# Biomedical Engineering at Rutgers

While medical doctors may administer procedures that save lives and keep people healthy, biomedical engineers are inventing the devices and equipment that drive medical advances and directly improve the quality of life for millions of people. Biomedical engineers design prostheses, artificial organs, and pharmaceutical products. They also design and manufacture diagnostic and therapeutic devices and imaging equipment that give doctors and medical researchers the tools to identify and treat a wide range of illnesses and injuries.

Biomedical engineering at Rutgers offers exceptional opportunities for the intellectual development, personal growth, and success of students in an environment of diversity and vibrancy. As part of a nationally acclaimed research university, BME students have access to state-of-the-art labs and facilities, research opportunities, and internships that compliment coursework and provide industry experience in preparation for a biomedical career.

TOP 50 BME GRADUATE ENGINEERING PROGRAMS *(USNWR)*

## Biomedical Engineering Degrees Offered and Curricular Options

**BS**

Options:

- **Biomedical Computing, Imaging, and Instrumentation**
- **Biomechanics and Rehabilitation Engineering**
- **Tissue Engineering and Molecular Bioengineering**

**BS/BA Dual Degree**
**BS/MS Five-year Dual Degree Program**
**BS/MBA Five-year Dual Degree Program**
**MS ME PhD**

## BME Highlights

- Among top 50 graduate engineering programs (USNWR rankings)
- Dedicated building brings together offices, classrooms, and laboratories
- Graduating students are prepared to meet the entrance requirements for medical and law schools, business administration, and other professional disciplines.
- More than 20 faculty members are fellows of the American Institute of Medical and Biological Engineers

## WHAT CAN YOU DO WITH A BME DEGREE?

Medical device industry

Health care, rehabilitation, and human performance

Medicine, and physical/occupational therapy

Tissue engineering, biomaterials design, and applications

Molecular medicine

Physiological systems

Medical imaging and processing

***"As a former athlete with many injuries, it is a dream come true to be working on research that personally matters to me at the Musculoskeletal Tissue Regeneration Lab. This hands-on experience has complimented my classroom knowledge better preparing me for future graduate studies."***

***Pushpendra Patel***

RUTGERS School of Engineering

For more information, visit
bme.rutgers.edu



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## Hands-On Experience

State-of-the-art facilities encourage interdisciplinary collaboration in genomics, tissue engineering, advanced microscopy, biomedical optics, microfabrication, animal study, and more.

Unparalleled access to leaders and innovators in the field as well as to resources, including research funding and internship opportunities for students.

The Rutgers-UMDNJ integration brings additional opportunities for collaboration and research for BME students.

## BME Out Front

The world's first automatic implantable defibrillator, a device that has saved more than 2 million lives since 1981 and is standard in cardiac care, was developed by Rutgers BME alumnus Mir Imran.

## Research Opportunities

Molecular, cellular, and nanosystems bioengineering

Biomaterials and tissue engineering

Biomechanics and rehabilitation engineering

Neuroengineering and neurotechnology

Physiologic systems and bioinstrumentation

Computational bioengineering and biomedical imaging

RUTGERS
School of Engineering

Established in 1864, the School of Engineering at Rutgers, The State University of New Jersey, is home to educational opportunity and innovation, pursuing work of enormous relevance to society and the economy. With seven academic departments and world-renowned research centers, the School of Engineering currently enrolls more than 3,300 undergraduate and 700 graduate students, and generates more than $60 million in research funding annually.

## Program Highlights

The undergraduate curriculum includes engineering, physics, chemistry, mathematics, and basic biology, as well as a solid core of biomedical engineering courses, numerous electives, a well-designed laboratory experience, career advising, summer industrial internships, and a capstone senior design conference. Coursework culminates in a rigorous, senior-year independent design project that emphasizes technical writing and oral communication.

Flexibility in the curriculum allows students to pursue pre-medical, pre-dental and graduate studies. Other opportunities include a specialized Honors Academy for students interested in pursuing a career in research and the possibility of completing a graduate degree on an accelerated schedule.

The biomedical engineering undergraduate program offers three main curriculum tracks:

### Biomedical Computing, Imaging, and Instrumentation

This track is designed for students interested in academic or industrial careers that involve physiological systems, medical imaging, medical image processing, and the graphics and visualization industries. Emphasis is placed both on understanding the physiological system as well as the engineering and development of new sensors and measurement devices.

### Biomechanics and Rehabilitation Engineering

Biomechanical engineering applies the principals of mechanical engineering to biological systems. Rehabilitation engineering applies engineering disciplines in developing technological solutions to problems related to disabilities and health issues. At Rutgers, the biomechanics option emphasizes tissue and fluid mechanics, while rehabilitation engineering places an emphasis on prosthetics and assisted devices.

### Tissue Engineering and Molecular Bioengineering

This track is designed for students interested in applying engineering principles to the development of biomedical technologies underlying tissue engineering, biomaterials design and applications, and molecular medicine. An emphasis is placed on biochemistry and on molecular and cell biology in the life sciences arena and on thermodynamics, kinetics, and transport and materials sciences within the engineering sciences.

For more information, visit
bme.rutgers.edu