

M.S. Programs Handbook
Industrial & Systems Engineering Department
Wayne State University
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Overview:

This handbook describes the following three Master of Science Programs offered by the Department of Industrial and Systems Engineering at Wayne State University:[†]

- ▶ Master of Science in Industrial Engineering
- ▶ Master of Science in Manufacturing Engineering
- ▶ Master of Science in Engineering Management

This handbook will provide you with information to help in deciding among several programmatic options, and will assist you in assuring that all administrative requirements are met. We encourage you to contact the department chairperson or the program coordinators (identified on the program description sheets) for information regarding any further questions. We have also included a list of all department faculty along with their research interests, mailing addresses, and electronic contact information at the end of this handbook. The faculty and staff are here to aid you in your studies and the development of your professional career.

Primary Contacts:

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For information regarding admission and general program requirements:
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For specific information regarding any individual M.S. program, or specializations within, contact the appropriate Coordinator identified on the program description sheets.

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[†] A supplemental document describing the Ph.D. program offered by the department is available from the departmental office and the department website on the Internet at <http://ise.wayne.edu>.

Master of Science in Industrial Engineering (MSIE)

Focus: Extended Enterprise Integration

Program Description:

The master of science degree 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

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

Admission Requirements:

Admission to this program is contingent upon admission to the [Graduate School](#). These are the additional requirements:

- Baccalaureate degree in engineering from an institution accredited by the [Accreditation Board for Engineering and Technology](#) (ABET).
- Honor point average of 2.8 in the upper division of their undergraduate program.
- GRE Exam is NOT required for applicants. However, a high GRE score will be considered as an incentive for the evaluation process.

In addition, students who have an undergraduate degree in mathematics, physics, computer science, or other discipline with a strong analytical base may be considered for admission. Applicants whose undergraduate education is deficient in prerequisites for graduate classes may be required to take background courses that will NOT count toward the thirty-two-credit degree requirement.

Degree Requirements:

The MSIE program is offered under the following two options: "Plan-A: Thirty-two credits including an eight credit thesis" and "Plan-B: Thirty-two credits of course work". Both options require a common core of eight credits as described below. While the core provides breadth to the student's program, depth of understanding is acquired through completion of the required twenty four credits. Please see the next page for Plan-A.

Thesis Option:

If a thesis option (Plan-A) is selected, up to 8 credits of research IE8999 may be selected which integrates with the student's plan of work to create depth of understanding in an area relevant to the program objective. The individually-designed program must be approved by both the thesis research advisor and a Graduate Program Officer.

Core courses: (8 Credits)

IE 6560: Deterministic Optimization
(4 Credits)

- Linear Optimization Methods
- Nonlinear Optimization Methods
- Integer and Dynamic Programming
- Queuing, Transportation, and Network Models
- Decision Theory

IE 6210: Applied Engineering Statistics

(4 Credits; Prereq: BE 2100 or BE 2100 or equivalent within five years*)

- Review of Hypothesis Testing
- Introduction to ANOVA and DOE
- Regression Analysis (Multiple and Multivariate)
- Time-series Analysis
- Non-parametric Statistics
- Minitab Software

* Alternately, students will take a not-for-credit refresher course in probability and statistics. There is no fee for this refresher course. Students are required to obtain the equivalent of B in this refresher course. Or, a placement exam can be recommended.

Coursework Option (Plan-B):

General Option	
<p><u>Core Courses</u> IE 6560: Deterministic Optimization IE 6210: Applied Engineering Statistics IE 6240: Quality Management System (or IE 7610: Six Sigma)</p>	<p><u>Regular Courses</u> Minimum 20 credits required; Up to eight credits can be obtained from outside the ISE Department with prior approval of the ISE Graduate Advisor</p>

Alternatively, students can select the following specialization.

