

MANUFACTURING SYSTEMS ENGINEERING, M.S.

The Master of Science in Manufacturing Systems Engineering (MSE) is an on-campus, multidisciplinary degree, drawing courses and faculty from engineering, business, computer sciences, and statistics. As the first program of its kind in the United States, and among the first in the world, MSE has long been recognized as a leading provider of resourceful engineers for global and dynamic manufacturing firms. Hands-on projects, along with classes taught by internationally recognized experts and state-of-the-art technology, provide an ideal foundation for anyone entering today's advanced manufacturing environment.

MSE graduates leave the program skilled beyond narrow specialties and equipped to lead technical teams. Students are exposed to practical problems and cutting-edge concepts, resulting in engineers who combine management skills with advanced technical abilities. Courses cover a broad range of manufacturing issues, while reinforcing a systems approach. The variety of subjects allows students to tailor their studies to individual goals or interests. More than 400 MSE alumni currently work in industry.

The student body of the MSE program is predominantly composed of students returning from industry or working for their degrees while employed. The program also has a substantial number of international students. Prospective students find the mid-sized program an ideal learning environment.

Specifically, the program addresses solutions to problems in the design, development, implementation, operation, evaluation, and management of modern manufacturing systems. A named option in the MSE M.S. degree titled Engineering Management Specialization (<http://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-engineering-management-specialization-ms/>) is also offered, ideal for engineering students with a special interest in management issues pertaining to manufacturing. For students seeking advanced training in management, the School of Business offers an MBA in operations and technology management.

Students may also consider the fully online M.Eng. degree with a named option in Manufacturing Systems Engineering (<http://guide.wisc.edu/graduate/engineering-college-wide/engineering-meng/engineering-manufacturing-systems-engineering-meng/>).

ADMISSIONS

Students apply to the Master of Science in Manufacturing Systems Engineering through one of the named options:

- Engineering Management Specialization (<https://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-engineering-management-specialization-ms/>)
- Manufacturing Systems Engineering (<http://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-manufacturing-systems-engineering-ms/>)

FUNDING

GRADUATE SCHOOL RESOURCES

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (<https://grad.wisc.edu/funding/>) is available from the Graduate School. Be sure to check with your program for individual policies and restrictions related to funding.

PROGRAM RESOURCES

The Manufacturing Systems Engineering program does not offer Teaching Assistantships, Project Assistantships, or Research Assistantships. Students seeking Teaching Assistantships and Project Assistantships should directly contact academic departments that offer courses (e.g., Mechanical Engineering, Industrial and Systems Engineering). Research Assistantships are only available to students in the research thesis track. Students seeking Research Assistantships should directly contact faculty who they want to conduct thesis research with.

FEDERAL LOANS

Students who are U.S. citizens or permanent residents may be eligible to receive some level of funding through the federal direct loan program. These loans are available to qualified graduate students who are taking at least 4 credits during the fall and spring semesters, and 2 credits during summer. Private loans are also available. Learn more about financial aid at their website (<https://financialaid.wisc.edu/>).

INTERNATIONAL STUDENT SERVICES FUNDING AND SCHOLARSHIPS

For information on International Student Funding and Scholarships visit the ISS website (<https://iss.wisc.edu/students/new-students/funding-scholarships/>).

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.

MAJOR REQUIREMENTS

CURRICULAR REQUIREMENTS

Requirements Detail

| | |
|--------------------|------------|
| Minimum | 30 credits |
| Credit Requirement | |

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|-----------------------|------------|
| Minimum | 16 credits |
| Residence Requirement | |
| Credit Requirement | |

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|---|---|
| Minimum Graduate Coursework Requirement | Half of degree coursework (15 credits out of 30 total credits) must be completed in graduate-level coursework. The department recommends taking coursework in College of Engineering, the School of Business, the Department of Statistics, the Department of Biological Systems Engineering, or the Department of Computer Sciences. |
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Overall 3.00 GPA required.

Graduate GPA Requirement

Other Grade Requirements The Graduate School requires an average grade of B or better in all coursework (300 or above, not including research credits) taken as a graduate student unless conditions for probationary status require higher grades. Grades of Incomplete are considered to be unsatisfactory if they are not removed during the next enrolled semester.

