MANUFACTURING OPERATIONS MANAGEMENT

Associate in Applied Science (AAS)
Program Code: 10-195-5
Total Credits: 61

The Manufacturing Operations Management program is designed to help those with some prior experience in manufacturing advance into management positions. Graduates are prepared to supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators. Supply chain, automation, quality, lean leadership, and supervisory skills are all emphasized along with creative problem solving and team building. Students in the program will have opportunities to explore manufacturing facilities where they will analyze manufacturing operations, identify process efficiencies, and identify management strategies leading to quality production and processing.

To learn more about this program, visit **mstc.edu/programs**.

ACADEMIC ADVISOR

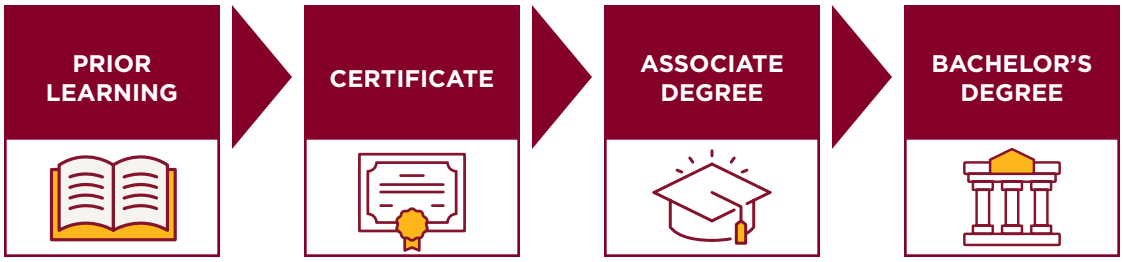
To schedule an appointment with an academic advisor, call 715-422-5300. Academic advisors will travel to other campuses as necessary to accommodate student needs. For more information about advising, visit **mstc.edu/advising.**

NEW STUDENT CHECKLIST

Complete the following steps to prepare for your New Student Advising appointment with your academic advisor:

- Submit a Mid-State application at **mstc.edu/apply**.
- Send official transcripts to:
  Mid-State Technical College
  Student Services
  500 32nd Street North
  Wisconsin Rapids, WI 54494
- Complete the Free Application for Federal Student Aid (FAFSA) at **fafsa.gov**. Mid-State's Financial Aid team is available to assist with your FAFSA application and to answer your financial aid questions. Contact Financial Aid or schedule an appointment at **mstc.edu/financial-aid**.
- Set up student MyCampus account at **mstc.edu/mycampus-assistance**.
- Schedule a New Student Advising appointment at **mstc.edu/advising**.

CAREER PATHWAY



Career pathways help you build your education step by step. Each stage offers one or more credentials that are recognized by employers and lead to real jobs—and you can keep building toward your career goals as you go.

Begin at any point.

Prior Learning

Credit for Prior Learning

- Certifications and Licenses
- Military Experience
- National/Standardized Exams
- Transfer Credit
- Work and Life Experience

Learn about Credit for Prior Learning at **mstc.edu/cpl**.

High School Credit

- High School Dual Credit
- Mid-State Fast Track

Learn about High School Credit at **mstc.edu/dc**.

Certificate

- Process Improvement (9 Credits)

Associate Degree

- Manufacturing Operations Management (61 Credits)
  Start Your Career: Manufacturing Supervisor, Production Manager, Production Supervisor, Project Manager, Quality Assurance Supervisor

Bachelor's Degree

For those interested in continuing their education, Mid-State offers transfer guides with various four-year colleges and universities. For more information, visit **mstc.edu/transfer**.

Other Options

Related Programs: Advanced Mechanical Technology, Industrial Mechanical Technician, Metal Fabrication, Precision Machining Technician, Stainless Steel Welding, Welding

OUTCOMES

Employers will expect you, as a Manufacturing Operations Management graduate, to be able to:

- Organize resources to achieve the goals of the organization.
- Direct individuals and/or processes to meet organizational goals.
- Implement safe work practices.
- Design, implement, and evaluate industrial processes.
- Apply leadership skills and tools to facilitate problem solving.
- Develop and maintain a continuous improvement environment.

