

# INDUSTRIAL ENGINEERING: SYSTEMS ENGINEERING AND ANALYTICS, M.S.

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (<http://guide.wisc.edu/graduate/#policiesandrequirements>), in addition to the program requirements listed below.

### NAMED OPTION REQUIREMENTS

#### MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	Yes

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students are able to complete a program with minimal disruptions to careers and other commitments.

**Evening/Weekend:** Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW-Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

#### Requirements Detail

Minimum Credit Requirement 30 credits

Minimum Residence Credit Requirement 16 credits

Minimum Graduate Coursework Requirement Half of degree coursework (15 credits out of 30 total credits) must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university's Course Guide (<https://registrar.wisc.edu/course-guide> (<https://registrar.wisc.edu/course-guide/>)).

Overall Graduate GPA Requirement 3.00 GPA required.

**Other Grade Requirements** Grades of C and D received by a candidate in any graduate course will not be counted as credit toward the degree. These grades will be counted in the graduate GPA.

**Assessments and Examinations** None.

**Language Requirements** No language requirements.

### REQUIRED COURSES

As stated above, of the required credits, all must be at the 300 level or higher, at most 6 credits may be at the 300 level, at least 15 must be at the graduate level, at least 18 credits must be in the Industrial and Systems Engineering Department, and at least 16 credits must be taken as a graduate student in residence at UW-Madison.

Below is a typical curriculum for those pursuing an M.S. in Industrial Engineering with a course option in Systems Engineering and Analytics. Please note the Systems Engineering and Analytics program is a customizable program and students should work out other course options with their faculty advisor.

#### PLANNING GRIDS:

- SEA FALL Course Planning Grid (<https://www.engr.wisc.edu/app/uploads/2016/02/MSIE-Named-Option-SEA-FALL-2018-update.pdf>)
- SEA SPRING Course Planning Grid (<https://www.engr.wisc.edu/app/uploads/2016/02/MSIE-Named-Option-SEA-SPRING-2018-UPDATE-V2.pdf>)

#### Fall Potential Courses:

Code	Title	Credits
I SY E 313	Engineering Economic Analysis	3
I SY E 412	Fundamentals of Industrial Data Analytics	3
I SY E/COMP SCI/ MATH 425	Introduction to Combinatorial Optimization	3
I SY E/M E 510	Facilities Planning	3
I SY E/M E 512	Inspection, Quality Control and Reliability	3
I SY E 515	Engineering Management of Continuous Process Improvement	3
I SY E/COMP SCI/ E C E 524	Introduction to Optimization	3
I SY E/COMP SCI/ MATH/STAT 525	Linear Optimization	3
I SY E 601	Special Topics in Industrial Engineering	1-3
I SY E 603	Special Topics in Engineering Analytics and Operations Research	1-3
I SY E 604	Special Topics in Manufacturing and Supply Chain Management	1-3
I SY E 605	Computer Integrated Manufacturing	3
I SY E 624	Stochastic Modeling Techniques	3
I SY E/MATH/OTM/ STAT 632	Introduction to Stochastic Processes	3
I SY E 645	Engineering Models for Supply Chains	3
I SY E/PSYCH 653	Organization and Job Design	3

I SY E 699	Advanced Independent Study	1-5
I SY E/INFO SYS 722	Computer-Based Data Management	3

**Spring Potential Courses:**

Code	Title	Credits
I SY E 313	Engineering Economic Analysis	3
I SY E 412	Fundamentals of Industrial Data Analytics	3
I SY E/M E 512	Inspection, Quality Control and Reliability	3
I SY E 516	Introduction to Decision Analysis	3
I SY E 517	Decision Making in Health Care	3
I SY E/COMP SCI/ E C E 524	Introduction to Optimization	3
I SY E/COMP SCI/ MATH/STAT 525	Linear Optimization	3
I SY E 575	Introduction to Quality Engineering	3
I SY E 601	Special Topics in Industrial Engineering	1-3
I SY E 603	Special Topics in Engineering Analytics and Operations Research	1-3
I SY E 604	Special Topics in Manufacturing and Supply Chain Management	1-3
I SY E 612	Information Sensing and Analysis for Manufacturing Processes	3
I SY E 615	Production Systems Control	3
I SY E 620	Simulation Modeling and Analysis	3
I SY E/M E 641	Design and Analysis of Manufacturing Systems	3
I SY E/M E 643	Performance Analysis of Manufacturing Systems	3
I SY E 699	Advanced Independent Study	1-5

**Summer Potential Courses:**

Code	Title	Credits
I SY E 313	Engineering Economic Analysis	3
I SY E 516	Introduction to Decision Analysis	3
I SY E/COMP SCI/ E C E 524	Introduction to Optimization	3
I SY E 575	Introduction to Quality Engineering	3
I SY E 601	Special Topics in Industrial Engineering	1-3
I SY E 603	Special Topics in Engineering Analytics and Operations Research	1-3
I SY E 604	Special Topics in Manufacturing and Supply Chain Management	1-3
I SY E/MATH/OTM/ STAT 632	Introduction to Stochastic Processes	3
I SY E 699	Advanced Independent Study	1-5
I SY E 702	Graduate Cooperative Education Program	1-2