Mizzou Engineering
University of Missouri
Engineering.Missouri.edu

Biomedical Engineering

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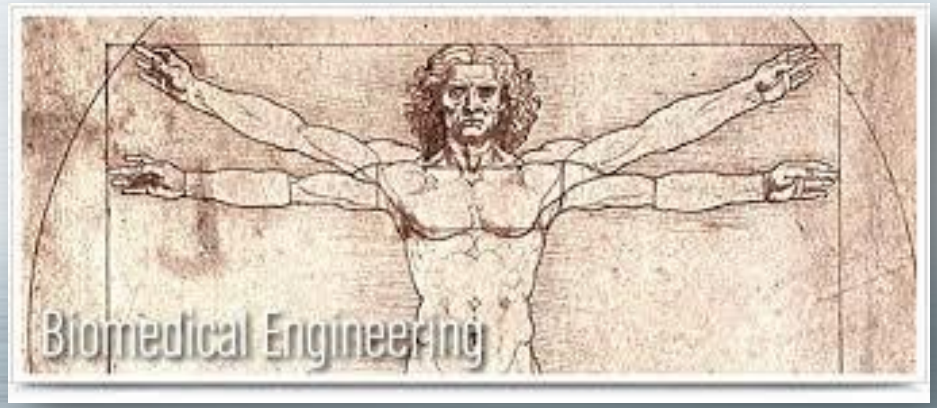


Biomedical Engineering

MU Bioengineering

Bioprocessing

Bioenvironmental Engineering

What Is Biomedical Engineering?

Application of engineering principles and research to

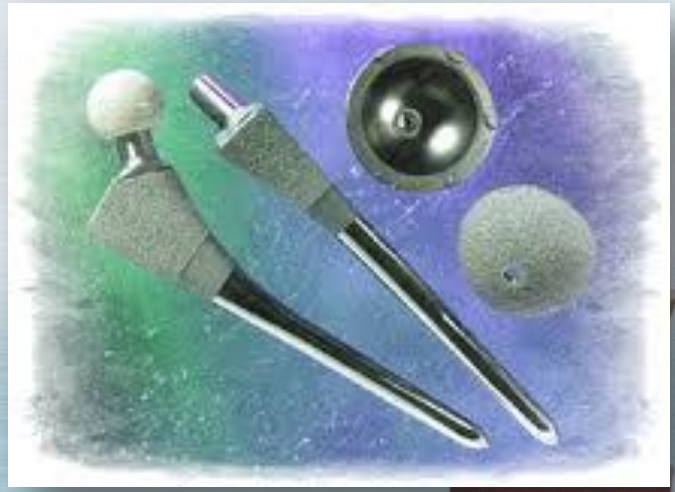
- Understand the functioning of the body
- Understand and fight diseases
- Help diagnosing diseases
- Develop instruments to improve diagnosis and therapy
- Design prostheses and implants

In general: Help enhance health and quality of life

Biomedical Engineering

Areas of Biomedical Engineering

- Biomechanics
- Biomaterials - Bioimplants
- Biomedical Devices and Sensors
- Biomedical Imaging - Biophotonics
- Tissue Engineering
- Physiology



Undergraduate Biomedical Emphasis

Biomaterials Emphasis

- Biomaterials
- Biomaterials Interfaces
- Biomedical Imaging
- Chemistry/Physics of Materials
- Molecular and Cell Biomechanics
- Engineering Computations
- Biomolecular Engr & Nanobiotechnology
- Intro. to Polymers
- Plasma Polymerization
- Intro. to Ceramics
- Engineering Materials

Biomechanics emphasis

- Orthopaedic biomechanics
- Biomaterials
- Chemistry/Physics of Materials
- Molecular and Cell Biomechanics
- Biomedical Imaging
- Biomaterials Interface
- Engineering Computations
- Mechanical Systems Engineering Dynamics
- Advanced CAD
- Engineering Materials
- Finite Element Analysis
- Introduction to MEMS

Biophotonics Emphasis

- Biomedical Imaging
- Biomedical Optics
- Engineering Computations
- Bioelectricity
- Photonics and Nanotech in Biosensors
- Biomolecular Engr & Nanobiotechnology
- Lasers and Their Applications
- Physical Electronics
- Introduction to Digital Image Processing
- Introduction to Digital Signal Processing

Bioinstrumentation or Bioelectronics

- Biomedical Imaging
- Biomedical Optics
- Engineering Computations
- Bioelectricity
- Biomaterials (WI)
- Circuit Theory I
- Circuit Theory II
- Lasers and Their Applications
- Introduction to Digital Signal Processing
- Introduction to Digital Image Processing
- Instrumentation and Measurements Laboratory
- Introduction to MEMS

All biomedical engineering majors should take one of the following physiology courses:

MPP3333/3337

Bio3700

An Sci 3254

Physiol 3202

Biomaterials Emphasis (choose up to 5-6 courses)

