Welcome to NYU ‘s Tandon School of Engineering!

Master of Science
Industrial Engineering
Program Overview

Fall 2020
The team – *we are here to support you*

Thomas Mazzone  
Director of Industrial Engineering,  
Industry Associate Professor

Aric C. Meyer  
Administrative Director  
Technology Management and Innovation

Elizabeth Spock  
Academic Advisor  
Technology Management and Innovation

Rebecca Menzer  
Academic and Career Advisor  
Technology Management and Innovation
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.

Industrial Engineers earn salaries above the average and the market for our degree is expected to grow 8% - 10% over the coming decade in areas like change management, organizational transformation and systems optimization. Industrial Engineering Students come from a wide variety of backgrounds and an engineering degree is not required to join our program.

The skills that Industrial Engineers develop are 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.
Industrial Engineering provides greater career flexibility

The *industrial engineering* skill set we help you develop is broad, deep and focused on application. This *opens a broader scope of job opportunities.*

The type of jobs* we prepare you for:

- **Industrial Engineer** – ave. $75K
- **Business Process Analyst** – ave. $73K
- **Change Management Consultant** – ave. $110K
- **Lean Consultant** – ave. $85K
- **Agile Consultant** – ave. $86K
- **Process Improvement** – ave. $76K
- **Supply Chain Analyst** – ave. $72K
- **Project Manager** – ave. $70K
- **Operations Research Analyst** – ave. $71K

*reference www.Glassdoor.com search on job, salary and location (NYC)

- **Benchmarks**
  - Computer Programmer - $64K
  - Application Developer - $77K
  - Electrical Engineer - $75K
  - Mechanical Engineer - $75K
  - Biomechanical Engineer - $67K
  - Financial Analyst - $72K
  - Strategy Analyst - $72K

Most of these jobs are critical entry points for *senior level positions in management, venture capital and investment banking.* They provide the foundational knowledge and experience in how work gets done and new ideas are implemented.
Master of Science in Industrial Engineering

Core Courses
(12 Credits)

Core Electives
(9 Credits)

Free Electives
(9 Credits)

30 credits required

we provide a great degree of flexibility in course selection
Industrial Engineering – Our Core builds a strong foundation

This course provides students with a solid foundation in the cost of quality, quality assurance and quality management. Emphasis is on the basic tools of quality control such as control charts and their use, the concept of “out of control,” acceptance sampling, variables and attributes charts and producer’s and consumer’s risk. A unique aspect of this course is the demonstration of the power of teams of people with different expertise to improve quality. A course project is required.

Topics in this course include facilities design for global competitiveness, strategic master site planning, site selection, factory layout and design, facility-management systems and materials handling and storage planning. Also presented are guidance on selecting alternative facility plans and application of queuing methods and computer modeling for facility design and evaluation.

This course prepares students for exploring alternative designs of complex industrial, commercial and service systems, such as factories and hospitals. During the course students will develop, run and test several simulation models. Understand the validation, verification and calibration of models and test the accuracy of models by testing inputs parameters and output performance measures.

This course reviews just-in-time and synchronous manufacturing methods. It analyzes the basic dynamics of factories to understand the importance of congestion and bottleneck rates on cycle time and inventories. Analytical models are developed to study variability and randomness introduced by breakdown, setups and batching. Simulation studies are used to provide data on performance of transfer lines.
Industrial Engineering – We have a wide scope of courses

### Core Courses – 12 Credits
- IE-GY 7883 Quality Control and Improvement
- IE-GY 7883 Facility Planning and design
- IE-GY 7883 Factory Simulation
- IE-GY 7883 Production science

### Core Electives - 9 Credits (pick 3)
- IE-GY 6003 Engineering Economics
- IE-GY 7883 Manufacturing Systems Engineering
- IE-GY 7923 Design for Manufacturability
- IE-GY 7993 Supply Chain Engineering
- IE-GY 6193 Production Planning and Control
- IE-GY 6203 Project Planning and Control
- IE-GY 9753 Data Analytics for Process Improvement
- IE-GY 9113 Managing New Product and Service Development
- MG-GY 6103 Management Science

### Fee Electives
- IE-GY 6193 Production Planning and Control
- IE-GY 6203 Project Planning and Control
- IE-GY 6063 Work Design and Measurement
- IE-GY 7883 Facility Planning and design
- IE-GY 7993 Supply Chain Engineering
- IE-MN-GY 7873 Lean Manufacturing
- IE-GY 9753 Data Visualization for Strategic Storytelling
- IE-GY 9753 Complex Systems Analysis - Advanced Optimization and Regression Analytical Methods for Describing and Improving Large, Complex Systems
- MG-GY 9753 Quality Management/Six Sigma

### Free Electives – 9 Credits (pick 3)
- MG-GY 8673 Technology Strategy
- MG-GY 9013 Design Thinking for Creative Problem Solving
- MG-GY 9753 Economics and Strategies for Digital Platforms
- MG-GY 8401 Programming for Business Intelligence
- MG-GY 8423 Machine Learning
- MG-GY 8411 Data Engineering
- MG-GY 6343 Human Capital Engineering & Analytics
- MG-GY 6373 Human Capital Big Data, Predictive Analytics, & Roi
- MG-GY 9753 Quality Management/Six Sigma

### Recommendations from MOT (subset of NYU and MOT courses)
- MG-GY 9753 Product Design Studio
- MG-GY 9753 Strategic Change Management
- MG-GY 9781 AI Based Business Innovation
- MG-GY 8411 Data Engineering
- MG-GY 6343 Human Capital Engineering & Analytics
- MG-GY 6373 Human Capital Big Data, Predictive Analytics, & Roi

