# **BIOTECHNOLOGY (MS)**

Chemical and Biomolecular Engineering Department (https:// engineering.nyu.edu/academics/departments/chemical-andbiomolecular-engineering/)

NYSED: 31537 HEGIS: 0499.00 CIP. 26.1201

## **Program Description**

Biotechnology is a swiftly growing industry. From the food grown at our farms to the medicine we buy and the ways we clean up the environment, biotechnology affects many facets of our daily lives. Major developments in the field occur every day, with many introduced by academic and professional communities before the greater public is even aware of industry advancements.

At the Tandon School of Engineering, students will join in these exciting discoveries. Course topics range from industrial application of enzymes and bio-polymer synthesis to modern drug design and the role of biotechnology in health care. The availability of various and varied electives enables students to specialize in selected biotechnology areas.

The program also includes Advanced Cell and Molecular Biology and Genetic Engineering courses, both with labs. Students can further enhance their research and analytical skills by registering for a project course. Taking two such courses will enable students to complete a body of research work equivalent to a master's thesis (optional). Students can also take a business or management related course from the Biotechnology and Entrepreneurship MS (https://bulletins.nyu.edu/ graduate/engineering/programs/biotechnology-entrepreneurship-ms/) program. With adviser permission, students can take courses at other schools of NYU.

There are ample research/internship opportunities available at NYU and NYC at large. For example, many Biotech MS students participate in research projects at the NYU Langone Medical Center, the worldrenowned Memorial Sloan Kettering Cancer Center, and other research institutions in the city. Students may also consider applying for summer internships at pharmaceutical companies or Biotech start-ups.

## **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, as detailed below. To meet graduation requirements, students must earn an overall (cumulative) GPA of 3.0 or higher.

Course Title	Credits		
Core Courses			
BT-GY 6013 Biotechnology and the Pharmaceutical Industry	· 3		
BT-GY 6023 Biotechnology and Health Care	3		
BT-GY 6033 Biosensors and Biochips	3		
BT-GY 6043 Biocatalysis in Industry	3		
Elective Courses			
Select 15 credits of the following: <sup>1</sup>			
BT-GY 6053 Introduction to Neuroscience for Biotechnologie	sts		

Total Credits		30
BT-GY 8723	Capstone Project in Biotechnology	3
Capstone		
BT-GY 871X	Project in Biotechnology	
BT-GY 9433	Protein Engineering	
BT-GY 7043	Computer-Aided Protein and Drug Design	
BT-GY 7013	Special Topics in Biotechnology	
BT-GY 6083	Advanced Cell and Molecular Biology	
BT-GY 6073	Genetic Engineering	
BT-GY 6063	Immunology: Concepts, Mechanisms and Applications in Biotechnology	

<sup>1</sup> Subject to adviser's approval, students can also take an elective course and/or do research at other schools of NYU (up to 9 credits). Typically, Biotechnology students choose NYU Langone Health (https:// med.nyu.edu/).

# Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
BT-GY 6023	Biotechnology and Health Care (core)	3
BT-GY 6083	Advanced Cell and Molecular Biology (elective)	3
Elective		3
	Credits	9
2nd Semester/Term		
BT-GY 6013	Biotechnology and the Pharmaceutical Industry (core)	3
BT-GY 6043	Biocatalysis in Industry (core)	3
BT-GY 6073	Genetic Engineering (elective)	3
	Credits	9
3rd Semester/Term		
BT-GY 6033	Biosensors and Biochips (core)	3
Elective		3
Elective		3
	Credits	9
4th Semester/Term		
BT-GY 8723	Capstone Project in Biotechnology (capstone)	3
	Credits	3
	Total Credits	30

### **Learning Outcomes**

Upon successful completion of the program, graduates will:

- 1. Demonstrate fundamental knowledge of main Biotechnology subject areas, including the underpinning science.
- 2. Have developed a clear understanding of how the main Biotech concepts are applied in practice.
- 3. Have acquired skills and experience necessary to successfully enter the workforce.

# 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/).