



Master of Science in Biomedical Engineering

Program Overview

The Master of Science in Biomedical Engineering is designed to prepare students to apply engineering principles to problems in medicine and biology; to understand and model attributes of living systems; and to synthesize biomedical systems and devices in order to improve human health.

The program is strongly interdisciplinary, as students choose from a large array of areas of study across the university, such as biology, public health and regulatory affairs. Course topics may also include: cancer therapy, cardiac electrophysiology, biosensors, microfluidics, medical imaging and image analysis, optogenetics, robotics and ultrasound applications in medicine.

With the university's central location in Washington, DC, students are able to take full advantage of opportunities available at nearby research and government institutions, including the GW Hospital, U.S. Food and Drug Administration (FDA), the National Institutes of Health (NIH), the National Institutes of Standards and Technology (NIST) and Children's National Medical Center.

Program Requirements

Credit Requirements

1. The following requirements must be fulfilled: non-thesis option—30 credits, including 15 credits in required courses and 15 credits in elective courses; thesis option—30 credits, including 6 credits in thesis and 9 credits in elective courses
2. Only 3 credits of independent research (BME 6050) may be applied toward a master's degree.

Colloquium Requirement

In addition to curriculum requirements, students must attend five non-credit bearing engineering colloquia as part of their program of study. At least three of these must be Department of Biomedical Engineering events. Each colloquium attended must be verified by

Required Courses

Five 6000-level BME courses (15 credits) excluding BME 6050.

Required of students who have selected the thesis option

1. BME 6998 Thesis Research
2. BME 6999 Thesis Research

Electives

1. For non-thesis option, five elective courses (15 credits) must be taken. For thesis option, three elective courses (9 credits) and the two thesis courses over two semesters (BME 6998 and 6999) must be taken. All electives must be approved by the advisor.
2. No more than **two** 3000- or 4000-level courses that have been approved for graduate credit may be counted toward the requirements for the degree.
3. Only 3 credits of independent research (BME 6050) may be applied toward a master's degree.
4. BME courses that can be taken as electives are given below[†].

6000-level Courses:

- BME 6481 Regulatory Law for Medical Devices (Fall)
- BME 6488 Cell and Molecular Imaging (Fall)
- BME 6489 Socially Assistive Robots (Fall)
- BME 6492 Biology of Materials and Regenerative Medicine (Fall)
- BME 6850 Pattern Recognition & Machine Learning (Fall)
- BME 6045 Bioelectromagnetics (Spring)
- BME 6483 Medical Instrumentation Design (Spring)
- BME 6484 Biomedical Signal Analysis (Spring)
- BME 6486 Clinical Medicine for Engineers (Spring)
- BME 6487 Rehabilitation Medicine Engineering (Spring)
- BME 6491 Micro and Nanofabrication for Bioelectronics (Spring)

3000- or 4000-level Courses (no more than two):

- BME 4482 Medical Measurements (Fall)
- BME 4831 Introduction to Bioelectronics (Fall)
- BME 4480 Bioelectricity (Spring)
- BME 4830 Introduction to Medical Imaging Methods (Spring)
- BME 4832 Nanotherapeutics and Drug Delivery (Spring)
- BME 4835 Introduction to Assistive Robotics (Spring)
- BME 3907 Special Topics in Biomedical Engineering (Fall, Spring, Summer)

[†]Note that electives can be courses from other departments or schools.

Admissions Requirements

- Preferred bachelor's degree in biomedical engineering. Admission may still be offered with a condition of taking deficiency courses during first semester.
- Minimum 3.0 GPA (on a 4.0 scale) achieved at the time of bachelor's degree conferral.
- Successful submission of online application form, exam scores and other documents as outlined in the [admissions requirements](#).



Professional Outcomes



Get further insights into the career options and outcomes for students and alumni of the Biomedical Engineering program.



Department of Biomedical Engineering

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