### Self-directed options
- MG-GY 9753 Independent/Group Project
- MG-GY 997X Masters Research Thesis
- MG-GY 9683 Internship and Action Learning

### Summer Internship
- IE-GY 9683 Internship and Action Learning
- MG-GY 9683 Internship and Action Learning

To further specialize your curriculum you can focus one of your free electives on a project or thesis.
Further specializing your curriculum – self-directed

- **Independent Study**
  - Individual or Team-based *Project*

- **MS Thesis**
  - Individual *Research*

- **Internship**
  - Company Sponsored *Project*

*We provide additional options for refining your focus*
Industrial Engineering Concentrations

As an Industrial Engineering student, you can create a self-customized curriculum by organizing electives into “concentrations.”

These 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 areas of concentration.
Industrial Engineering Concentrations:

- **Business Transformation and Continuous Improvement**
  - Aligning courses with your career aspirations
- **Operations and Supply Chain Management**
  - These are suggested areas of concentration. We work with you to select courses across our department to create opportunities to align with and provide support for your career ambitions
- **Operations Research and Systems Analytics**
Business Transformation and Continuous Improvement

Are you interested in helping organizations understand where to focus, then help them build and implement the capability to transform their organization?

Suggestions for Core Electives

IE-GY 6003 Engineering Economics
IE-GY 7923 Design for Manufacturability
IE-GY 6203 Project Planning and Control
IE-GY 9753 Data Analytics for Process Improvement
IE-GY 9113 Managing New Product and Service Development
MG-GY 6103 Management Science

MG-GY 8203 Project Management
MG-GY 6303 Operations Management
MG-GY 7993 Supply Chain Management
IE/MN-GY 7873 Lean Manufacturing
IE-GY 9753 Data Visualization for Strategic Storytelling
MG-GY 9753 Quality Management/Six Sigma

Suggestions for Free Electives from MOT

MG-GY 8673 Technology Strategy
MG-GY 9013 Design Thinking for Creative Problem Solving

MG-GY 9753 Strategic Change Management
MG-GY 9753 Economics and Strategies for Digital Platforms
MG-GY 9753 Product Design Studio

Career Focus on Consulting
Are you interested in building agile, dynamic teams capable of partnering across the enterprise to continuously define and deliver customer-centric value?

**Suggestions for Core Electives**
- IE-GY 7883 Manufacturing Systems Engineering
- IE-GY 7923 Design for Manufacturability
- IE-GY 7993 Supply Chain Engineering
- IE-GY 6193 Production Planning and Control
- IE-GY 6203 Project Planning and Control
- IE-GY 6003 Engineering Economics
- MG-GY 6103 Management Science
- IE-GY 6063 Work Design and Measurement
- IE-GY 7653 Human Factors in Engineering design
- MG-GY 6303 Operations Management
- MG-GY 7993 Supply Chain Management
- IE/MN-GY 7873 Lean Manufacturing
- MG-GY 8203 Project Management
- MG-GY 9753 Quality Management/Six Sigma

**Suggestions for Free Electives from MOT**
- MG-GY 8673 Technology Strategy
- MG-GY 9013 Design Thinking for Creative Problem Solving
- MG-GY 9753 Economics and Strategies for Digital Platforms

**Career Focus on Management**
- MG-GY 9753 Product Design Studio
- MG-GY 9753 Strategic Change Management
- MG-GY 9781 AI Based Business Innovation
Operations Research and Systems Analytics

Are you 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?

Suggestions for Core Electives

IE-GY 6003 Engineering Economics
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Suggestions for Free Electives from MOT

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Career Focus on Analytics
Join an Industrial Engineering Student Club
Connecting with Colleagues, Alumni and Industry

We are launching three separate Industrial Engineering Student Clubs in Fall 2020 to help support your professional development through networking, mentoring and professional certification support.

**Industrial Engineering Consulting Club**
Focus on students seeking support to work for consulting firms
contact student leader: Daniel Weinstein
daniel.rory.weinstein@gmail.com

**Industrial Engineering Catalyst Club**
Focus on taking a leadership role in the Institute for Industrial and Systems Engineers and in LSS and PMI certification
contact student leader: Ajinkya Shinde,
ars1120@nyu.edu

**Industrial Engineering Operations Research Club**
Focus on taking a leadership role in the INFORMS Professional Association
contact: Abubakr Abdalla
aba452@nyu.edu

**NYU Industrial Engineering Alumni Advisory Panel**
Newly formed, Alumni Advisory Group eager to connect with students to provide mentorship and support
We have a competitive program that will help you accelerate your career!

Thomas Mazzone, MBA, CPA

*Director of Industrial Engineering, Industry Associate Professor*

Professor Mazzone is an Industry Associate Professor and the Program Director of the Industrial Engineering Program. He earned his BBA from the University of Notre Dame, his MBA from EDHEC Business School in France and his CPA certificate from the State of Rhode Island.

Professor Mazzone has wide-ranging teaching experience and has developed courses for graduate, undergraduate and executives in project and change management, product and service development, supply chain and operations management and global innovation.

Professor Mazzone has had significant industry and international experience in senior executive positions at A.T Kearney, Ernst and Young, Royal Bank of Scotland and Fidelity Investments working in the US, Europe and East Asia. Professor Mazzone has both led large-scale, operational and technology change programs, as well as, built departments and centers of excellence in business transformation, continuous improvement, change management and technology development.

Let’s talk!

Contact me at tm1298@nyu.edu