BIOMEDICAL ENGINEERING (PHD)

Department Website (https://engineering.nyu.edu/academics/programs/biomedical-engineering-phd/)

NYSED: 41174 **HEGIS:** 0905.00 **CIP:** 14.0501

Program Description

The primary goal of the PhD in Biomedical Engineering (BME) is to provide students with an indepth, advanced education that will give them the tools needed to perform fundamental and applied independent research in biomedical engineering. In addition, students will gain the requisite technical knowledge that they may wish to apply to management, marketing, sales, and entrepreneurial activities related to biomedical engineering.

The PhD degree in Biomedical Engineering is awarded to a student upon successful completion of 75 credits and the defense of a comprehensive dissertation research project. The credits are broken down as minimums of 27 course credits – 12 core courses plus 15 electives – and 27 doctoral dissertation research credits, with flexible choices in coursework and/or research for the remaining credits. A maximum of 30 course credits may be transferred from previous graduate course work. Doctoral dissertation credits can only be taken upon passing the qualifying exam. Students should be able to complete the doctoral program within four to six years.

Admissions

A BS degree in biomedical engineering or a related field of science or engineering is generally required for admission to the BME PhD program. Applicants with degrees in other fields or from other colleges may be admitted with undergraduate or graduate deficiencies as evaluated by the Graduate Admissions Committee. Students entering at the BME PhD program with an MS degree are expected to have an MS degree in biomedical engineering or a related field of science, medicine, or engineering. In addition to the degree requirement, acceptance to the program will depend on (1) academic excellence, (2) research interests congruent with those of program faculty, and (3) positive recommendations (e.g., from former research advisors). GRE scores are optional. Admissions committee members or faculty members whose research interests match those of the candidate, either in person or by a conference call, will interview viable candidates. Enrollment in the NYU Global Fellows program is available to those who choose a research advisor at the NYU Abu Dhabi campus.

Program Requirements

The program requires the completion of 75 credits, comprised of the following:

Course	Title	Credits
Core Requirements		
Advanced Mathematics and Statistics for Biomedical Engineering		
Select one of the following: [1]		3
BE-GY 6453	Probability and Stochastic Processes	
BE-GY 6473	APPLIED MATHEMATICS AND STATISTICS FOR BIOMEDICAL ENGINEERING	
CBE-GY 6153	APPLIED MATHEMATICS IN ENGINEERING	
Biomedical or Biophysical Science		
Select one of the following: [1]		3
BE-GY 6103	ANATOMY, PHYSIOLOGY, & BIOPHYSICS I	
BE-GY 6113	ANATOMY, PHYSIOLOGY, & BIOPHYSICS II	
Biomechanics or Bioinstrumentation		
Select one of the following: [1]		3
BE-GY 6503	BIOMEDICAL INSTRUMENTATION	
BE-GY 6513	BIOMEDICAL DEVICE DESIGN AND DEVELOPMENT	
BE-GY 6783	BIOMECHANICS FOR BIOMEDICAL ENGINEERS	
Responsible Conduct of Research		
BE-GY 9753	BIOETHICS SEMINAR [1,2]	3
Electives		
Other Elective Credits [1,3]		15-36
Qualifying Exam and Dissertation		
RE-GY 9990	PHD QUALIFYING EXAM	0
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING [4]	27
Department Colloquium Requirements		
BE-GY 9730	Colloquium in Biomedical Engineering [5]	0
BE-GY 9740	Seminar in Biomedical Engineering [5]	0
Total Credits		**75**

1

Other courses may be selected with the approval of the Graduate Studies Committee.

2

Students must take a course on responsible conduct in regards to research in accordance with the rules of the National Institutes of Health (https://www.nih.gov/) for student training programs.

3

More electives may be taken depending on if students wish to focus on coursework or dissertation research. Courses listed under the core requirement may be used for electives, after the student has filled the core requirement. However, the same course cannot count as both a core and an elective. See Biomedical Engineering, PhD (http://bulletin.engineering.nyu.edu/preview_program.php?catoid=17&poid=5023&returnto=1374) for a list of optional electives.

4

A minimum of 27 credits of dissertation are required for this Ph.D. degree. Once dissertation research begins, students must enroll in at least 3 credits of dissertation each fall and spring term (the summer term is optional) until graduation.

5

Students are required to enroll in BE-GY 9730 each semester. Students are required to enroll in BE-GY 9740 for four semesters.

Note: The Ph.D. degree requires a total of 75 credits to graduate. The minimum credit requirements for the core, electives, and the dissertation total to 54 credits. This design is intentional so that students are afforded the flexibility to structure the remaining 21 credits in the way that best suits their interests and goals. Students have the option of either electing to take more courses or more dissertation credits or a combination of both for these 21 credits.

Qualifying Exam and Dissertation

Passing a doctoral qualifying examination is required in order to begin taking dissertation research credits. The qualifying exam will be based on assigned thematically focused publications. This exam may be taken as early as the end of the first year, and not later than the middle of the second year. In the case of failure, the right to a second examination within six months is at the discretion of the examination committee in consultation with the Biomedical Engineering program committee. The qualifying examination must be passed by the end of the second year.

Once students have passed the qualifying exam, they may then enroll in dissertation research. A minimum of 27 credits of dissertation are required for this Ph.D. degree. Once dissertation research begins, students must enroll in at least 3 credits of dissertation each fall and spring term (the summer term is optional) until graduation.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
BE-GY 6453	Probability and Stochastic Processes	3
BE-GY 6103	ANATOMY, PHYSIOLOGY, & BIOPHYSICS I	3
BE-GY 9730	Colloquium in Biomedical Engineering	0
BE-GY 9740	Seminar in Biomedical Engineering	0
Elective		3
	Credits	**9**
2nd Semester/Term		
BE-GY 6503	BIOMEDICAL INSTRUMENTATION	3
BE-GY 9753	BIOETHICS SEMINAR	3
BE-GY 9730	Colloquium in Biomedical Engineering	0
BE-GY 9740	Seminar in Biomedical Engineering	0
Elective		3
	Credits	**9**
3rd Semester/Term		
BE-GY 9730	Colloquium in Biomedical Engineering	0
BE-GY 9740	Seminar in Biomedical Engineering	0
RE-GY 9990	PHD QUALIFYING EXAM	0
Elective		3
Elective		3
Elective		3
	Credits	**9**
4th Semester/Term		
BE-GY 9730	Colloquium in Biomedical Engineering	0
BE-GY 9740	Seminar in Biomedical Engineering	0
Elective		3
Elective		3
Elective		3
	Credits	**9**
5th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**3**
6th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**3**
7th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**3**
8th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
GA-GY 9993	Writing and Communication for Engineers and Scientists	3
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**6**
9th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**6**
10th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**6**
11th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**6**
12th Semester/Term		
BE-GY 999X	PHD DISSERTATION IN BIOMEDICAL ENGINEERING	3-9
BE-GY 9730	Colloquium in Biomedical Engineering	0
	Credits	**6**
	Total Credits	**75**

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Provide students with an indepth, advanced education that will give them the tools needed to perform fundamental and applied independent research in biomedical engineering.
2. Provide requisite technical knowledge that students may wish to apply to management, marketing, and sales activities related to biomedical engineering.
3. Provide knowledge for entrepreneurial activities related to biomedical engineering.

Policies

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/).