Grades of C or lower do not count toward the degree.

Assessments and Examinations The research-thesis track requires student to submit a thesis and defend to a committee of faculty. The industry-thesis track requires students to submit an industry thesis and defend it to a committee of faculty. The course-only track does not require a thesis.

Language Requirements No language requirements.

REQUIRED COURSES

Select a Named Option (p. 2) for courses required.

NAMED OPTIONS

A named option is a formally documented sub-major within an academic major program. Named options appear on the transcript with degree conferral. Students pursuing the Master of Science in Manufacturing Systems Engineering must select one of the following named options:

View as listView as grid

- **MANUFACTURING SYSTEMS ENGINEERING: ENGINEERING MANAGEMENT SPECIALIZATION, M.S.** ([HTTP://GUIDE.WISC.EDU/GRADUATE/ENGINEERING-COLLEGE-WIDE/MANUFACTURING-SYSTEMS-ENGINEERING-MS/MANUFACTURING-SYSTEMS-ENGINEERING-ENGINEERING-MANAGEMENT-SPECIALIZATION-MS/](http://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-engineering-management-specialization-ms/))
- **MANUFACTURING SYSTEMS ENGINEERING: MANUFACTURING SYSTEMS ENGINEERING, M.S.** ([HTTP://GUIDE.WISC.EDU/GRADUATE/ENGINEERING-COLLEGE-WIDE/MANUFACTURING-SYSTEMS-ENGINEERING-MS/MANUFACTURING-SYSTEMS-ENGINEERING-MANUFACTURING-SYSTEMS-ENGINEERING-MS/](http://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-manufacturing-systems-engineering-ms/))

POLICIES

Students should refer to one of the named options for policy information:

- Engineering Management Specialization (<https://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-engineering-management-specialization-ms/>)

[engineering-ms/manufacturing-systems-engineering-engineering-management-specialization-ms/](http://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-engineering-management-specialization-ms/))

- Manufacturing Systems Engineering (<http://guide.wisc.edu/graduate/engineering-college-wide/manufacturing-systems-engineering-ms/manufacturing-systems-engineering-manufacturing-systems-engineering-ms/>)

PROFESSIONAL DEVELOPMENT

GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School's professional development resources (<https://grad.wisc.edu/pd/>) to build skills, thrive academically, and launch your career.

PROGRAM RESOURCES

THE INDIVIDUAL DEVELOPMENT PLAN ([HTTPS://GRAD.WISC.EDU/PD/IDP/](https://grad.wisc.edu/pd/idp/))

An Individual Development Plan helps with self-assessment, planning, and communication:

- An IDP can help you communicate your professional development and career planning needs and intentions to others including your mentor, which can lead to helpful advice and resources.
- You can use the IDP to make sure you and your mentor's expectations are clearly outlined and in agreement so that there are no big surprises, particularly at the end of your training.
- The current job market is challenging and research has shown that individuals who perform structured career planning achieve greater career success and satisfaction.

The onus to engage in the IDP process is your responsibility—although your mentor, PI, or others may encourage and support you in doing so. The IDP itself remains private to you, and you choose which parts to share with which mentors. Through the IDP process, you may decide to identify various mentors to whom you can go for expertise and advice.

ENGINEERING CAREER SERVICES ([HTTPS://ECS.WISC.EDU/](https://ecs.wisc.edu/))

Julie Rae, Assistant Director for Graduate Student Career Services, **graduate** students in all engineering programs

- Resumes and Cover Letters (<https://ecs.wisc.edu/students/resumes-and-cover-letters/>)
- Job Search Strategies
- Job Offers and Negotiation (<https://ecs.wisc.edu/students/offers-and-negotiation/>)
- CPT for Graduate Students (<https://ecs.wisc.edu/students/co-op-and-internship/>)
- Student Appointments: Schedule Here (<http://go.wisc.edu/ecs-grad-appt/>)
- Employer Recruitment List for Industrial Engineering Students (<https://ecs.wiscweb.wisc.edu/wp-content/uploads/sites/86/2017/03/IE-Employer-Recruitment-List.pdf>)

UW WRITING CENTER ([HTTP://WRITING.WISC.EDU/](http://writing.wisc.edu/))

6171 Helen C. White Hall
608-263-1992

The UW Writing Center provides free of charge face-to-face and online consultations that focus on a number of different writing scenarios (i.e. drafts of course papers, resumes, reports, application essays, cover letters, theses, etc). Writing Center instructors will not edit or proofread papers. Instead, their goal is to teach students to edit and proofread on their own in order to become a better, more confident writers.

