BIOMEDICAL ENGINEERING (MS)

Biomedical Engineering Department (https://engineering.nyu.edu/ academics/departments/biomedical-engineering/)

NYSED: 08793 HEGIS: 0905.00 CIP. 14.0501

Program Description

Biomedical Engineering (BME), a multi-disciplinary field, is behind some of the most important medical breakthroughs today. Working closely together, engineers, scientists, mathematicians, and physicians have developed artificial organs, internal and external prosthetics, multiple imaging modalities, and diagnostic and therapeutic devices. Biomedical Engineering has significantly contributed to improved health care and quality of life.

The MS program in Biomedical Engineering merges coursework from Tandon's engineering departments along with research opportunities with Biomedical Engineering faculty from across NYU to create a degree path that matches a student's BME career objectives.

Admissions

To apply for admission to any Tandon graduate program, please contact the Office of Graduate Admissions (https://engineering.nyu.edu/ admissions/graduate/).

Program Requirements

The program requires the completion of 30 credits, comprised of the following:

Course	Title Cre	dits
Core Requirement	ts	
BE-GY 6103	Anatomy, Physiology, & Biophysics I	3
BE-GY 6473	Applied Mathematics and Statistics for Biomedical Engineering ¹	3
or BE-GY 8103	Systems & Computational Simulation for Biomedic Engineering	al
BE-GY 6503	Biomedical Instrumentation ¹	3
or BE-GY 6783	Biomechanics for Biomedical Engineers	
Biomedical Engine	eering (BME) Electives	
Select 9 credits of	f the following:	9
BE-GY 6113	Anatomy, Physiology, & Biophysics II	
BE-GY 6203	Biomedical Imaging I	
BE-GY 6303	Bio-optics	
BE-GY 6353	Special Topics in Biomedical Engineering	
BE-GY 6403	Digital Signal Processing I	
BE-GY 6453	Probability and Stochastic Processes	
BE-GY 6513	Biomedical Device Design and Development	
BE-GY 6523	Biomems and Microfluidics	
BE-GY 6723	Natural Polymers and Materials	
BE-GY 6763	Rehabilitation Engineering	
BE-GY 6803	Biomaterials: Engineering Principles and Design Consideration	
BE-GY 8203	Biomedical Modeling, Estimation and Control	

BE-GY 9443	Tissue Engineering	
BE-GY 9453	Engineering Tissue Regeneration	
BE-GY 9603	Neural and Physiological Signal Processing	
BE-GY 9753	Bioethics Seminar	
Flexible Electives		
Select 6 credits o the BME electives	f flexible electives. Flexible electives can be from s list above or the out-of-department list below. ²	6
Out-of-Departm	ent Courses	
BT-GY 6063	Immunology: Concepts, Mechanisms and Applications in Biotechnology	
BT-GY 9433	Protein Engineering	
ECE-GY 6123	Image and Video Processing	
ECE-GY 6143	MACHINE LEARNING	
ECE-GY 6483	Real Time Embedded Systems	
ROB-GY 6423	Interactive Medical Robotics	
Experiential Learn	ning Tracks	
Each student mus Learning Tracks.	st complete one of the following Experiential 3	6
Guided Studies	Track	
The Guided Stu course, 3 credi	udies Track requires 6 credits of the Guided Studies ts per term for two consecutive terms.	
BE-GY 871X	Guided Studies in Biomedical Engineering	
Research Track		
The Research ⁻ credits per terr	Track requires 6 credits of the Research course, 3 n for two consecutive terms.	
BE-GY 873X	Research in Biomedical Engineering	
Thesis Track		
The Thesis Tra credits per terr	ck requires 6 credits of the MS Thesis course, 3 n for two consecutive terms.	
BE-GY 997X	MS Thesis in Biomedical Engineering	
Colloquium and S	eminar	
Students must er distinguished invi	roll in and attend the colloquium lecture series with ited speakers at least two semesters.	
BE-GY 9730	Colloquium in Biomedical Engineering	0
Students must pa development at le	articipate and enroll in the seminar for professional east two semesters.	
BE-GY 9740	Seminar in Biomedical Engineering	0
Total Credits		30
¹ If students take electives (or fle	both options, the second will count toward the BME xible electives if the BME electives are filled).	

² With adviser approval, other courses not on this list may count as flexible electives. Note, however, that courses cannot be selected from the School of Professional Studies.

³ See Policies (p. 2) for important details.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
BE-GY 6103	Anatomy, Physiology, & Biophysics I	3
BE-GY 6473	Applied Mathematics and Statistics for Biomedical Engineering	3
BE-GY 9730	Colloquium in Biomedical Engineering	0
BME Elective		3
	Credits	9

2nd Semester/Term

	Total Credits	30
	Credits	3
BE-GY 9740	Seminar in Biomedical Engineering	0
BE-GY 871X	Guided Studies in Biomedical Engineering	3
4th Semester/Term		
	Credits	9
Flexible Elective		3
Flexible Elective		3
BE-GY 9740	Seminar in Biomedical Engineering	0
BE-GY 871X	Guided Studies in Biomedical Engineering	3
3rd Semester/Term		
	Credits	9
BME Elective		3
BME Elective		3
BE-GY 9730	Colloquium in Biomedical Engineering	0
BE-GY 6503	Biomedical Instrumentation	3

Learning Outcomes

Upon successful completion of the program, graduates will:

- Have established a fundamental understanding of the biological sciences and advanced math principles, and various fields of biomedical engineering key concepts and applications.
- Be provided with exposure to laboratory and practical research opportunities, and enable them to develop innovative problem solving techniques in the field of biomedical engineering.
- 3. Have oral and written presentation capabilities for professional preparation and career development.

Policies

Program Policies

Experiential Learning Policies Internship Substitutions

Guided Studies Track

Students may count up to 3 credits of internship courses toward the Guided Studies Track. For example: BE-GY 871X (3 credits) + CP-GY 9911 (1.5 credits) + CP-GY 9921 (1.5

credits) = 6 credits

Research Track

Students may count up to 3 credits of internship courses toward the Research Track. For example:

BE-GY 873X (3 credits) + CP-GY 9911 (1.5 credits) + CP-GY 9921 (1.5 credits) = 6 credits

Credit Limitations Per Term Limit

Only with prior approval from the academic adviser should a student enroll in more than 3 credits of either BE-GY 871X, BE-GY 873X, or BE-GY 997X in a single semester.

Overall Limit

Students may take no more than 6 credits of BE-GY 871X or BE-GY 873X. Students may take no more than 9 credits of BE-GY 997X. No more than a total of 9 credits of Experiential Learning (EL) courses, including internship courses, may be taken. Additional EL credits, beyond the 6 credits required, will count either as BME or flexible electives.

Mutually Exclusive Tracks

The EL tracks are mutually exclusive. Students may only choose one track. Students cannot combine BE-GY 871X, BE-GY 873X, and BE-GY 997X.

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

Tandon Policies

Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/graduate/engineering/academic-policies/).