Specialization (32 Credits): Lean Operations Management	Specialization (32 Credits): Healthcare Systems Engineering
<p><u>Objectives:</u> Develop abilities to:</p> <ul style="list-style-type: none"> Plan, operate, and control production & service systems Turn existing facilities into lean systems Design lean and flexible production & service systems Design, model, and manage supply chains to enhance extended enterprise integration Awareness for maintenance engineering and management Implement strategies such as Lean Manufacturing (mistake proofing, etc.) and Six Sigma to existing manufacturing facilities 	<p><u>Objectives:</u> Develop abilities to:</p> <ul style="list-style-type: none"> Develop fundamental concepts, principles, models associated within the healthcare industries Apply organizational theory, financial management and economics, information systems and policies to healthcare systems Analyze the factors that influence the costs, utilization, distribution and outcomes of health care as well as gain an understanding of yield management and logistics associated with maximizing profits in the services sectors.
<p><u>Prospective Jobs:</u></p> <ul style="list-style-type: none"> Process Improvement Specialist First Line Plant Supervisor Production Control Supervisor Materials and Procurement Manager Supply Chain Manager/ Logistics System Manager Facilities Manager Operations Manager Plant Manager Lean Manufacturing Consultant 	<p><u>Prospective Jobs:</u></p> <ul style="list-style-type: none"> Healthcare Systems Engineer IT Specialist in Healthcare Industry Systems Engineer Quality Engineer
<p><u>Prerequisite Courses (Do NOT Count Toward 32 Program Credits):</u> BE 2100: Probability and Statistics or equivalent. IE 4260: Principles of Quality Control (3 Cr.)¹ or equivalent.</p> <p><u>Core Courses: (8 Credits)</u> IE 6560: Deterministic Optimization IE 6210: Applied Engineering Statistics</p> <p><u>Regular Coursework: (18 Credits)</u> IE 7610: Six Sigma (4 Cr.) or IE6240: Quality Management Systems (4 Cr.) IE 6310: Lean Operations/Manufacturing (2 Cr., Coreq: IE6430) IE 6430: Computer Simulation Methods (2 Cr., Coreq: IE6310) IE 6840: Project Management (2 Cr.) or IE 7830: Technology and Change Management (2 Cr.) IE 7315: Production Systems (4 Cr.) IE 7325: Supply Chain Management (4 Cr., Prereq: IE 7315)</p> <p><u>Elective Coursework: (6 Credits)</u> All elective courses should be relevant to the program and approved by the <u>Coordinator</u></p> <p><u>Recommended Courses:</u> BA 6000: Finance or Accounting (2 Cr.) IE 6442: Facilities Design (2 Cr.) IE6510: Information Systems for the Mfg. Enterprise (2 Cr.) IE 6850: Manufacturing Strategies (2 Cr.) IE7420: Flexible Manufacturing Systems (4 Cr.) IE 7720: Engineering Risk and Decision Analysis (4 Cr.) IE 7995: Value Engineering [Special Topics] (4 Cr.)</p>	<p><u>Prerequisite Courses (Do NOT Count Toward 32 Program Credits):</u> BE 2100: Probability and Statistics or equivalent. IE 4260: Principles of Quality Control (3 Cr.)² or equivalent.</p> <p><u>Core Courses: (10 Credits)</u> IE 7550: Introduction to Healthcare Processes (4 Cr.) IE 7610: Fundamentals of Six Sigma (4 Cr.) IE 6490: Introduction to Systems Engineering (2 Cr.)</p> <p><u>Recommended Regular Courses:</u> <i>Healthcare systems (6 Cr.)</i> FPH 7100: Health Care Organization and Administration (3 Cr.) FPH 7200: Health Planning (3 Cr.) FPH 7230: Health Program Evaluation (3 Cr.) FPH 7145: Principles of Health Care Management (3 Cr.) FPH 7320: The Social Basis of Health and Health Care (3 Cr.)</p> <p><i>Industrial engineering (12 Cr.)</i> IE 6210: Applied Engineering Statistics (4 Cr.) IE 6260: Quality Assurance and Control (4 Cr.) IE 6270: Engineering Experimental Design (4 Cr.) IE 6310: Lean Operations and Manufacturing (2 Cr.) IE 6430: Computer Simulation Methods (2 Cr.) IE 6560: Deterministic Optimization (4 Cr.) IE 7125: Human Factors Engineering (4 Cr.) IE 6840: Project Management (SYE 6840) (3 Cr.)</p> <p><i>Information systems (4 Cr.)</i> CSC 6110: Software Engineering (3 Cr.) IE 7550: introduction to data engineering (2 Cr.) CSC 7300: Bioinformatics I: Biological Databases and Data Analysis. (MBG 7300) (3 Cr.) CSC 7301: Bioinformatics I: Programming Lab. (MBG 7301) (1 Cr.)</p>

