CHEMICAL ENGINEERING (PHD)

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

NYSED: 08800 HEGIS: 0906.00 CIP: 14.0701

Program Description

Chemical Engineering is part of a rapidly expanding field that requires interdisciplinary engineers educated in both the molecular and medical sciences. For every discovery made in the health and industrial sectors, a chemical engineer finds a way to develop and implement it on a large scale.

The PhD in Chemical Engineering program at the Tandon School of Engineering prepares students to fulfill that role. Our curriculum offers an advanced course of study to refine students' research skills, and we teach students the problem-solving skills to surmount any problem along the way.

Our PhD program in Chemical Engineering is designed to outfit students with expert knowledge of the field's core fundamentals as well as the latest research in its subtopics. By doing so, we further students' specialization beyond a master's degree, helping students achieve superior competence in a minor topic within Chemical Engineering.

Urban Science Doctoral Track

The optional Urban Science Doctoral Track (https://engineering.nyu.edu/ urban-science-sensing-complexity-informatics-doctoral-track/) is specifically designed for students who want to focus on urban science through a cohesive array of in-class and experiential learning activities, while pursuing their PhD at NYU Tandon. Doctoral track students will engage with CUSP's urban science faculty, experts in methodological aspects pertaining to complexity (dynamical systems, multi-agent systems, network science, and risk engineering), informatics (AI, machine learning, and robotics), and sensing (Internet of Things, smart infrastructure, wireless).

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 75 credits, comprised of the following:

Course	Title	Credits			
Core Courses					
CBE-GY 6153	Applied Mathematics in Engineering	3			
CBE-GY 6333	Transport Phenomena	3			
CBE-GY 6733	Chemical Engineering Thermodynamics	3			
CBE-GY 6813	Chemical Reactor Analysis and Design	3			
Required Seminars					

Students are required to enroll in one of the following seminars each semester until graduation.

	CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering		
	After passing the QE, students will in enroll at least 3 credits of disseration each fall and spring term until graduation. The PhD requires a total of 36 credits of dissertation. ²			
) հ	Dissertation			
	RE-GY 9990	PHD QUALIFYING EXAM	0	
	Students are requ years of beginning dissertation cours	ired to pass the Qualifying Exam (QE) within 2 g the PhD program. The QE is the prerequiste of the se.		
	Qualifying Exam			
	Free Electives can be either more graduate courses or more dissertation credits beyond the minimum required. ¹			
	Free Electives			
	Course Electives of graduate program	can be more CBE-GY courses or chosen from other as with the approval of the graduate adviser. ¹	9	
	Course Electives			
	Select at least thr above.	ee CBE-GY courses (9 credits), 6000-level and	9	
	CBE-GY 6000 Elect	ives		
	Electives			
	CBE-GY 9920	Seminar in Chemical & Biological Engineering	0	
	CDL-01 9910	Seminal in Chemical & Biology Engineering	0	

All electives must first be approved by the graduate adviser. No courses may be chosen from the School of Professional Studies.

² Note: Up to 9 credits of CBE-GY 998X Research in Chemical & Biomolecular Engineering can be included here.

Additional Program Requirements Comprehensive Qualifying Examination and Dissertation

Students must pass a comprehensive qualifying examination in chemical engineering and present a doctoral dissertation. The qualifying exam is given once a year. Additional details on the qualifying examination will be provided by the graduate adviser.

GPA Requirement

To meet graduation requirements, students must have an overall GPA (grade point average) of 3.0 or higher, and must not obtain a grade of C or lower in more than two required core courses.

Transfer Credits

A student who has earned graduate level credits and/or been awarded an MS degree should consult with the graduate adviser for course registration and possible credit transfer.

Required Safety Training

All PhD students in Chemical Engineering must complete a threehour training session offered by the NYU Environmental Health and Safety (EHS) Office (https://www.nyu.edu/life/safety-health-wellness/ environmental-health-and-safety.html) during their first semester, prior to beginning any work in the lab. Students will enroll in the training session on BioRaft (https://nyu.bioraft.com/frontpage_panel/). The sessions cover. Lab Safety, Hazardous Waste, Bloodborne Pathogens and International Air Transport Association (IATA) shipping. Students must show proof (e.g. certificate) that they have completed this training to their advisers. Each subsequent fall, students must take the above mentioned online refreshers (excluding IATA) until they graduate.

Internship for Chemical Engineering Students

Students can register for an internship course (CP-GY 9941, CP-GY 9951, 1.5 credits each) to do an internship. It is strongly recommended that the internship courses are taken during the summer. Up to 3 credits of approved internships can be applied as general (non-CBE) electives towards the PhD degree. Students cannot do an internship for credit after they have completed degree requirements. For an internship to be approved for credit, the internship must provide industry and/or research experience relevant to the Chemical Engineering PhD degree program. A PhD dissertation adviser serves as a faculty adviser. All internships must be approved by the faculty adviser. An internship supervisor (that is a person supervising a student's work at the internship site) will be requested to supervise the project and submit a midterm and a final term evaluation report to the faculty adviser. The student must submit a project report to the faculty adviser upon completion of the internship for evaluation and grading. During the internship, students are responsible for covering expenses such as fees, tuition, or living costs. International students willing to do an internship should consult with the Office of Global Services (OGS) (https://www.nyu.edu/about/leadership-universityadministration/office-of-the-president/office-of-the-provost/universitylife/office-of-studentaffairs/office-of-global-services.html) to ensure compliance with immigration regulations; this most often involves getting approval for Curricular Practical Training (CPT).

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
CBE-GY 6333	Transport Phenomena	3
CBE-GY 6733	Chemical Engineering Thermodynamics	3
CBE-GY 6000 Elective		3
CBE-GY 9910	Seminar in Chemical & Biology Engineering	0
	Credits	9
2nd Semester/Term		
CBE-GY 6153	Applied Mathematics in Engineering	3
CBE-GY 6813	Chemical Reactor Analysis and Design	3
CBE-GY 6000 Elective		3
CBE-GY 9920	Seminar in Chemical & Biological Engineering	0
RE-GY 9990	PHD QUALIFYING EXAM	0
	Credits	9
3rd Semester/Term		
CBE-GY 6000 Elective		3
CBE-GY 9910	Seminar in Chemical & Biology Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering	3
Course Elective		3
	Credits	9
4th Semester/Term		
CBE-GY 9920	Seminar in Chemical & Biological Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological	6
	Engineering	
Course Elective		3
	Credits	9
5th Semester/Term		
CBE-GY 9910	Seminar in Chemical & Biology Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering	6
Course Elective		3
	Credits	9

6th Semester/Term		
CBE-GY 9920	Seminar in Chemical & Biological Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering	6
	Credits	6
7th Semester/Term		
CBE-GY 9910	Seminar in Chemical & Biology Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering	6
	Credits	6
8th Semester/Term		
CBE-GY 9920	Seminar in Chemical & Biological Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering	6
	Credits	6
9th Semester/Term		
CBE-GY 9910	Seminar in Chemical & Biology Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering	6
	Credits	6
10th Semester/Term		
CBE-GY 9920	Seminar in Chemical & Biological Engineering	0
CBE-GY 999X	PhD Dissertation in Chemical and Biological Engineering	6
	Credits	6

Learning Outcomes

Upon successful completion of the program, graduates will:

- 1. Develop an expert knowledge of the field's core fundamentals as well as the latest CBE research.
- 2. Enhance problem-solving skills and refine research skills for advanced scientific and engineering problems.
- 3. Effectively convey scientific concepts and/or research findings in both written and oral formats.

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/).