TECHNICAL SKILLS ATTAINMENT

The Wisconsin Technical College System (WTCS) has implemented a requirement that all technical colleges measure outcomes attained by students. This requirement is called Technical Skills Attainment (TSA). The main objective of TSA is to ensure graduates have the technical skills needed by employers. Faculty will let students know when and how the TSA is being assessed in the program.

STUDENT HANDBOOK

Visit **mstc.edu/studenthandbook** to view Mid-State's student handbook, which contains information about admissions, enrollment, appeals processes, services for people with disabilities, financial aid, graduation, privacy, Mid-State's Student Code of Conduct, and technology.

GRADUATION REQUIREMENT

The GPS for Student Success course is required for all Mid-State program students and is recommended to be completed before obtaining 12 credits. Some students are exempt from this requirement. Please see your academic advisor for more information.

ADDITIONAL COURSES AS NEEDED

The following courses may be recommended or required if the student does not achieve minimum placement scores.

College Reading and Writing 1
10831104
3 credits
Provides learners with opportunities to develop and expand reading and writing skills to prepare for college-level academic work. Students will employ critical reading strategies to improve comprehension, analysis, and retention of texts. Students will apply the writing process to produce well-developed, coherent, and unified written work.

Pre-Algebra
10834109
3 credits
Provides an introduction to algebra. Includes operations on real numbers, solving linear equations, percent and proportion, and an introduction to polynomials and statistics. Prepares students for elementary algebra and subsequent algebra-related courses.

MULTIPLE MEASURES

Students can place into courses using high school GPA and completed classes. Placement can be determined in the following ways:

- **Multiple Measures Writing (MMW)**
  High school GPA of 2.6 & successful completion of 2.0 credits of high school writing courses with a "C" or better
- **Multiple Measures Reading (MMR)**
  High school GPA of 2.6 & successful completion of 2.0 credits of high school literature courses with a "C" or better
- **Multiple Measures Math 1 (MMM_1)**
  High school GPA of 2.6 & successful completion of 1.0 credit of high school math (Algebra 1 or equivalent) with a "C" or better
- **Multiple Measures Math 2 (MMM_2)**
  High school GPA of 2.6 & successful completion of 2.0 credits of high school math including Algebra 1 and Algebra 2 with a "C" or better
- **Multiple Measures Science 1 (MMS_1)**
  High school GPA of 2.6 & successful completion of 1.0 credit of high school lab science course with a "C" or better
- **Multiple Measures Science 2 (MMS_2)**
  High school GPA of 2.6 & successful completion of 1.0 credit of high school chemistry with a "C" or better

Past high school and college transcripts are used in making course placement decisions.

SAMPLE FULL-TIME CURRICULUM OPTION

Manufacturing Operations Management • 61 Total Credits

Term 16 Credits

Course Number	Course Name	CPL	Credits
10196189	Team Building & Problem-Solving	No	3
10623126 or 10196191	Manufacturing Supervision or Supervision	No or Yes	3
10462107	Industrial Safety	Yes	2
10623114	Intro to Inventor	Yes	1
10801136	English Composition 1	Yes	3
10804107 or 10804189	College Mathematics or Introductory Statistics	Yes	3
10890102	GPS for Student Success	Yes	1

Term 15 Credits

Course Number	Course Name	CPL	Credits
10102110	Employment Law	No	3
10623124 or 10102121	Budgets & Economic Impact for Manufacturing or Finance and Budgeting	No or Yes	3
10103123	Excel-Beginning	Yes	1
10623112	Manufacturing Practices	No	2
10801198 or 10801196	Speech or Oral/Interpersonal Communication	Yes	3
10809166	Introduction to Ethics: Theory & Application	Yes	3

Term 15 Credits

Course Number	Course Name	CPL	Credits
10196190	Leadership Development	Yes	3
10196193	Human Resource Management	No	3
10605117	Automation 1 - Beginning PLC	Yes	3
10623169 or 10623168	Manufacturing Operations Management Internship or Manufacturing Operations Capstone	No	3
10809198 or 10809188	Introduction to Psychology or Developmental Psychology	Yes	3

