



Health Careers Fact Sheet

COLLEGE OF SCIENCE AND MATHEMATICS STUDENT SUCCESS CENTER
UNIVERSITY OF MASSACHUSETTS BOSTON

Biomedical Engineering

Biomedical engineers combine engineering principles with medical sciences to design and create equipment, devices, computer systems, and software. Most biomedical engineers work in manufacturing, universities, hospitals, and research facilities of companies and educational and medical institutions. Biomedical engineers design electrical circuits, software to run medical equipment, or computer simulations to test new drug therapies. In addition, they design and build artificial body parts, such as hip and knee joints. In some cases, they develop the materials needed to make the replacement body parts. They also design rehabilitative exercise equipment. ([U.S. BLS](#))

Degree

Biomedical engineers typically need a bachelor's degree in biomedical engineering or bioengineering, or in a related engineering field. Some positions may require a graduate degree.

Program Length

4 years (Bachelor's Degree)

Professional Organizations

Biomedical Engineering Society ([BMES](#))

Accreditation Board for Engineering and Technology ([ABET](#))

American Institute for Medical and Biological Engineering ([AIMBE](#))

Application Service

Apply individually to programs

Academic Admission Requirements

Students interested in becoming biomedical engineers should take high school science courses, such as chemistry, physics, and biology. They should also take math courses, including algebra, geometry, trigonometry, and calculus. Courses in drafting or mechanical drawing and in computer programming are also useful.

Bachelor's degree programs in biomedical engineering and bioengineering focus on engineering and biological sciences. Programs include laboratory- and classroom-based courses, in subjects such as fluid and solid mechanics, computer programming, circuit design, and biomaterials. Other required courses may include biological sciences, such as physiology.

Accredited programs also include substantial training in engineering design. Many programs include co-ops or internships, often with hospitals and medical device and pharmaceutical manufacturing companies, to provide students with practical applications as part of their study. Biomedical engineering and bioengineering programs are accredited by ABET. ([U.S. BLS](#))

Volunteer and Internship experience in the field are crucial. Some Computer Science background may also be helpful.

Job Outlook

Employment of biomedical engineers is projected to grow 5 percent from 2019 to 2029, faster than the average for all occupations. ([U.S. BLS](#))

PREMEDICAL AND ALLIED HEALTH ADVISING

Wheatley Hall, Fourth Floor, Suite 151
www.umb.edu/premed | premedadvising@umb.edu