

Master of Science: Manufacturing Systems Engineering



Gain the knowledge to lead and integrate the entire manufacturing process of your operation for maximum success and efficiency. This interactive online degree is tailored specifically for the working engineer/manager to enhance your skills in the application of advanced manufacturing techniques, data analytics, continuous improvement and overall engineering leadership.

What You Learn

- The manufacturing and business skills to become an operations leader
- Technology and process innovations that will enhance your productivity and make your business more competitive
- How to incorporate quality, lean, advanced automation, robotics, supply chain, sustainability, and data analytics into your engineering decision-making and planning

Where and How You Learn

Where This is a 100% online educational program in which you will interact with world-renowned faculty and students from large and small manufacturing and supply chain organizations.

How Our teaching is focused on an engaged model where you will learn through videos, weekly live webinars, online discussions and real-life projects.

You may start the program in spring or fall of any year. Most of the courses are three credit-hours. The majority of students elect to take two courses per semester depending on their individual situation.

A faster or slower pace can be selected as appropriate to the individual learner's circumstances. The MSE degree is awarded upon completion of thirty credits – twenty-four core course credits and six elective credits.

My favorite part of the MSE program was the opportunity for benchmarking and learning from alternate industries. The class topics were also highly applicable and relevant to my current role.

*Kjerstin Gronski
Kohler, WI*

Apply Now!

Visit interpro.wisc.edu/MSE

At a Glance

Delivery: Online

Credits: 24 core credits, 6 elective credits

Time Frame: 2 to 3 years

Tuition: Resident and non-resident:
\$1,300 per credit

Typical Curriculum

- Quality Engineering and Quality Management
- Smart Manufacturing
- Industrial Data Analytics
- Engineering Economics and Management
- Technical Project Management
- Supply Chain Management
- Additive Manufacturing
- Production Systems Control
- Inspection, Quality Control, and Reliability
- Design and Analysis of Manufacturing Systems

Questions?

For more information on admission requirements, how to apply, tuition and financial aid or other questions, contact:

Justin Kyle Bush, Graduate Advisor

608-262-0468

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**Interdisciplinary
Professional Programs**
COLLEGE OF ENGINEERING
UNIVERSITY OF WISCONSIN-MADISON

Sample Plan of Study

| | Class Number | Class Name | Cr. |
|-----------------|--------------|---|-----|
| Fall 1 | ISyE 618 | Quality Engineering and Quality Management | 3 |
| | EPD 678 | Supply Chain Management | 3 |
| Spring 1 | ISyE 615 | Production Systems Control | 3 |
| | EPD 612 | Technical Project Management | 3 |
| Summer 1 | EPD 512 | Elective – Inspection, Quality Control, and Reliability | 3 |
| Fall 2 | ME 529 | Smart Manufacturing | 3 |
| | EPD 611 | Engineering Economics and Management | 3 |
| Spring 2 | ISyE 412 | Fundamentals of Industrial Data Analytics | 3 |
| | ISyE 641 | Design and Analysis of Manufacturing Systems | 3 |
| Summer 2 | ME 514 | Elective- Polymer Additive Manufacturing | 3 |

Listed courses and schedule are subject to change

Required Courses

Smart Manufacturing

Learn how to evaluate, choose and integrate automation and robotic equipment into manufacturing systems. Understand Industry 4.0 and what it means for operations. Analyze, design and simulate closed loop control systems.

Quality Engineering and Quality Management

Learn how to lead quality improvement and successfully implement change in your organization. Deploy lean, kaizen, quality and key analysis tools for process enhancement. Many graduates say this course and project opened doors to new opportunities at work.

Engineering Economic Analysis and Management

Deepen your understanding of financial performance and financial terms. Develop an understanding of how best to create financial models for capital investments, projects and resource allocation. Create make vs buy models and understand direct and indirect costs.

Industrial Data Analytics

Develop your ability to implement data-driven modeling techniques such as regression, classification, and principal component transformation. Understand the concept of model complexity and trade-off between model bias and variation, as well as improve your problem-solving capability using realistic industrial datasets.

Production Systems Control

Learn production system modeling principles, performance analysis procedures, and analytical tools. You will understand continuous improvement procedures, lean buffer implications, and design principles. You will be able to carry out bottleneck analysis.

Technical Project Management

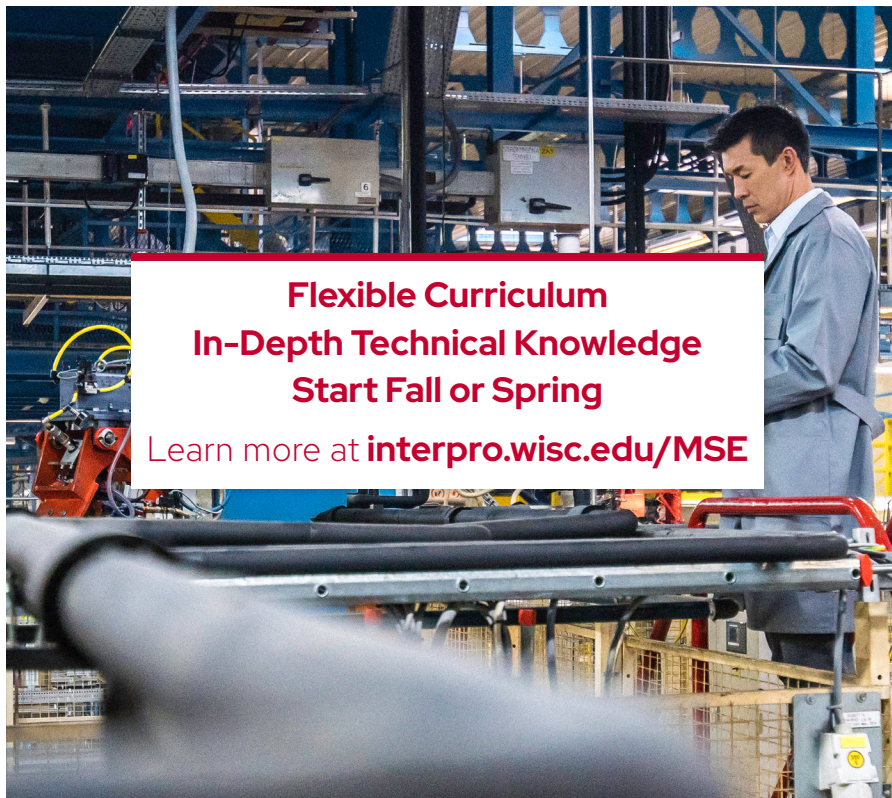
This advanced, practice-focused course enables engineering project managers at all levels, from first-time rookies to highly seasoned pros, improve their strategies, methods, and results. Learn latest proven methods to successfully plan, schedule, budget, and complete projects. Using a real project from your own work, you and several team members will apply methods and tools to improve the organization and management of your selected project. The course examines how traditional project management methods can be improved through incorporation of lean principles and agile methods.

Supply Chain Management

This course provides a practical perspective of supply chain management and logistics. The course will look at distribution, transportation, international logistics, inventory control, key performance indicators, leadership in a supply chain role and an introduction to logistics technology including ERP systems.

Design and Analysis of Manufacturing Systems

This course is a comprehensive review of manufacturing systems. It will introduce the Quick Response Manufacturing methodology and look end-to-end at the manufacturing process.



**Flexible Curriculum
In-Depth Technical Knowledge
Start Fall or Spring**

Learn more at interpro.wisc.edu/MSE

College of Engineering • Interdisciplinary Professional Programs

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