Master of Science in Manufacturing Engineering (MSMfgE) Focus: Production Life-Cycle Integration

Program Description:

The master of science degree program in manufacturing engineering is built on a core designed to provide a firm foundation in the various elements of advanced manufacturing and systems engineering.

Program Objectives:

Graduates will be able to

- Understand and integrate the Design, Test & Build product life cycle
- Model, analyze and control design and production activities
- Understand the impact of Quality, Cost and Timeliness metrics on manufacturing performance
- Demonstrate a basic understanding of manufacturing processes and technologies
- Perform data analysis and optimization for decision making
- Develop business cases for justifying process, organizational and technological projects
- Support for systems engineering and project management
- Communicate effectively (written, verbal and presentation) across all levels in the enterprise
- Develop an ability to grow through life long acquisition of knowledge

Admission Requirements:

Admission to this program is contingent upon admission to the [Graduate School](#). These are the additional requirements:

- Baccalaureate degree in engineering from an institution accredited by the [Accreditation Board for Engineering and Technology](#) (ABET).
- Honor point average of 2.8 in the upper division of their undergraduate program.
- GRE Exam is NOT required for applicants. However, a high GRE score will be considered as an incentive for the evaluation process.

Applicants whose undergraduate education is deficient in prerequisites for graduate classes may be required to take background courses that will NOT count toward the thirty-two-credit degree requirement.

Degree Requirements:

The MSME program is offered under the following two options: Plan-A: Thirty-two credits including an eight credit thesis and Plan-C: Thirty-two credits of course work. Please see the next page for Plan-A.

Thesis Option:

If a thesis option (Plan A) is selected, up to 8 credits of research IE8999 may be selected which integrates with the student's plan of work to create depth of understanding in an area relevant to the program objective. The individually-designed program must be approved by both the thesis research advisor and a coordinator.

Coursework Option (Plan-B):

General Option

Core Courses

IE 6210: Applied Engineering Statistics
 IE 6240: Quality Management System (or IE7610: Six Sigma)
 IE 6420: CAD/CAM (or IE 6405: Integrated Product Development)

Regular Courses

Minimum 20 credits required; Up to eight credits can be obtained from outside the ISE Department with prior approval of the ISE Graduate Advisor

Alternatively, students can select the following specialization.

