



# Master of Science Program In Biomedical Engineering

Department of Biomedical Engineering  
New Jersey Institute of Technology

## New Jersey Institute of Technology

NJIT set its roots 130 years ago in the industrial powerhouse that was 19<sup>th</sup> century Newark and has grown into a major technological university poised to advance into the 21<sup>st</sup> century. Ranked in the top 100 Best Colleges by U.S. News & World Report, NJIT's modern campus sits at the heart of Newark's revitalized University Heights, surrounded by the New Jersey Medical School, New Jersey Dental School, and the Newark campus of Rutgers University.

Graduate study greatly influences the academic environment of the campus, with 1200 out of NJIT's total 11000 enrollment pursuing the MS or Ph.D. in engineering. On campus research has grown rapidly from a nominal level in the 1990s to over \$160 Million annually. Combining this with the research programs at the Medical and Dental schools and Rutgers-Newark, NJIT and its neighboring institutions comprise a robust research community approaching \$950 million/year.



## Newark/New York City Metro Area

Few regions of the nation rival the Newark/New York City metropolitan area for its exciting cultural, entertainment and employment opportunities. Within minutes of NJIT's campus are the NJ Performing Arts Center, The Prudential Newark Arena for professional hockey and basketball, and the Newark Ironbound, a neighborhood with dozens of Portuguese and Brazilian restaurants. Nearby communities offer an amazing ethnic richness that should appeal to graduate students. Only 30 minutes away, connected by excellent public transportation, NYC awaits with its theaters, performance halls, and matchless attractions.

For a closer look at the NJIT campus and the city of Newark take an online tour at <https://www.njit.edu/life/around-campus> and <http://gonewark.com/>

## MS in Biomedical Engineering at NJIT

The biomedical engineering department at NJIT offers one of the most flexible MS curricula in the nation. Rather than require a one-size-fits-all common core set of courses, it recognizes that few students have the same background and even fewer have the same career goals. With one of the largest BME MS enrollments in the nation, the department is able to offer an outstanding selection of courses that allow students to develop an individual concentration of courses that support their personal career aspirations. This allows an individual to avoid taking courses that repeat material from their undergraduate education, while focusing their entire MS experience on acquiring depth in their area of specialization.

The department of biomedical engineering is NJIT's newest academic department and is staffed by faculty who are energetic in their teaching and research. NJIT's location close to world-class medical research institutions as well as one of the nation's most active biomedical industrial communities provides access to professors of practice who bring their personal expertise to courses that expand the curriculum.

The MS in BME can be earned with 30-credits (including a 6-credit thesis) or 30 credits (courses only). Many research oriented students pursue a thesis in one of the department's many faculty research laboratories or at a nearby medical research institution. A large number of non-thesis students pursue an internship in a biomedical industry

While the majority of students are full-time, part-time students are most welcome and will find a strong selection of late afternoon and evening courses available. Visit the department website at <http://biomedical.njit.edu/>

## Graduate Courses Offered in BME at NJIT

### Fall

- CELL & MOLECULAR TISSUE ENGINEERING
- ADVANCE SYNTHESIS & CHARACTERIZATION OF MATERIALS
- INTRODUCTION TO BIOMECHANICAL ENGINEERING
- BIOMATERIALS
- BIOROBOTICS
- PRINCIPLES OF NEUROMUSCULAR ENGINEERING
- DESIGN OF ORTHOPEDIC IMPLANTS
- CAD FOR BIOMECHANICS AND BIOMATERIALS
- MEDICAL DEVICE DEVELOPMENT
- VIRTUAL BIOMEDICAL INSTRUMENTATION LABVIEW
- MODELING IN FUNCTIONAL BRAIN IMAGING
- MS PROJECT
- MS THESIS

### Spring

- CLINICAL PHYSIOLOGY & NEUROSCIENCE
- PRINCIPLES OF TISSUE ENGINEERING
- NEURAL ENGINEERING
- MEDICAL INSTRUMENTATION
- BIOMECHANICS HUMAN STRUCTURE AND MOTION
- MEDICAL IMAGING SYSTEMS
- COMPUTATIONAL BIOMECHANICS
- DESIGN OF ORTHOPEDIC IMPLANTS
- INJURY BIOMECHANICS
- ADVANCED LABVIEW
- BIOSTATISTICS
- SYSTEMS MANAGEMENT FOR MEDICAL DEVICES
- MS PROJECT
- MS THESIS

Prospective students can view current course enrollments and availability at the NJIT Registration website at <https://www5.njit.edu/registrar/schedules/>. Students may also select elective courses from other departments.

### Research and Industrial Opportunities

Within the NJIT biomedical engineering department, research expenditures for the current year are approximately \$5 million. The BME department at NJIT has a number of multi-disciplinary research centers and specialized laboratories that focus on cutting edge technologies with applications in biomedicine and the life sciences: Biomaterial Drug Discovery, Delivery & Development Laboratory, Center for Brain Imaging, Center for Injury Biomechanics, Materials and Medicine (CIBM3), Medical Device Concept Laboratory MDCL), Neuromotor Behavior and Neurorehabilitation Laboratory, Neural Engineering for Speech and Hearing Laboratory, Neural Prosthetics Laboratory, Neuromuscular Engineering Laboratory, Center for Rehabilitation Robotics, Stem Cells and Tissue Engineering Laboratory, Tissue Engineering and Applied Biomaterials Laboratory, Vision and Neural Engineering Laboratory. See <https://biomedical.njit.edu/research/centers.php> for additional information.

The following is a partial listing of local companies where many of our students work and find internships: Siemens, Stryker Orthopedics, Maquet-Getinge, Becton Dickenson, Zimmer Biomet, Phillips, Datascope, Integra LifeSciences Ethicon, Johnson & Johnson,, Medtronic, Picatinny Arsenal, Kessler Rehabilitation Institute, The East Orange VA Medical Center.

### MS Students in BME at NJIT

Approximately 75% of the current students enrolled in the program are full-time and expect to complete their degree in 3 semesters. Both US and international students are strongly represented. For US applicants, favorable consideration will be given to those who have proven themselves academically in undergraduate courses. GRE scores are required for full-time applicants. All applicants must provide a supporting letter of recommendation. Further details about applying can be obtained online at <https://www.njit.edu/apply-now>. Students who have completed undergraduate studies in a closely related non-engineering life science field may also be conditionally admitted with appropriate bridge courses assigned. Please contact the graduate program director for more details. Students from all engineering backgrounds are eligible for admission.

### More Information

Those interested in obtaining additional information may view the MS in BME Program description at <https://biomedical.njit.edu/academics/graduate/masters.php>. Telephone, email and on-campus visits are welcomed. Please feel free to contact Max Roman, Ph.D., BME MS Director, [max.roman@njit.edu](mailto:max.roman@njit.edu) or 1-973-596-5270