LEARNING OUTCOMES

1. Demonstrate a strong understanding of mathematical, scientific, and engineering principles in the field.
2. Demonstrate an ability to formulate, analyze, and solve advanced engineering problems.
3. Apply the latest scientific and technological advancements, advanced techniques, and modern engineering tools to these problems.
4. Recognize and apply principles of ethical and professional conduct.

PEOPLE

PROFESSORS

- Frank Pfefferkorn (MSE Director; Mechanical Engineering) (https://directory.engr.wisc.edu/me/Faculty/Pfefferkorn_Frank/)
- Gregory A. DeCroix (School of Business) (https://directory.engr.wisc.edu/ie/Faculty/Decroix_Gregory/)
- Rafael Lazimy (School of Business) (<https://bus.wisc.edu/faculty/rafi-lazimy/>)
- Jingshan Li (Industrial and Systems Engineering) (https://directory.engr.wisc.edu/ie/Faculty/Li_Jingshan/)
- Kaibo Liu ((https://directory.engr.wisc.edu/ie/Faculty/Liu_Kaibo/)Industrial and Systems Engineering (https://directory.engr.wisc.edu/ie/Faculty/Li_Jingshan/)) (https://directory.engr.wisc.edu/ie/Faculty/Liu_Kaibo/)
- Miron Livny (Computer Science) (<http://www.cs.wisc.edu/people/miron/>)
- Ella Mae Matusumura (School of Business) (<https://bus.wisc.edu/faculty/ella-mae-matsumura/>)
- Sangkee Min (Mechanical Engineering) (https://directory.engr.wisc.edu/me/Faculty/Min_Sangkee/)
- Tim Osswald (Mechanical Engineering) (https://directory.engr.wisc.edu/me/Faculty/Osswald_Tim/)
- Robert Radwin (Industrial and Systems Engineering) (https://directory.engr.wisc.edu/ie/Faculty/Radwin_Robert/)
- Bin Ran (Civil and Environmental Engineering) (https://directory.engr.wisc.edu/cee/faculty/ran_bin/)
- Jeffrey S. Russell (Vice Provost for Lifelong Learning/ Dean of Continuing Studies) (<https://continuingstudies.wisc.edu/bios/russell-jeffrey.html>)
- Leyuan Shi (Industrial and Systems Engineering) (https://directory.engr.wisc.edu/ie/Faculty/Shi_Leyuan/)
- Kumar Sridharan (Engineering Physics) (https://directory.engr.wisc.edu/ep/faculty/sridharan_kumar/)
- Donald S. Stone (Material Science and Engineering) (https://directory.engr.wisc.edu/mse/Faculty/Stone_Donald/)
- Krishnan Suresh (Mechanical Engineering) (https://directory.engr.wisc.edu/me/faculty/suresh_krishnan/)
- Lih-Sheng (Tom) Turng (Mechanical Engineering) (https://directory.engr.wisc.edu/me/Faculty/Turng_Lih-sheng/)
- Raj Veeramani (Industrial and Systems Engineering) (https://directory.engr.wisc.edu/ie/Faculty/Veeramani_Raj/)
- Xin Wang (Industrial and Systems Engineering) (https://directory.engr.wisc.edu/ie/Faculty/Wang_Xin/)
- Urban Wemmerlov (School of Business) (<https://bus.wisc.edu/faculty/urban-wemmerlov/>)
- Michael R. Zinn (Mechanical Engineering) (https://directory.engr.wisc.edu/me/Faculty/Zinn_Michael/)
- Shiyu Zhou (Industrial and Systems Engineering) (https://directory.engr.wisc.edu/ie/Faculty/Zhou_Shiyu/)