Specialization (32 Credits): Advanced Manufacturing Systems	Specialization (32 Credits): Integrated Product Engineering	Specialization (32 Credits): Quality Engineering
<p><u>Objectives:</u> Develop abilities to: <i>Prerequisite: Thorough understanding for different manufacturing processes</i></p> <ul style="list-style-type: none"> Use computers to simulate for design, test and build automated systems Select automated manufacturing and material handling systems to support flexible and cost efficient manufacturing facilities Integrate CAD, CAE and CAM technologies Design real-time control systems for shop floor and CIM systems 	<p><u>Objectives:</u> Develop abilities to:</p> <ul style="list-style-type: none"> Manage cost in the product development cycle Manage lead time and projects for the product life cycle Define marketing and "Voice of the Customer" requirements for product and process definition Understand and coordinate the process of product conceptualization and realization Understand application of a range of computer-aided engineering (CAE) analysis tools Facilitate interdisciplinary work to support product realization Facilitate data transformation through the product life cycle (CAD to CAM) 	<p><u>Objectives:</u> Develop abilities to:</p> <ul style="list-style-type: none"> Control and monitor quality during production Improve quality during production and manufacturing process start up Incorporate quality into products during design and prototyping Perform reliability assessment/estimation for production equipment Perform reliability design/benchmarking/improvement during product design/prototyping Coordinate quality/reliability improvement with other professionals Learn/introduce new methodologies for process quality improvement Implement six-sigma quality improvements
<p><u>Prospective Jobs:</u></p> <ul style="list-style-type: none"> Automation Engineer Systems Integration Engineer CIM Specialist 	<p><u>Prospective Jobs:</u></p> <ul style="list-style-type: none"> Product development program manager PD-Project Manager Product Development Engineer Design Engineer Design and Development Engineer Release Engineer Test Engineer Computer Aided Engineering Analysis Engineer Robust Design Engineer 	<p><u>Prospective Jobs:</u></p> <ul style="list-style-type: none"> Quality Engineer Reliability Engineer Manufacturing Engineer with Quality Focus Product Engineer with Quality/Reliability Focus Quality Supervisor Six Sigma Consultant
<p><u>Prerequisite Courses (Do NOT Count Toward 32 Program Credits):</u> BE 2100: Probability and Statistics or equivalent. IE 3450: Mfg Processes I or equivalent. ME 5580: Computer-Aided Mechanical Design (4 Cr.) or equivalent.</p> <p><u>Regular Coursework: (26 Credits)</u> IE 6000: Digital Automation (4 Cr.) IE 6260: Quality Assurance and Control (2 Cr.) IE 6310: Lean Operations/Manufacturing (2 Cr.) IE 6420: Computer Aided Manufacturing (2 Cr.) IE 6421: Computer Aided Manufacturing Lab (2 Cr., Prereq: ME 5580) IE 6425: PLM and Sustainable Design (4 Cr.) IE 6430: Computer Simulation Methods (2 Cr., Coreq. IE6310) IE 6442: Facilities Design (2-4 Cr.) IE 6510: Information Systems for the Manufacturing Enterprise (2 Cr.) IE 7315: Production Systems (4 Cr.) IE 7420: Flexible Manufacturing Systems (4 Cr.)</p> <p><u>Elective Coursework: (6 Credits)</u> All elective courses should be relevant to the program and approved by the <u>Coordinator</u> Recommended Courses: IE 6442: Facilities Design (2-4 Cr.) IE 6560: Deterministic Optimization (4 Cr.) IE 6850: Manufacturing Strategies (2 Cr.) IE 7515: Factory Information Systems (2 Cr., Prereq. IE 6000 or Equivalent)</p>	<p><u>Prerequisite Courses (Do NOT Count Toward 32 Program Credits):</u> BE 2100: Probability and Statistics or equivalent. ME 4500: Mechanical Engineering Design II (4 Cr.) or equivalent. ME 5580: Computer-Aided Mechanical Design (4 Cr.) or equivalent.</p> <p><u>Regular Coursework: (26 Credits)</u> ME 5040: Finite Element Methods (4 Cr.) BA 6010: Markets and Marketing (2 Cr.) IE 6405: Integrated Product Development (4 Cr.) IE 6420: Computer Aided Manufacturing (2 Cr.) IE 6421: Computer Aided Manufacturing Lab (2 Cr., Prereq: ME 5580) IE 6425: PLM and Sustainable Design (4 Cr.) IE 7210: Robust Design (4 Cr.) IE 7315: Production Systems (4 Cr.) IE 7400: Capstone: Integrated Product Engineering (4 Cr., Prereq. IE 6405, ME 5040, IE 6420, IE 6421, IE7210)</p> <p><u>Elective Coursework: (6 Credits)</u> All elective courses should be relevant to the program and approved by the <u>Coordinator</u> Recommended Courses: IE 6000: Digital Automation (4 Cr.) IE 6260: Quality Assurance and Control (2 Cr.) IE 6510: Information Systems for the Manufacturing Enterprise (2 Cr.) IE 6560: Deterministic Optimization (4 Cr.) IE 7270: Reliability Estimation (4 Cr.) IE 7720: Engineering Risk and Decision Analysis (4 Cr.) IE 7880: Computer Supported Collaborative Engineering (2 Cr.) IE 7995: Value Engineering [Special Topics] (4 Cr.)</p>	<p><u>Prerequisite Courses (Do NOT Count Toward 32 Program Credits):</u> BE 2100: Probability and Statistics or equivalent. IE 4260: Principles of Quality Control (3 Cr.) or equivalent.</p> <p><u>Regular Coursework: (26 Credits)</u> IE 6210: Applied Engineering Statistics (4 Credits; Prereq: BE 2100 or equivalent) IE 7610: Six Sigma (4 Cr.) IE 6240: Quality Management Systems (4 Cr.) IE 6270: Design of Experiments (4 Cr.) IE 6310: Lean Operations/Manufacturing (2 Cr.) IE 7250: Quality Engineering (4 Cr.) IE 7270: Reliability Estimation (4 Cr.)</p> <p><u>Elective Coursework: (6 Credits)</u> All elective courses should be relevant to the program and approved by the <u>Coordinator</u> Recommended Courses: IE 6850: Manufacturing Strategies (2 Cr.) IE 7995: Value Engineering [Special Topics] (4 Cr.) IE 8200: Advanced Quality Engineering (4 Cr.)</p>

