Biomedical Engineering

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The Department of Biomedical, Biological & Chemical Engineering, 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. Biomedical, Biological & Chemical Engineering 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

Primary Faculty:


Professor Emeritus F. H. Hsieh

Affiliated Faculty:


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/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 undergraduate programs lead to a Bachelor of Science degree in Biomedical Engineering (BME), producing graduates who will, within 3-5 years:

- Show proficiency in quantitative analysis, engineering design and development
- Interact effectively with life science, regulatory, and other professionals
- Leverage principles of biological and engineering sciences for the design and development of innovative systems, including interactions between living and non-living systems
- Demonstrate leadership and professionalism as they continually add value to their chosen field of endeavor and to society
- Adopt and integrate rapidly evolving new developments in life sciences and engineering through continuing education and/or advanced study in engineering, medicine or other fields

Student Outcomes:

Students from the BME program will attain (by the time of graduation):

1. An ability to identify, formulate, and solve engineering programs by applying principles of engineering, science, and mathematics
2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must
consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

8. An ability to integrate engineering and biological sciences for the modeling and development of systems and processes to realize improvements in health, bio-resource use, environmental protection, and/or other fields

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.