Term 15 Credits

Course Number	Course Name	CPL	Credits
10196192	Managing for Quality	No	3
10196188	Project Management	No	3
10623171	Lean Six Sigma	No	3
10623177	Manufacturing Leadership	No	3
10809172	Introduction to Diversity Studies	Yes	3

Please Note

- Credit for Prior Learning (CPL) options are available for some courses. You can visit **mstc.edu/cpl** or contact your academic advisor for details.
- This curriculum sequence is only for student planning. Actual student schedules will vary depending on course availability.
- Program completion time may vary based on student scheduling and course availability. For details, go to **mstc.edu/schedule**.
- Get the latest updates online at **mstc.edu**.

SAMPLE PART-TIME CURRICULUM OPTION

Manufacturing Operations Management • 61 Total Credits

Term 7 Credits

Course Number	Course Name	CPL	Credits
10462107	Industrial Safety	Yes	2
10623114	Intro to Inventor	Yes	1
10801136	English Composition 1	Yes	3
10890102	GPS for Student Success	Yes	1

Term 6 Credits

Course Number	Course Name	CPL	Credits
10103123	Excel-Beginning	Yes	1
10804107 or 10804189	College Mathematics or Introductory Statistics	Yes	3
10623112	Manufacturing Practices	No	2

Term 9 Credits

Course Number	Course Name	CPL	Credits
10196189	Team Building & Problem-Solving	No	3
10623126 or 10196191	Manufacturing Supervision or Supervision	No or Yes	3
10809166	Introduction to Ethics: Theory & Application	Yes	3

Term 9 Credits

Course Number	Course Name	CPL	Credits
10102110	Employment Law	No	3
10623124 or 10102121	Budgets & Economic Impact for Manufacturing or Finance and Budgeting	No or Yes	3
10801198 or 10801196	Speech or Oral/Interpersonal Communication	Yes	3

Term 9 Credits

Course Number	Course Name	CPL	Credits
10196190	Leadership Development	Yes	3
10196193	Human Resource Management	No	3
10809198 or 10809188	Introduction to Psychology or Developmental Psychology	Yes	3

Term 6 Credits

Course Number	Course Name	CPL	Credits
10196192	Managing for Quality	No	3
10809172	Introduction to Diversity Studies	Yes	3

Term 6 Credits

Course Number	Course Name	CPL	Credits
10605117	Automation 1 - Beginning PLC	Yes	3
10623169 or 10623168	Manufacturing Operations Management Internship or Manufacturing Operations Capstone	No	3

Term 9 Credits

Course Number	Course Name	CPL	Credits
10196188	Project Management	No	3
10623171	Lean Six Sigma	No	3
10623177	Manufacturing Leadership	No	3

Automation 1 - Beginning PLC
10605117
3 credits
An overview of programmable logic controllers (PLCs) that provides a foundation of knowledge of the programming techniques, operation, and maintenance of PLCs used in typical industrial automation.

Budgets & Economic Impact for Manufacturing
10623124
3 credits
Students will study the language of budgets and fiscal management as it relates to the manufacturing industry. Provides an overview of the use and analysis of financial statements. Students will study the impact of current and historical economics and how they have a role in successful business planning.

College Mathematics
10804107
3 credits
This course is designed to review and develop fundamental concepts of mathematics in the areas of algebra, geometry, trigonometry, measurement and data. Algebra topics emphasize simplifying algebraic expressions, solving linear equations and inequalities with one variable, solving proportions and percent applications. Geometry and trigonometry topics include; finding areas and volumes of geometric figures, applying similar and congruent triangles, applying Pythagorean Theorem, and solving right triangles using trigonometric ratios. Measurement topics emphasize the application of measurement concepts and conversion techniques within and between U.S. customary and metric system to solve problems. Data topics emphasize data organization and summarization skills, including: frequency distributions, central tendency, relative position and measures of dispersion. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators.
Prerequisite: High School GPA of 2.6 and MMM_1 or Accuplacer Arithmetic of 250 and QAS 234 or ACT Math score of 17 or Pre-Algebra 10834109 with a "C" or better