Course Number	Title	# of Credits	Offered
BE 3170	Biomaterials (WI)	3	Fall
BE 4170	Biomaterials Interfaces	3	Spring
BE 4480	Chemistry/Physics of Materials	3	Spring
BE 3075	Introduction to Materials Engineering	3	Spring
BE 4470	Biomolecular Engr & Nanobiotechnology	3	Spring
MAE 4231	Nanomaterials	3	Prereq Matls course
ChemE 4319	Intro. to Polymers	3	Prereq ChemE course
ChemE 4321	Intro. to Ceramics	3	
science elective			
Physics 4310	Physics in Cell and Developmental Biology	3	

Biomechanics emphasis (choose up to 5-6 courses)

Course Number	Title	# of Credits	Semester Taught
BE 3170	Biomaterials (WI)	3	Fall
BE 4370	Orthopedic Biomechanics	3	Spring
BE 4480	Chemistry/Physics of Materials	3	Spring
BE 3075	Introduction to Materials Engineering	3	Spring
BE 4170	Biomaterials Interface	3	Spring
MAE 2600	Dynamics	3	
MAE 3100	Advanced CAD	3	
MAE 3200	Engineering Materials	4	
MAE 4280	Finite Element Analysis	3	

Biophotonics Emphasis (choose up to 5-6 engineering courses)

Course Number	Title	# of Credits	Offered
BE 4420	Introduction to Biomedical Imaging	3	Spring
BE 4770	Biomedical Optics	3	Spring
BE 4070	Bioelectricity	3	Fall
BE 4570	Fluorescent Imaging	3	Fall
BE 4470	Biomolecular Engr & Nanobiotechnology	3	Spring
BE 4575	Computational Neuroscience	4	Fall
ECE 4610	Physical Electronics	3	
ECE 4850	Introduction to Digital Image Processing	4	
ECE-4830	Introduction to Digital Signal Processing	4	
Science elective			
Physics 4110	Light and Modern Optics	4	

Bioinstrumentation or Bioelectronics Emphasis (choose up to 5-6 courses)

Course Number	Title	# of Credits	Offered
BE 4770	Biomedical Optics	3	Spring
BE 4070	Bioelectricity	3	Fall
BE 4570	Fluorescent Imaging	3	Fall
ECE 2100	Circuit Theory I	3	
ECE 3810	Circuit Theory II	3	
ECE-4570(NU ENG 4382)	Lasers and Their Applications	3	
ECE-4830	Introduction to Digital Signal Processing	4	
ECE-4850	Introduction to Digital Image Processing	4	
MAE 3800	Instrumentation and Measurements Laboratory	3	
MAE 4680	Introduction to MEMS	3	
science electives			
DMU 4200	Principles of Diagnostic Medical Ultrasound	3	
NUCMED 4327	Nuclear Medicine Instrumentation	3	

Considering Pre-Med, Dental, Optometry, Podiatry, Pharmacy, Pre-Veterinary or Physician Assistant School?

Step One: Being Prepared

Mizzou does not have a designated Pre-med major. Students interested in attending medical, dental, optometry, podiatry or physician assistant school following college graduation are **free to choose from a wide variety of majors at Mizzou as long as they fulfill the pre-professional course requirements.** For more information about requirements, visit http://premed.missouri.edu or call the Medopp Advising Office (Honors College) at 573-882-3893.

Step Two: Choosing your major at Mizzou

However, the most commonly chosen majors are those where the pre-med requirements coincide with the degree requirements.
Majors in which the curriculum contains these requirements include those in the sciences and engineering. These are distributed through various colleges at MU:

College of Engineering: *Chemical Engineering*, *Bioengineering*
Questions regarding options: Click on the major above or call (Chem) 573-882-2030 or (Bio) 573-882-7044

http://premed.missouri.edu/

Advising Services

Appointments

If you are a currently-enrolled student or a graduate of the University of Missouri-Columbia, you can make an appointment with a pre-health adviser in The Medopp Advising Office by calling 573-882-3893. We encourage all freshmen and sophomores to attend our small group advising sessions through the Freshmen Connection and Sophomore Connection programs. These are individualized sessions that allow you to get your questions answered while interacting with other pre-professional students.

Susan Geisert

GeisertS@missouri.edu

Pre-Pharmacy Advising

Pre-Pharmacy students should meet with a UMKC Advisor about the UMKC School of Pharmacy at MU.

To schedule an appointment with a UMKC School of Pharmacy Pre-Pharmacy advisor, please call or e-mail the Pharmacy Student Affairs Office at 816-235-1613 or e-mail pharmacy@umkc.edu.

•Steve McDonald, UMKC academic advisor, will be in Columbia on the following dates for advising in Lewis Hall:

- September 12
- October 10
- October 31

On days that Steve McDonald is at his Kansas City office, he will be available to meet via video link from Lewis Hall.

Clubs and Organizations

- Professional organizations /Student Chapters
  - BMES (Biomedical Engineering Society)
  - SPIE (Society of Photo-Optical Instrumentation Engineers)
  - IBE (Institute of Biological Engineering)
  - ASABE (American Society of Agricultural and Biological Engineers)
  - SWE (Society of Women Engineers)
- Alpha Epsilon—Honors Society
- Opportunities to develop leadership skills, technical information exchange
- Opportunities to know faculty members and others students.
- Interaction with professionals in industry and government.
- Opportunities to meet alumni and to learn about their careers.

Questions?

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