Master of Science in Engineering Management (MSEM)

Program Description:

The Master of Science degree program in Engineering Management is designed to build both technical competence and business acumen. The program builds understanding and skills critical to the support of fast-to-market strategies, which also guarantee product quality, and cost minimization. A systematic analytical framework is developed and coupled with tools for managing the engineering and technical functions within manufacturing and service based companies. This cross-disciplinary program draws from the expertise of the College of Engineering and School of Business Administration, and develops the technical leader who is responsible for designing and implementing strategies to successfully compete in the twenty-first century.

Admission Requirements:

Admission to this program is contingent upon admission to the [Graduate School](#). These are the additional program requirements:

Academic Credentials

- Students with Baccalaureate degree in engineering from an institution accredited by the [Accreditation Board for Engineering and Technology](#) (ABET honor point average of 3.0 in the upper division of their undergraduate program are prime candidates for this program.)
- Applicants from non-ABET institutions will be considered on a case by case basis. No GRE is required.
- Students without a Baccalaureate degree in engineering or other mathematically rich field who have work experience in a technical field will be considered for admission on probation only after demonstrating mathematical proficiency by scoring a grade of B or better in the following 3 courses or their equivalent: MAT2010 (Calculus I), MAT2020 (Calculus II), and BE2100 (Basic Engineering: Probability & Statistics). Students on probation must complete 8 credits of ISE courses with a grade of B or better before changing to regular status.

Required Work Experience: This program is designed to leverage student work experiences to make the learning more immediately relevant.

- Currently working full-time in the U.S. in an engineering related job .
- Or at least 2 years previous full-time work experience post Baccalaureate graduation as a practicing engineer or technical leader.

Applicants with less than 3.0 honor point average might be considered for admission under special circumstances.

Degree Requirements: 42 credits

The MSEM program is a forty-two credit degree program that includes twenty credits of required industrial engineering courses, ten credits of required business courses, and 12 credits of electives. Students who are working in the U.S. are strongly recommended to register for six credits of leadership project as part of their 12 credits of electives. Applicants whose undergraduate education is deficient in prerequisites for graduate classes may be required to take background courses that will NOT count toward the forty-two-credit degree requirement.

Option 1. Leadership Project: Black Belt in Engineering Management (6 credits + 6 credits of elective courses)

The Leadership Project integrates lessons learned from across the curriculum. The project has important goals of developing leadership skills and focuses on the application of tools and methods acquired in the program to address a significant, real-world industrial challenge in the student's organization. Satisfactory completion of a Leadership Project is additionally recognized with a Black Belt in Engineering Management that signifies the student has demonstrated the ability to translate knowledge into practice.