Developmental Psychology
10809188
3 credits
Studies human development throughout the lifespan and explores developmental theory and research with an emphasis on the interactive nature of the biological, cognitive, and psychosocial changes that affect the individual from conception to death. Application activities and critical thinking skills enable students to gain an increased knowledge and understanding of themselves and others.
Prerequisite: High School GPA of 2.6 and MMR and MMW or Accuplacer Reading Skills of 236 and Writing of 237 or ACT of 15 Reading/16 English

Employment Law
10102110
3 credits
Introduces a broad scope of employment laws and provides the opportunity to apply these laws to the employment arena. Includes laws relating to anti-discrimination, including the Civil Rights Act, ADEA, and ADA; wage and hour regulation, including FLSA; employer-provided pensions, including ERISA; health insurance, including COBRA and ACA; and unemployment and worker's compensation insurance.

English Composition 1
10801136
3 credits
Learners develop and apply skills in all aspects of the writing process. Through a variety of learning activities and written documents, learners employ rhetorical strategies, plan, organize and revise content, apply critical reading strategies, locate and evaluate information, integrate and document sources, and apply standardized English language conventions.
Prerequisite: High School GPA of 2.6 and MMW or Accuplacer Writing of 262 or Accuplacer Reading 253 or ACT English score of 20 or ACT Reading 21 or completion of College Reading and Writing 1 10831104 with a "C" or better

Excel-Beginning
10103123
1 credit
Students learn to create, modify, and format spreadsheets, charts, and graphics. Students also learn to perform calculations and analysis on data.

Finance and Budgeting
10102121
3 credits
For the nonfinancial manager, this course introduces the language of accounting, finance, and budgeting. Provides an overview of the use and analysis of financial statements. Business planning and the foundations and development of budgets are explored. Business financing basics and the securing of necessary financing for a business are covered. Practical application of financial statement creation and analysis, budgetary activities, and finance calculations are included.

Human Resource Management
10196193
3 credits
Applies skills and tools necessary to perform human resource functions in an organization. Each learner demonstrates skill in following EEOC laws; writing job descriptions; recruiting, selecting, and orienting employees; developing policies and procedures; developing and conducting training; designing performance appraisal plans; developing employee development plans; and selecting compensation and benefit strategies.

Industrial Safety
10462107
2 credits
Provides an overview of safety, health, and environmental issues as they relate to industry. Various types of hazards and the controls and equipment used to reduce risks from hazards are discussed. Focuses on understanding the Occupational Safety and Health Administration (OSHA) and its function as well as other regulatory and enforcement agencies associated with industrial safety, health, and the environment.

Intro to Inventor
10623114
1 credit
Learners will create 3D models in Inventor using a variety of feature and modify tools, analyze the volume of the models, and apply a material to determine weight of the finished product. Learners will generate 2D representations of the 3D model in appropriate views, and add dimensions and annotations before formatting drawings to print out. Prior experience with computers is recommended.

Introduction to Diversity Studies
10809172
3 credits
This course introduces the study of diversity from a local to a global perspective using a holistic, interdisciplinary approach that encourages exploration and prepares students to work in a diverse environment. The course introduces basic diversity concepts, examines the impact of bias and power differentials among groups, explores the use of culturally responsive communication strategies, and compares forces that shape diversity in an international context.
Prerequisite: High School GPA of 2.6 and MMR and MMW or Accuplacer Reading Skills of 236 and Writing of 237 or ACT of 15 Reading/16 English

Introduction to Ethics: Theory & Application
10809166
3 credits
Provides a basic understanding of the theoretical foundations of ethical thought. Diverse ethical perspectives are used to analyze and compare relevant issues. Students critically evaluate individual, social, and/or professional standards of behavior, and apply a systemic decision-making process to these situations.
Prerequisite: High School GPA of 2.6 and MMR and MMW or Accuplacer Reading Skills of 236 and Writing of 237 or ACT of 15 Reading/16 English

