**APPLIED BIOMEDICAL ENGINEERING**

- **Master of Science in Applied Biomedical Engineering**
  - Focus Areas: Imaging, Instrumentation, or Translational Tissue Engineering
- **Post-Master's Certificate in Applied Biomedical Engineering**

**COURSES**

**PREREQUISITE COURSES**

- 585.209 Organic Chemistry
- 585.207 Molecular Biology OR 410.602 Molecular Biology*
- 625.201 General Applied Mathematics

*These courses do not count towards degree or certificate requirements.

**CORE COURSES**

- 585.405 Physiology for Applied Biomedical Engineering I
- 585.406 Physiology for Applied Biomedical Engineering II
- 585.409 Mathematical Methods for Applied Biomedical Engineering OR 535.441 Mathematical Methods for Engineers
- 585.425 Biomedical Engineering Practice and Innovation

See below for the fifth core course, which is specific to each focus area.

**COURSES BY FOCUS AREAS**

The focus areas offered represent related groups of courses that are relevant for students with interests in the selected areas. Students are required to choose a focus area to follow. The focus areas are presented as an aid to students in planning their course schedules and are only applicable to students seeking a master's degree. They do not appear as official designations on a student's transcript or diploma.

**IMAGING**

- **CORE COURSE (SELECT ONE)**
  - 585.604 Principles of Medical Imaging
  - 585.605 Medical Imaging

- **OTHER COURSES FOR THE FOCUS AREA (SELECT AT LEAST ONE)**
  - 585.411 Principles of Medical Instrumentation and Devices
  - 585.423 Systems Bioengineering Lab I (1/2 credit)
  - 585.424 Systems Bioengineering Lab II (1/2 credit)
  - 585.607 Medical Imaging II: MRI
  - 585.606 Medical Image Processing
  - 585.605 Medical Imaging
  - 585.606 Medical Image Processing
  - 585.610 Biochemical Sensors
  - 585.632 Advanced Signal Processing for Biomedical Engineers
  - 585.633 Biosignals
  - 585.800 Special Project in Applied Biomedical Engineering

**INSTRUMENTATION**

- **CORE COURSE (SELECT ONE)**
  - 585.408 Medical Sensors and Devices
  - 585.411 Principles of Medical Instrumentation and Devices

- **OTHER COURSES FOR THE FOCUS AREA (SELECT AT LEAST ONE)**
  - 585.414 Rehabilitation Engineering
  - 585.423 Systems Bioengineering Lab I (1/2 credit)
  - 585.424 Systems Bioengineering Lab II (1/2 credit)
  - 585.607 Medical Imaging II: MRI
  - 585.605 Medical Imaging
  - 585.606 Medical Image Processing
  - 585.610 Biochemical Sensors
  - 585.624 Neural Prosthetics: Science, Technology, and Applications
  - 585.632 Advanced Signal Processing for Biomedical Engineers
  - 585.633 Biosignals
  - 585.634 Biophotonics
  - 585.800 Special Project in Applied Biomedical Engineering

* This course is offered online through the Zanvyl Krieger School of Arts and Sciences’ Advanced Academic Programs
TRANSLATIONAL TISSUE ENGINEERING

CORE COURSE
585.629  Cell and Tissue Engineering

OTHER COURSES FOR THE FOCUS AREA (SELECT AT LEAST ONE)
585.414  Rehabilitation Engineering
585.423  Systems Bioengineering Lab I (1/2 credit)
585.424  Systems Bioengineering Lab II (1/2 credit)
585.608  Biomaterials
585.609  Cell Mechanics
585.610  Biochemical Sensors
585.618  Biological Fluid and Solid Mechanics
585.620  Orthopedic Biomechanics
585.624  Neural Prosthetics: Science, Technology, and Applications
585.800  Special Project in Applied Biomedical Engineering

ELECTIVES
The following electives are offered during the day through the full-time Department of Biomedical Engineering at the Homewood campus or at the School of Medicine.
580.420  Build-a-Genome
580.448  Biomechanics of the Cell
580.451  Cellular and Tissue Engineering Laboratory
580.452  Cellular and Tissue Engineering Laboratory
580.466  Statistical Methods in Imaging
580.488  Foundations of Computational Biology and Bioinformatics II
580.495  Microfabrication Laboratory
580.616  Introduction to Linear Systems
580.625  Structure and Function of the Auditory and Vestibular Systems
580.626  Structure and Function of the Auditory and Vestibular Systems
580.628  Topics in Systems Neuroscience
580.630  Theoretical Neuroscience
580.632  Ionic Channels in Excitable Membranes
580.634  Molecular and Cellular Systems Physiology Laboratory
580.639  Models of the Neuron
580.641  Cellular Engineering
580.642  Tissue Engineering
580.673  Magnetic Resonance in Medicine
580.677  Advanced Topics in Magnetic Resonance
580.682  Computational Models of the Cardiac Myocyte
580.684  Ultrasound Imaging: Theory and Applications
580.688  Foundations of Computation Biology and Bioinformatics II
580.691  Learning Theory
580.771  Principles of Design of Biomedical Instrumentation

Please refer to the course schedule (ep.jhu.edu/schedule) published each term for exact dates, times, locations, fees, and instructors.