Students must have completed at least 26 credits of coursework towards the MSEM degree before registering for Leadership Project Credits. Typically the project is spread over the final two semesters of the program. In the immediately preceding semester, students work with faculty advisors and their management to frame an appropriate leadership project. The faculty of ISE have extensive experience in supervising leadership projects that earn high levels of visibility within an organization. They will meet bi-weekly with the student to review progress reports and provide guidance.

Option 2. Twelve credits of electives

Students without current jobs will opt for 12 credits of elective courses. Students are encouraged to select their electives around a common theme such as manufacturing, services, or product development. With special permission, students may opt to take up to 6 elective credits in the business school.

Course Requirements and Electives and their Schedule Frequency:

Online Option: Currently, more than 42 credits of courses are available online and each semester more courses are added to the list. In general, our online courses are blended courses. Students who wish can dial in and participate live in the classroom discussions.

Required Industrial Engineering Courses (16 Credits)					
Course ID (Online*)	Course Name	Credits	Offered	Semester	Grade
IE6310*	Lean Operations/Manufacturing	2	F/W/S		
IE6560*	Deterministic Systems	4	F		
IE6840*	Project Management	4	W/S		
IE7720*	Engineering Risk and Decision Analysis	4	W**		
IE7830*	Management of Technology Change	2	F		

Required IE Course: Select One (1) Course from the following (4 Credits)					
Course ID (Online*)	Course Name	Credits	Offered	Semester	Grade
IE6420	Quality Management	4	W		
IE7210	Robust Design	4	F		
IE6610	Introduction to Six Sigma	4	S		
IE7610***	Fundamentals of Six Sigma	4	W		

Required Business Courses (10 Credits)					
Course ID (Online*)	Course Name	Credits	Offered	Semester	Grade
BA6000*	Financial Reporting	2	F/W/S		
BA6005*	Financial Management (Prereq. BA6000)	2	F/W/S		
BA6015*	Marketing	2	F/W/S		
BA6020*	Contemporary Principles of Management	2	F/W/S		
BA6025*	Production and Operations MGT	2	F/W/S		

Option 1: Leads to Black Belt Certificate in Engineering Management^^					
Course ID	Course Name	Credits	Offered	Semester	Grade
Leadership Project: (6 Credits Total)					
IE7999^	Leadership Project (Semester I)	3	F/W		
IE7999^	Leadership Project (Semester II)	3	F/W		
Elective Courses: (6 Credits Total)					
IE_____					
IE_____					

Option 2: Elective Courses (12 Credits)					
Course ID	Course Name	Credits	Offered	Semester	Grade
	Elective Courses				
	Elective Courses				
	Elective Courses				
	Elective Courses				

Option 1:	Is for students with a current job, who has approval of a Work Supervisor, Department Faculty Advisor, and Director of Engineering Management, before being allowed to register.
Option 2:	Is for Students without a current job

IE Elective Courses (should have focus): Manufacturing (M) or Product Design (PD)					
Course ID Online*	Course Name	Credits	Offered	Semester	Grade
IE6210	Applied Engineering Statistics (M/PD)	4	F		
IE6490	Intro to Systems Engineering in Design (M/PD)	2	Varies		
IE7125*	Human Factors Engineering (M/PD)	4	Varies		
IE7250	Quality Engineering (M/PD)	4	W		
IE6430	Computer Simulation Methods (M)	2	F		
IE6441	Advanced Facilities Design and Logistics (M)	2	W		
IE6442	Facilities Design & Materials Flow (M)	2	W		
IE6850	Manufacturing Strategies (M)	2	SP/S		
IE7270	Reliability Estimation (M)	4	F		
IE7325	Supply Chain Management (M)	4	F		
IE7420	Flexible Manufacturing Systems (M)	4	F		
IE6220*	Value Engineering (PD)	4	SP/S		
IE6270	Engineering Experimental Design (PD)	4	F		
IE6405 *	Integrated Product Development (PD)	4	F		
IE6425*	Product Lifecycle Mgt (PD)	4	W		
IE6510	Information Systems (M/PD)	2	F		

*Online Course Available

**Every Other Year Only

***Future Online Course

^ Schedule of Meetings is arranged

^^Must submit proposal in semester before registering

Students can request permission to take up to Six (6) Credits of Business Electives					
Course ID	Course Name	Credits	Offered	Semester	Grade
BA7050	Marketing Strategy	3			
BA7020	Corporate Financial Management	3			
BA7040	Managing Organizational Behavior	3			
BA7000	Managerial Accounting	3			

If you took courses during your undergraduate degree that are equivalent to a course listed above, you should NOT take them again. You will be required to replace the course with another elective.

