INDUSTRIAL ENGINEERING (M.S.)

The M.S. program in industrial engineering is built on a core designed to provide breadth of experience in systems modeling, analysis, and applications common in industrial engineering and operations analysis.

Program Objectives

Graduates will be able to:

1. Integrate, model, continuously improve, control, and if necessary redesign, enterprise activities
2. Perform data analysis and optimization for enterprise decision making
3. Develop business cases for justifying process, organizational and technological projects
4. Support enterprise performance, quality, efficiency and productivity enhancement activities
5. Facilitate systems engineering and project management
6. Communicate effectively (written, verbal and presentation) across all levels in the enterprise
7. Develop an ability to grow through life long acquisition of knowledge

Students must achieve at least a 'B' (3.0) grade point average and achieve 'B' or greater in ISE M.S. core courses. A limited number of grades below 'B' and 'B-', though unsatisfactory for graduate level work, may be applied toward a graduate degree provided they are offset by a sufficient number of higher grades to maintain a grade point average of 3.0. Unsatisfactory grades can constitute reason for dismissal from the MSIE program at the department or program's discretion.

Admission Requirements

Admission to ISE M.S. programs is contingent upon admission to the Graduate School (http://wayne.edu/apply/#fndtn-graduate). The M.S. in Industrial Engineering program requires a baccalaureate degree in engineering and an approximate 2.8 GPA or equivalent in upper division undergraduate courses. Conditions to admission or prerequisites may be assigned in the admissions process. The GRE is NOT required, however, high GRE scores will be considered in application evaluation. Students with degrees in related disciplines with a strong analytical base are also considered. Applicants whose undergraduate education is deficient in prerequisites for graduate classes may be required to take background courses that will NOT count toward the 30-credit degree requirement.

Applicants can provide supplemental materials such as resume, personal statement, GRE scores, and letters of recommendation to support their application.

Prospective students should contact M.S. Industrial Engineering Program Chair Dr. Jeremy Rickli (https://engineering.wayne.edu/profile/fm9822/) for program information or the College of Engineering Graduate Program Coordinators at engineeringgrad@wayne.edu for admissions and application concerns.

The Master of Science in Industrial Engineering is offered under the following options: Plan A (thesis option) and Plan C (coursework option). Students must achieve a minimum of a B grade in each core course.

Plan A - Thesis

Minimum thirty credits including six to eight thesis credits. If a thesis option (Plan A) is selected, six to eight credits of Master's Thesis Research and Direction (IE 8999) is required. Student pursuing Plan A must take nine credits of IE core courses and design an individual program of study that must be approved by both the thesis research advisor and the appropriate MS program chair or graduate advisor. To register for ISE thesis credits, students must submit the thesis credit registration approval form to their appropriate MS program chair or graduate advisor. Up to two courses (six to eight credits) may be earned in courses outside the Industrial and Systems Engineering Department, but require approval by the appropriate MS program chair or graduate advisor. All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations/) and the College of Engineering (http://bulletins.wayne.edu/graduate/college-engineering/academic-regulations/).

Note: M.S. student pursuing IE 6991 Industrial Internship for curriculum practical training (CPT) may use a maximum of 6 IE 6991 credits towards the M.S in Industrial Engineering degree requirements. Except in specific cases, IE 6991 must be taken in 2 credit blocks.

Course Requirements

Code	Title	Credits
IE core course requirement (9 credits)		
IE 6210	Applied Engineering Statistics	
IE 6560	Deterministic Optimization	
IE 6315	Production and Service Systems	
Thesis credit requirement (6-8 credits)		
IE 8999	Master's Thesis Research and Direction	
Electives: 13-15 credits		

Plan C - Coursework

Minimum thirty credits of course work. Plan C requires nine credits of IE core for the general option and nine credits of IE core if a concentration is pursued. While ISE core courses provide fundamental IE knowledge, depth within a specific IE field can be acquired by completing an MS IE concentration in Lean Systems, Analytics, or Systems Engineering. Students interested in an area not among the concentrations listed should elect the general option. Up to two courses (six to eight credits) may be earned in courses outside the Industrial and Systems Engineering Department, but require approval by the appropriate MS program chair or graduate advisor. All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations/) and the College of Engineering (http://bulletins.wayne.edu/graduate/college-engineering/academic-regulations/).

Note: M.S. student pursuing IE 6991 Industrial Internship for curriculum practical training (CPT) may use a maximum of 6 IE 6991 credits towards the M.S in Manufacturing Engineering degree requirements. Except in specific cases, IE 6991 must be taken in 2 credit blocks.

General Option

Code	Title	Credits
IE core course requirement (9 credits)		
IE 6210	Applied Engineering Statistics	
IE 6560	Deterministic Optimization	
IE 6315	Production and Service Systems	
Electives: 21 credits		

Lean Systems

Code	Title	Credits
IE core course requirement (9 credits)		
IE 6210	Applied Engineering Statistics	
IE 6560	Deterministic Optimization	
IE 6315	Production and Service Systems	
Concentration course requirement (9 credits)		
IE 6310	Lean Operations and Manufacturing (REQUIRED)	
IE 6220	Value Engineering	
IE 6255	Quality Engineering	
IE 6325	Supply Chain Management	
IE 6422	Flexible Manufacturing Systems	
IE 6430	Computer Simulation Methods	
IE 6442	Facilities Design and Materials Flow	
IE 6611	Fundamentals of Six Sigma	
Electives: 12 credits		

Analytics

Code	Title	Credits
IE core course requirement (9 credits)		
IE 6210	Applied Engineering Statistics	
IE 6315	Production and Service Systems	
One course from the two operations research courses listed below		
IE 6560	Deterministic Optimization	
DSA 6200	Operations Research	
Concentration course requirement (9 credits)		
DSA 6000	Data Science and Analytics (REQUIRED)	
IE 6430	Computer Simulation Methods	
IE 7811	Data Mining: Algorithms and Applications	
IE 7860	Intelligent Analytics	
CSC 5800	Intelligent Systems: Algorithms and Tools	
ECO 7100	Econometrics I	
CSC 6710	Database Management Systems I	
Electives: 12 credits		

Systems Engineering

Code	Title	Credits
IE core course requirement (9 credits)		
IE 6210	Applied Engineering Statistics	
IE 6560	Deterministic Optimization	
IE 6315	Production and Service Systems	
Concentration course requirement (9 credits)		
SYE 6490	Introduction to Systems Engineering in Design (REQUIRED)	
IE 5490	Creative Problem Solving in Design and Manufacturing	
IE 6220	Value Engineering	
IE 6240	Quality Management Systems	
IE 6270	Engineering Experimental Design	
IE 6405	Integrated Product Development	
IE 6720	Engineering Risk and Decision Analysis	
IE 6840	Project Management	
SYE 6491	Systems Engineering Thinking and Concepting	
SYE 6492	Adaptive Acquisition	
Electives: 12 credits		