INDUSTRIAL ENGINEERING: SYSTEMS ENGINEERING AND ANALYTICS, MS

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (https://guide.wisc.edu/graduate/#requirementstext) and policies (https://guide.wisc.edu/graduate/#policiestext), 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 typically take enough credits aimed at completing the program in a year or two.

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

Requirement	Detail
Minimum Credit Requirement	30 credits
Minimum Residence Credit Requirement	16 credits
Minimum Graduate Coursework Requirement	15 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: https://policy.wisc.edu/library/UW-1244 (https://policy.wisc.edu/library/UW-1244/).
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/).
Other Grade Requirements	Grades of D received by a candidate in any graduate course will not be counted as satisfying degree requirements. These grades will, however, be counted in the graduate GPA.
Assessments and Examinations	None.
Language Requirements	No language requirements.

REQUIRED COURSES

Code	Title	Credits
Industrial and Systems Engineering (I SY E) [1]		
Students must complete at least 18 credits in the Industrial and Systems Engineering Department.		18
Electives		
Electives are chosen in consultation with advisor.		12
Optional Experiential Courses		
At most, 6 credits total from independent study, research, and internship / co-op courses may be applied towards the degree.		0-6
I SY E 699	Advanced Independent Study	
I SY E 790	Master's Research and Thesis	
I SY E 702	Graduate Cooperative Education Program	
Total Credits		**30**

[1] All credits must be from coursework numbered 300 or higher. Up to 6 credits of coursework numbered 300 to 399 may satisfy degree requirements.

Fall Potential Courses

Code	Title	Credits
I SY E 313	Engineering Economic Analysis	3
I SY E 315	Production Planning and Control	3
I SY E 415	Introduction to Manufacturing Systems, Design and 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 517	Decision Making in Health Care	3

I SY E 521	Machine Learning in Action for Industrial Engineers	3
I SY E/COMP SCI/ E C E 524	Introduction to 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 645	Engineering Models for Supply Chains	3
I SY E 649	Interactive Data Analytics	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 315	Production Planning and Control	3
I SY E 412	Fundamentals of Industrial Data Analytics	3
I SY E 415	Introduction to Manufacturing Systems, Design and Analysis	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 521	Machine Learning in Action for Industrial Engineers	3
I SY E/COMP SCI/ E C E 524	Introduction to Optimization	3
I SY E 562	Human Factors of Data Science and Machine Learning	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 649	Interactive Data Analytics	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

Other Policy

Students in this program may not take courses outside the prescribed curriculum without faculty advisor and program director approval. Students in this program cannot enroll concurrently in other undergraduate or graduate degree programs.