All courses are scheduled for 5:30pm or later. A Four (4) Credit course typically meets twice a week, whereas a Two (2) Credit course will meet once a week.

All elective courses should be relevant to the program and approved by the [MSEM Program Director](#)

Program Director: Dr. Kenneth Chelst • kchelst@wayne.edu
engineering.wayne.edu/ise/masters/management

General Administrative Policy

Admissions:

You must apply for admission to the Graduate School at Wayne State University. Applications may be obtained by calling the Department of Industrial and Systems Engineering at +(313) 577-3821, or the office of Graduate Admissions at +(313) 577-3577, or by visiting the Wayne State University website on the internet at <http://www.wayne.edu>. Instructions for filing the application are included with the application. In order to assure sufficient time for processing your application, the following dates are recommended for complete submission of your application.

Semester	Apply Before	Classes Begin
Fall	May 1st	Early September
Winter	August 1st	Early January
Spring/Summer	January 1st	Early May

If your application is submitted too late for acceptance during the desired semester, you may apply to the department of Industrial and Systems Engineering for a "Permit to Register". Your application must be filed to be eligible for such a permit. The permit is only granted once, and hence, students must gain admission to the graduate program by the next registration period. A permit to register is generally not available to international students because of VISA restrictions.

Academic Standing:

The Master of Science student is required to earn at least a 3.0 (or B) average to satisfy degree requirements. Any student receiving a grade of C+ or lower will be placed on probation. Two grades of C+ or lower will result in dismissal from the program. In addition, the student must meet the following criteria:

1. Students are permitted to repeat a maximum of one course to improve their grade point average. Permission to repeat a course must be approved before the course is taken. Applications to repeat a course can be obtained from the Department of Industrial & Systems Engineering. Forms must be returned to the office for processing by the departmental "Student Advisor". Repeating a course will result in the old grade being replaced by the new grade earned.
2. Students must achieve a minimum of a B grade in the courses in the core program. The core courses are detailed in the description of each of the Master of Science programs.

Requirements Established in Admission Process:

Attention must be paid to any restrictions established in the admission process. Such restrictions often deal with the requirements to take courses above the thirty-two-credit minimum in the case of MSIE and MSME programs and above forty-two-credit minimum in the case of the MSEM program to make up for background deficiencies. Occasionally, there is reason to change these stipulations made in the admission process. The only way to change any requirements established in the admission process is through a "Memo of Change" initiated by the appropriate program coordinator (identified along with the program description). If such a change memo has not been processed, the student will be required to satisfy all requirements established in the admission process. This may impact the ability of the student to graduate on time.

Plan of Work:

The Plan of Work is intended to assist the student in structuring the course work for the MS degree. Students are urged to discuss their program with the appropriate program coordinator (identified along with the program description). The plan of work should be filed by all students in the program before completing 12 credits. Students will be notified by the graduate program office regarding the acceptance of the plan. The plan of work is a contract that describes all requirements to be met for the degree. The plan of work should be treated as a living document. If there are any changes to your program, you must file a new Plan of Work and receive approval. Failure to keep your plan of work updated can delay graduation.

Application for Graduation:

It is your responsibility to file an "[Application for Graduation](#)" with the University Records Office. They are located at: 1 West Helen Newberry Joy Administrative Services Building. Their telephone number is +(313) 577-3531. This application must be filed by the first day of class of the student's final semester.

