in engineering education. We provide a supportive and stimulating environment that combines talented students, a diverse faculty body, and excellent teaching and research facilities. Bioengineering uniquely positions graduates to pursue careers in traditional engineering as well as medicine, veterinary medicine, law, health care, policy, and academics.

Our award-winning faculty offer exceptional classes and research experiences for our students, and our flexible, tracked curriculum integrates easily with the pre-medicine and Honors Certificate programs, as well as a number of integrated, 5-year, bachelor plus master degree programs at MU.

Faculty

Professors

Associate Professors

Assistant Professors
N. Aloysius*, I. Ozden*, F. M. Pfeiffer*, R. Thomen*, C. Wan*

Professor Emeritus
F. H. Hsieh

Professors

Associate Professors

Assistant Professors
L. A. Martinez-Lemus**, L. Polo-Parada**, R. A. White*, J. Zulovich*

Adjunct Professors
T. Rahhal, E. J. Sadler*, K. A. Sudduth**, E. Vories

* Graduate Faculty Member - membership is required to teach graduate-level courses, chair master's thesis committees, and serve on doctoral examination and dissertation committees.
** Doctoral Faculty Member - membership is required to chair doctoral examination or dissertation committees. Graduate faculty membership is a prerequisite for Doctoral faculty membership.

Undergraduate

- BS in Biomedical Engineering (http://catalog.missouri.edu/undergraduategraduate/collegeofengineering/biomedicalengineering bs-biomedical-engineering)

Advising and Scholarship Contacts

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Biomedical engineering is a science-based engineering discipline that integrates engineering and biological sciences in one curriculum. The MU biomedical engineering program is a broad-based curriculum that prepares students for careers in traditional engineering as well as medicine, veterinary medicine, law, health care, policy, and academics. Biomedical engineering graduates are hired by biotechnology, medical, and pharmaceutical companies, as well as by government agencies and major research laboratories. Many of our undergraduate students attend graduate, medical, or law schools post-graduation. Graduates are well-prepared to take the Fundamentals of Engineering exam during their senior year, which is the first step toward obtaining a Professional Engineer license; many additionally take the MCAT, the LSAT, and the GRE in preparation for their graduate or professional studies.

The Bachelor of Science with a major in Biomedical Engineering (B.S. B.M.E.) program at MU was developed to meet the mission, program objectives and student outcomes described below.

Program Educational Objectives

The structure of the curriculum provides both breadth and depth across the range of engineering and science topics consistent with the program educational objectives and student outcomes. The undergraduate program leads to a Bachelor of Science degree in Biomedical Engineering, producing graduates who will, within 3-5 years:

1. Applying principles of engineering, biology, human physiology, chemistry, calculus-based physics, mathematics (through differential equations) and statistics;
2. Solving bio/biomedical engineering problems, including those associated with the interaction between living and non-living systems;
3. Analyzing, modeling, designing, and realizing bio/biomedical engineering devices, systems, components, or processes; and
4. Making measurements on and interpreting data from living systems.

Student Outcomes

The bioengineering program should produce graduates that have:

1. an ability to apply knowledge of mathematics, science and engineering;
2. an ability to design and conduct experiments, as well as to analyze and interpret data;
3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
4. an ability to function on multi-disciplinary teams;
5. an ability to identify, formulate and solve engineering problems;
6. an understanding of professional and ethical responsibility;
7. an ability to communicate effectively;
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
9. a recognition of the need for, and an ability to engage in, life-long learning;
10. a knowledge of contemporary issues;
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice; and
12. an ability to integrate engineering and biological sciences to develop systems and processes for improved health, bio-resource utilization, and environmental protection

Graduate

A graduate degree in Biomedical Engineering is not currently offered. Please see Biological Engineering (http://catalog.missouri.edu/undergraduategraduate/collegeofengineering/biologicalengineering) for similar graduate degree programs.