MECHANICAL ENGINEERING (PHD)

Mechanical and Aerospace Engineering Department (https://engineering.nyu.edu/academics/departments/mechanical-and-aerospace-engineering/)

NYSED: 08827 **HEGIS:** 0910.00 **CIP:** 14.1901

Program Description

Mechanical engineers create the physical systems and devices that define modern society — everything from automobiles to air conditioning, robotic parts to power plants, people movers to artificial limbs, and rocket engines to satellites. At the Tandon School of Engineering, we groom our students to become the inventors and innovators of tomorrow. Our PhD in Mechanical Engineering program offers a balanced curriculum that emphasizes the principles behind these designs and approaches. To apply these principles in the field, we make computational and research experience an integral component of our students' studies.

We offer students the freedom to choose from 5 distinct areas of specialization:

- Aerospace Engineering
- Controls and Dynamic Systems
- Fluid Dynamics and Thermal Systems
- Materials Engineering
- Mechanics and Structural Systems

The high faculty-to-student ratio of our program ensures students develop close ties to their instructors and fellow students. This fosters lifelong relationships and a rigorous intellectual community of scholars.

Many of our graduates enter such fields as computer engineering, nanotechnology, software development, and financial engineering. They also occupy positions in bioengineering, manufacturing, astronautics, systems engineering, corporate management, and law.

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/).

Required Background Knowledge

Admission to this program requires an MS in Mechanical or Aerospace Engineering or other closely related engineering field or applied sciences. Applicants are expected to have earned a GPA of 3.5 or better in their MS degree. If a student is admitted, but their background appears to be lacking in some areas, the student will be advised to supplement their background knowledge based on the requirements for Tandon's MS degree in Mechanical Engineering. Those with a BS in Mechanical or Aerospace Engineering and a GPA of 3.5 or higher, may apply directly to the PhD program without an MS degree.

Program Requirements

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

Course	Title	Credits
Courses		
Approved Graduate Courses [1,2,3]		54
Qualifying Exam		
RE-GY 9990	PHD QUALIFYING EXAM [4]	0
Dissertation		
ME-GY 999X	PhD Dissertation in Mechanical Engineering (taken for a total of 21 credits) [5]	21
Total Credits		**75**

1. Students will select 54 credits of graduate courses, in consultation with their PhD adviser.
2. Normally, students will receive 30 credits toward this requirement transferred from their MS degree. These credits will appear on students' NYU transcripts as a blanket 30 credits.
3. Courses cannot be chosen from the School of Professional Studies.
4. The qualifying exam (QE) is the prerequisite for dissertation research. Students must pass the QE within 2 academic years from the start of the PhD program.
5. After passing the QE, students will begin their dissertation research. During this time, students will enroll in at least 3 credits of the dissertation course each fall and spring semester, until graduation. A total of 21 credits of dissertation are required for graduation.

The Qualifying Exam

The qualifying exam (QE) is a written and oral exam required to proceed to dissertation research. Students are expected to take the QE within the first two times it is offered. The QE must be taken and passed no later than 2 academic years after the student begins their PhD studies. The academic year starts at the beginning of the fall semester and concludes at the end of the spring semester.

Dissertation Grading

Students are awarded a grade of *satisfactory* (S) or a grade of *unsatisfactory* (U) after each semester of dissertation. A dissertation grade of U for two consecutive terms affects whether a student will be permitted to continue doctoral work. Once the dissertation is completed, the S and/or U grades will be converted to a final letter grade (A, A-, B +, B, etc.). The final grade will be awarded for each enrollment of the dissertation course (ME-GY 999X PhD Dissertation in Mechanical Engineering). Students are required to present the progress in their dissertation work to their guidance committees at least once a year. More information about guidance committees will be provided after admission into the PhD program.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
Approved Graduate Course		3
Approved Graduate Course		3
Approved Graduate Course		3
	Credits	**9**
2nd Semester/Term		
Approved Graduate Course		3
Approved Graduate Course		3
Approved Graduate Course		3
	Credits	**9**
3rd Semester/Term		
Approved Graduate Course		3
Approved Graduate Course		3
Approved Graduate Course		3
	Credits	**9**
4th Semester/Term		
Approved Graduate Course		3
Approved Graduate Course		3
Approved Graduate Course		3
RE-GY 9990	PHD QUALIFYING EXAM	0
	Credits	**9**
5th Semester/Term		
ME-GY 999X	PhD Dissertation in Mechanical Engineering	3
Approved Graduate Course		3
	Credits	**6**
6th Semester/Term		
ME-GY 999X	PhD Dissertation in Mechanical Engineering	3
Approved Graduate Course		3
	Credits	**6**
7th Semester/Term		
ME-GY 999X	PhD Dissertation in Mechanical Engineering	3
Approved Graduate Course		3
	Credits	**6**
8th Semester/Term		
ME-GY 999X	PhD Dissertation in Mechanical Engineering	3
Approved Graduate Course		3
	Credits	**6**
9th Semester/Term		
ME-GY 999X	PhD Dissertation in Mechanical Engineering	3
Approved Graduate Course		3
	Credits	**6**
10th Semester/Term		
ME-GY 999X	PhD Dissertation in Mechanical Engineering	3
Approved Graduate Course		3
	Credits	**6**
11th Semester/Term		
ME-GY 999X	PhD Dissertation in Mechanical Engineering	3
	Credits	**3**
	Total Credits	**75**

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Be provided with computational and research experience in Mechanical Engineering.
2. Be provided with knowledge to be inventors and innovators in physical systems and devices for the convenience of modern living.
3. Be trained to advance the state of the art in a chosen specialty subfield of Mechanical 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/).