Curricular Practical Training (CPT):

The Industrial & Systems Engineering Department strongly believes in the valuable, complementary experience that Curricular Practical Training can provide to international students. Students are encouraged to gain CPT by taking up industrial internships through "IE 6991: Industrial Internship" credits.

All CPT experiences must be directly aligned with your degree program. They need prior approval from the department Graduate Program Officer, or, in his absence, the Chair of the department. This is consistent with Immigration and Naturalization Service (INS) and WSU's Office of International Students and Scholars (OISS) guidelines.

Eligibility and Process:

- Student should have completed 16 credits of plan of work related coursework to be eligible for Curricular Practical Training.
- With only 16 credits completed, student is allowed to take CPT either in the Fall term or the Winter term, but not both. Student is however allowed to extend the CPT to include the Spring/Summer term as well.
- With 24 or more credits completed, students are eligible for one full year CPT.
- No more than 2 credits of the CPT related credits (IE 6991 with Satisfactory or Unsatisfactory grade) can be used toward the 32 credit plan-of-work. If credits are to be used toward graduation, there are stringent requirements for report writing. See "Departmental Procedures and Requirements" section below for more details.
- In case of conflict, Wayne State University policy will always override this departmental policy.

Words of Caution:

- Students should always consult with the OISS before taking any CPT credits.
- In gaining CPT, students are responsible for strictly following guidelines set by OISS and INS.

Wayne State University Forms:

All necessary university forms are available at the OISS located at 42 W. Warren, 416 Welcome Center, Detroit, MI 48202 (Tel: 313-577-3422, Fax: 313-577-2962, E-mail: oissmail@wayne.edu, <http://www.oiss.wayne.edu>).

Handbook of M.S. Programs - Industrial & Systems Engineering Department, Wayne State University

Revised: May 8, 2013

Departmental Procedures and Requirements for CPT:

ANY STUDENT CONSIDERING AN INTERNSHIP MUST COMPLETE THE INTERNSHIP PROPOSAL FORM (IPF), IDENTIFYING AN ADVISOR, AND DESCRIBING A CONCISE PLAN (PREPARED WITH THE HELP OF THE ADVISOR) FOR CARRYING OUT THE INTERNSHIP STUDY. The proposal should clearly demonstrate the relevance of the internship to the degree program. CPT forms will not be signed by the GPO or Department Chair without the completed IPF. It is the responsibility of the student to make sure that an approved copy of the IPF is included in his/her official folder with the Graduate Student Advisor (i.e., Ms. Gail Evans). TO BE ELIGIBLE FOR SIGNATURES, STUDENT MUST MAKE AVAILABLE JOB DESCRIPTION (INCLUDING SPECIFIC DUTIES) ON CORPORATE STATIONERY OR COME IN AN E-MAIL DIRECTLY FROM THE CORPORATION TO EITHER THE GPO OR DEPARTMENT CHAIR. The offer letter should have not only a starting date but also an approximate semester long duration.

CPT Report:

A detailed report is necessary if the student is planning to use the credits toward graduation. The report will document "learning experiences" and not simply describe/detail the tasks/projects worked on. Students that do not clearly demonstrate learning will receive an "Unsatisfactory" grade. There is no particular format for preparing the report. Typically, 3-credit internship reports are relatively substantial at 25 to 30 typed pages (with 1 to 1.5 line spacing). A 1-credit internship report will be approximately 8 to 10 pages. You are expected to provide detailed learning experiences. Typically, the report is due with the advisor at least three weeks before the semester ends. While the grades will be assigned by the chosen advisor at the end of the term, it is the responsibility of the student to ensure that a copy of the report is included in the student's official folder with the Graduate Student Advisor (i.e., Ms. Gail Evans). These reports will once again be checked while certifying graduation requirements. STUDENTS NOT PLANNING TO USE THE CREDITS FOR GRADUATION ARE ONLY REQUIRED TO PREPARE A SHORT SUMMARY REPORT NOT EXCEEDING TWO PAGES. In both cases, the grade is always Satisfactory (S) or Unsatisfactory (U).