

Industrial Engineering, MS

Requirements

The Master of Science program in industrial engineering requires a minimum of 30 s.h. of graduate credit. Students must maintain a UI cumulative grade-point average higher than 3.25 to earn the degree.

In addition, students must enroll in ENGR:7270 Engineering Ethics, typically in the first fall semester of enrollment. ISE:5000 Graduate Seminar: Industrial Engineering must be taken in the first two consecutive semesters of enrollment and one semester (fall or spring) in subsequent academic years. More information about graduate seminar requirements can be found in the Graduate Student Handbook on the Department of Industrial and Systems Engineering Graduate Program website. Credit in ISE:5000 and ENGR:7270 may not be applied toward the 30 s.h. of required coursework.

Breadth Requirement

All students must successfully complete at least one approved graduate-level course in each of three focus areas—analytics, human factors, and systems. Those with a relevant academic background in these areas may be excused from this requirement by the director of graduate studies.

For more detailed information about program requirements and focus area courses, see the Graduate Student Handbook on the Department of Industrial and Systems Engineering website.

Analytics

Course #	Title	Hours
One of these:		
ISE:3610	Stochastic Modeling	3
ISE:3660	Data Analytics With R	3
ISE:3700	Operations Research	3
ISE:4172	Big Data Analytics	3
ISE:5730	Digital Industry	3
ISE:5740	Design and Analysis of Computer Experiments	3
ISE:6300	Innovation Science and Studies	3
ISE:6380	Deep Learning	3
ISE:6650	Human Analytics and Behavioral Operations	3
ISE:6760	Pattern Recognition for Financial Data	3
ISE:6780	Financial Engineering and Optimization	3
ISE:6790	Advanced Data Analytics and Informatics	3

Human Factors

Course #	Title	Hours
One of these:		
ISE:3400	Human Factors	3
ISE:3450	Ergonomics	3

ISE:4175	Safety Engineering	3
ISE:5420	Automated Vehicle Systems	3
ISE:5460	User Experience Design	3
ISE:6211	Human Factors in Healthcare Systems	3
ISE:6220	Cognitive Engineering	3
ISE:6410	Research Methods in Human Factors Engineering	3
ISE:6420	Human/Computer Interaction	3
ISE:6450	Human Factors in Aviation	3
ISE:6460	The Design of Virtual Environments	3
ISE:6480	Unmanned Aircraft Systems	3

Systems

Course #	Title	Hours
One of these:		
ISE:3300	Manufacturing Systems	3
ISE:3350	Process Engineering	3
ISE:3500	Information Systems Design	3
ISE:3600	Quality Control	3
ISE:3750	Digital Systems Simulation	3
ISE:4620	Design of Experiments for Quality Improvement	3
ISE:4900	Introduction to Six Sigma	3
ISE:5310	Advanced Computational Design and Manufacturing	3
ISE:5520	Renewable Energy	3
ISE:5620	Design of Experiments	3
ISE:5650	Mechatronics Engineering for Smart Device Design	3
ISE:6350	Computational Intelligence	3
ISE:6810	Advanced Topics on Additive Manufacturing	3

Master of Science Degree Without Thesis

The MS in industrial engineering without thesis requires at least 21 s.h. in Department of Industrial and Systems Engineering courses (prefix ISE), including the 9 s.h. breadth requirement and at least 12 s.h. of graduate-level courses at the 5000 level or above. Courses offered by other College of Engineering departments or courses from other colleges may be selected with the consent of the academic advisor to fulfill some or all of the remaining 9 s.h.

Master of Science With Thesis

Nonthesis students may petition for entry into the MS thesis program or the PhD program by requesting a change of status through the department. Typically, students make this request at the invitation of a faculty member who is ready to serve as a student's research advisor. The request is then reviewed by the Graduate Admissions Committee. The committee forwards approved requests to the department chair, who may authorize a change of status petition from the department to the Graduate College.

Students are encouraged to write their thesis as a publishable journal article and submit the article for publication. The thesis option consists of a minimum of 21 s.h. of coursework, including the 9 s.h. breadth requirement and up to 9 s.h. of

research. Students pursuing the thesis option are permitted to enroll in ISE:5999 Research: Industrial Engineering MS Thesis. Up to 9 s.h. in the thesis course may count toward the graduate-level course requirement. In addition, students must submit the Final Examination: Advanced Degree form, complete a Report of Thesis Approval, and submit a copy of their thesis to the Graduate College by following the published guidelines and deadlines.