INDUSTRIAL ENGINEERING (MS)

Technology Management and Innovation (https://engineering.nyu.edu/ academics/departments/technology-management-and-innovation/)

NYSED: 08834 HEGIS: 0913.00 CIP. 14.3501

Program Description

The NYU Tandon School of Engineering Master's Degree Program in Industrial Engineering (IE) is a top U.S. News and World Report ranked program focused on preparing students to assume organizational leadership roles after they graduate. We provide a strong academic foundation and combine it with an emphasis on application. Our courses are taught by professors with significant industry experience. They teach project-based, highly practical courses focused on helping you to apply the principles you learn in class to the situations you will face in helping organizations to grow and improve.

The top reasons for choosing our program include:

- · top ranked program that continues to climb in the ranks
- · strong foundational core taught by highly experienced professors
- emphasis on experiential learning culminating in highly regarded Capstone program where students get to apply what they have learned on a company-sponsored project
- high degree of program flexibility, with the ability to choose electives from across our department and the university
- strong networking and career support with student clubs professionally affiliated with INFORMs and IISE, LinkedIn Group (https://www.linkedin.com/groups/12321411/), IE Alumni Advisory board, career development and professional certification workshops
- great location, in the heart of the Brooklyn Tech Triangle (https:// engineering.nyu.edu/about/brooklyn/) and a subway ride to Manhattan we are close to many companies across diverse industries which creates outstanding opportunities for internships and job placement

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

Industrial Engineering students come from a wide variety of backgrounds and an engineering degree is not required to join our program. Admission to the Master of Science program requires a bachelor's degree in a related discipline from an accredited institution. Applicants should have a superior undergraduate academic record. Students who do not meet these requirements are considered individually for admission and may be admitted subject to their completion of courses to remove deficiencies. Students are encouraged to seek waivers (and have approved substitutes designated) for all required courses in which they can demonstrate competence, thereby using their time effectively.

Program Requirements

The MS in Industrial Engineering requires 30 credits, comprised of the following:

Course	Title	Credits		
Core Courses				
Select four courses from the following: 12				
IE-GY 6113	Quality and Reliability Engineering			
IE-GY 6203	Project Planning and Control (Project Management)			
IE-GY 6213	Systems Planning and Design			
IE-GY 6473	Strategic Change Management			
IE-GY 6823	Discrete Events Simulation			
IE-GY 7893	Operations Research - Decision Science and Quantitative Methods			

IE Required Electives

Select 9 elective credits. These can be chosen from any course with 9 an IE-GY course designation (that has not been used to satisfy the core course requirement block), and the following MG-GY courses:

	MG-GY 6103	Management Science				
	MG-GY 6303	Operations Management				
	MG-GY 6343	Human Capital Engineering & Analytics				
	MG-GY 6463	Supply Chain Management				
	MG-GY 8233	Quality Management/Six-Sigma				
	MG-GY 8413	Business Analytics				
	MG-GY 8643	New Product Development				
Free Electives						
Select six free elective credits. Students can select up to 6 credits 6						

from either the TMI Department (IE-GY, MG-GY, or MN-GY) or across NYU.¹

Capstone Requirement

Total Credits		30
IE-GY 9503	Industrial Engineering Capstone Project	3

¹ These must be courses that have not been used to fill the Core Courses or IE Required Electives above. Students that choose to take courses outside of the TMI Department must have one full year in good academic standing and receive prior approval. Courses cannot be selected from the School of Professional Studies.

Industrial Engineering Tracks

The Industrial Engineering degree comprises 10 courses totaling 30 credits. Courses for the IE program are held at the Brooklyn campus of NYU Tandon. Industrial engineers determine the most effective ways to design, manage and improve systems —people, machines, materials, information, and energy—to make a product or provide a service. In this regard, the IE program's courses provide participants with a deep understanding of the foundational elements of industrial engineering. Industrial engineers play a key role in driving change. The skills that industrial engineers develop in areas like change management, organizational transformation and systems optimization are becoming increasingly valuable, and highly sought after across a wide range of industries. Industrial engineers work in consulting firms, financial services, health care, government, transportation, construction, social services, operations, and supply chain management. The electives, both industrial engineering and free are therefore offered to provide the

student with the flexibility to create a self-customized curriculum by organizing electives into "tracks." These are suggested specializations and reflect the recent directional advances in the field. However, students may elect a unique focus by creating a curriculum that includes courses across the prescribed tracks.

These tracks are:

- Business Transformation and Continuous Improvement for students interested in helping organizations understand where to focus, then help them build and implement the capability to transform their organization. This is of primary interest to those students considering careers in consulting.
- Operations and Supply Chain Management for students interested in building agile, dynamic teams capable of partnering across the enterprise to continuously define and deliver customer-centric value. This is of primary interest to those students considering careers in management.
- Operations Research and Systems Analytics for students interested in working with organizational leaders and cross-enterprise teams to frame the discussion on how to best use data to drive the conversation on where to focus improvement efforts. This is of primary interest to those students considering data science and operations analysis.

These are suggested tracks only. We work with students to select courses from across our department and the university to create opportunities to align with and provide support for their career ambitions.

Sample Plan of Study

Course	Title	Credits			
1st Semester/Term					
Core Course		3			
Core Course		3			
Industrial Engineering Elec	3				
	Credits	9			
2nd Semester/Term					
Core Course		3			
Core Course		3			
Industrial Engineering Elective					
	Credits	9			
3rd Semester/Term					
Industrial Engineering Elec	3				
Free Elective		3			
Free Elective		3			
	Credits	9			
4th Semester/Term					
IE-GY 9503	Industrial Engineering Capstone Project	3			
	Credits	3			
	Total Credits	30			

Learning Outcomes

Upon successful completion of the program graduates will be able to demonstrate:

Technical Proficiency

- 1. Apply knowledge of mathematics, science, and engineering skills to solve industrial engineering problems.
- 2. Apply principles of quality control and reliability engineering to improve and ensure the quality of products and systems.

3. Use statistical process control and other quality tools to monitor and improve production processes.

Systems Design and Improvement Skills

- 1. Design, develop, implement, and improve integrated systems that include people, materials, information, equipment, and energy.
- 2. Use operations research techniques for decision-making and problem-solving in manufacturing and service industries.
- 3. Analyze and design supply chains for optimizing performance and efficiency.

Analytical and Critical Thinking

- 1. Use principles of probability and statistics to model, analyze, and improve complex systems.
- 2. Apply optimization techniques to make decisions and solve industrial engineering problems efficiently.

Project Management and Teamwork

- 1. Function effectively on multidisciplinary teams and exhibit leadership qualities.
- 2. Manage projects, including planning, resource allocation, scheduling, and control.

Communication and Change Management Skills

 Communicate effectively with a range of audiences, including writing technical reports, preparing documentation, and delivering oral presentations.

These outcomes ensure that graduates are well-prepared to meet the demands of the industry and contribute effectively to their organizations and society at large.

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/).