Systems Engineering
and Analytics
One Year Accelerated Master’s Program

PREREQUISITES

• BS degree in industrial engineering or equivalent
• Mathematical statistics (Ex. Stat 312)
• Computer programming (Ex. CS 302)
• Graduate Record Examination (GRE) scores received by December 1st.

*ISyE undergrads and applicants with prior institutional approval are waived from the GRE requirement.

PROGRAM DESCRIPTION

Analytics, and the ability to effectively utilize data, is quickly becoming an important component in engineering decision making. There is a strong need in the marketplace for people who use analytical tools to transform data into insights for making better decisions. The Systems Engineering and Analytics option within the UW-Madison graduate program in Industrial and Systems Engineering offers students the opportunity to pursue graduate training in this important and emerging area, under the auspices of the foremost experts in their field, in one of the world’s top-ranked departments of industrial and systems engineering. The flexible curricula in Systems Engineering and Analytics enable students to tailor their degree program to suit their particular needs and career objectives.

After completing your degree, you will be able to analyze, process, and build conclusions based on the data you collect in the design, testing, and operations phases of engineering and design processes. The program includes training in optimization models and methods, applied industrial analytics, simulation modeling and analysis, and courses wherein these analytical and computational tools are applied in an engineering systems setting. These learned skills are now highly sought after in manufacturing, transportation, finance, healthcare, and other industrial sectors.

WHAT YOU LEARN

• Acquire mathematical, scientific, and engineering principles in analytics.
• Utilize data-driven methodologies to formulate, analyze, and solve advanced engineering problems.
• Evaluate relevant analytical, computational, engineering tools to address advanced systems engineering problems.
• Solve real-world problems using computer-assisted, data-driven decision making technologies.

HOW YOU LEARN

• The flexible curriculum can be personalized to suit your needs.
• Students who hold a graduate degree may transfer up to 9 credits of prior graduate work.
• UW-Madison Industrial Engineering students may count up to 7 credits of coursework numbered 300 or above towards degree.
• Complete in one calendar year: Three semesters, including courses during summer sessions.

COURSES (30 Credits)

Below is a typical curriculum for those pursuing a MSIE-Named Option in Systems Engineering and Analytics.

FALL POTENTIAL COURSES

• ISyE 313: Engineering Economic Analysis
• ISyE 412: Fundamentals of Industrial Data Analytics
• ISyE 510: Facilities Planning
• ISyE 512: Inspection, Quality Control and Reliability

Please contact CoE Grad Admissions at iegradadmissions@engr.wisc.edu; Subject Line: “IE Grad Admissions” with questions. ISyE Seniors please contact Pam Peterson (prpeterson@wisc.edu) with questions.
COURSES CONT'D (30 Credits)

FALL POTENTIAL COURSES
- ISyE 524: Introduction to Optimization
- ISyE 525: Linear Programming
- ISyE 601: 004 IE Special Topics (Digital Mfg Tech for Enterprise System)
- ISyE 624: Stochastic Modeling Techniques
- ISyE 645: Engineering Models for Supply Chains
- ISyE 699: Independent Studies (up to 6 credits- contact instructor directly for permission)

SPRING POTENTIAL COURSES
- ISyE 313: Engineering Economic Analysis
- ISyE 412: Fundamentals of Industrial Data Analytics
- ISyE 512: Inspection, Quality Control and Reliability
- ISyE 517: Decision Making in Healthcare
- ISyE 575: Introduction to Quality Engineering
- ISyE 601: Special topics TBD (if offered and advisor approval needed)
- ISyE 612: Information Sensing and Analysis for Manufacturing Processes
- ISyE 615: Production Systems Control
- ISyE 620: Simulation Modeling and Analysis
- ISyE 641: Design and Analysis of Manufacturing Systems
- ISyE 643: Performance Analysis of Manufacturing Systems
- ISyE 699: Independent Studies (up to 6 credits)

SUMMER POTENTIAL COURSE OPTIONS:
- ISyE 313: Engineering Economic Analysis
- ISyE 516: Introduction to Decision Analysis
- ISyE 575: Introduction to Quality Engineering
- ISyE 601: Special topics TBD (if offered and advisor approval needed)
- ISyE 699: Independent Studies (up to 6 credits)

EXIT REQUIREMENTS

In order to be eligible for graduation, a Master’s student must:
- Have a GPA of 3.0 or higher
- Meet all MS degree requirements for their focus area
- Have all grades entered, except for the current semester. No Incompletes (Is) or No Reports (NRs) grades can show on the student’s transcript.
- Be enrolled in at least 2 credits the semester in which they graduate.
- Have their MS degree warrant signed and dated by the degree deadline.
- Please note if you earn a grade of C or below in a course you CANNOT count that course toward the 30-credit requirement.

JOB PLACEMENT

Engineering Career Services Office
1150 Engineering Hall
1415 Engineering Drive
Madison, WI 53706
Tel: (608) 262-3471
Email: ecs@engr.wisc.edu
https://www.engr.wisc.edu/academics/student-services/career-services/

FURTHER INFORMATION

ISyE Graduate Student Services
3182 Mechanical Engineering
1513 University Avenue
Madison, WI 53706
Tel: (608) 263-4025
Fax: (608) 890-2204
Email: iegradadmission@engr.wisc.edu
http://www.engr.wisc.edu