Introduction to Psychology
10809198
3 credits
This science of psychology course is a survey of multiple aspects of behavior and mental processes. It provides an overview of topics such as research methods, theoretical perspectives, learning, cognition, memory, motivation, emotions, personality, abnormal psychology, physiological factors, social influences, and development.
Prerequisite: High School GPA of 2.6 and MMR and MMW or Accuplacer Reading Skills of 236 and Writing of 237 or ACT of 15 Reading/16 English

Introductory Statistics
10804189
3 credits
Students taking Introductory Statistics display data with graphs, describe distributions with numbers, perform correlation and regression analyses, and design experiments. They use probability and distributions to make predictions, estimate parameters, and test hypotheses. They draw inferences about relationships including ANOVA. Algebra knowledge and foundational skills in mathematics are important for success in this course.
Prerequisite: High School GPA of 2.6 and MMM_2 or Accuplacer QAS 241 or ACT Math score of 19 or Pre-Algebra 10834109 or College Math 10804107 with a "C" or better

Leadership Development
10196190
3 credits
Applies skills and tools necessary to fulfill their role as a modern leader. Each learner evaluates personal leadership effectiveness, use individual and group motivation strategies, implement mission and goals, demonstrate ethical behavior, adapt personal leadership style to worker readiness, use power, facilitate employee development, coach, manage change, and resolve conflict.

Lean Six Sigma
10623171
3 credits
Learners will examine methods used in Lean Six Sigma to implement continuous improvement projects in the workplace. Concepts identified in this course cover problem solving tools, root cause analysis and project management using the DMAIC model. Learners will incorporate basic statistics to support projects and explore the Lean Six Sigma 'body of knowledge' providing skills to achieve Lean Six Sigma Green Belt certification.

Managing for Quality
10196192
3 credits
Apply skills and tools necessary to implement and maintain a continuous improvement environment. Each learner will demonstrate the application of a personal philosophy of quality, identify stakeholder relationships, identify ways to meet/exceed customer expectations, apply a systems-focused approach, use quality models and tools, manage a quality improvement project, and measure effectiveness of continuous improvement activities.

Manufacturing Leadership
10623177
3 credits
This course equips aspiring manufacturing supervisors with the skills to lead teams, drive performance, and align manufacturing operations with organizational goals. Students will learn to analyze key metrics, apply problem-solving techniques, and implement change management strategies to enhance efficiency. By applying effective communication and leadership styles, participants will be well-equipped to transition from production roles to impactful supervisory positions.

Manufacturing Operations Capstone
10623168
3 credits
This project-based course simulates working in a supervisory role where students build a portfolio demonstrating skills they could present to an employer when applying for supervisory or management positions.
Prerequisites: minimum 21 credits of 623 or 196 or 462 program courses

Manufacturing Operations Management Internship
10623169
3 credits
This internship provides students with practical knowledge and experience in the manufacturing industry through the lens of supervisors and managers. Integrating the theories and techniques learned in previous courses with specific off-campus occupational experiences at selected training sites allows students to gain a real-world perspective of this segment of the manufacturing industry.

Manufacturing Practices
10623112
2 credits
As competition for market share continues to increase, manufacturers rely on innovations in technology, methods, and practices to give them the edge they need. To remain competitive globally, the watchwords are productivity, efficiency, and quality. In this course, students examine some of the practices that many manufacturing operations have come to rely on to make their operations competitive, efficient, and cost-effective. Topics covered in this class include the principles of lean manufacturing, value versus non-value added waste, 5S methodology, value stream mapping, setup reduction and quick changeover, cellular flow, building a lean culture, total productive maintenance, and statistical process control (SPC).

Manufacturing Supervision
10623126
3 credits
Applies skills and tools necessary to perform the functions of a supervisor in a manufacturing field. Students engage in operational planning, analyze organizational structures, review the staffing process, study techniques that enhance personal and group functionality, and develop techniques to measure production and effectiveness of teams.

Oral/Interpersonal Communication
10801196
3 credits
Focuses on developing effective listening techniques and verbal and nonverbal communication skills through oral presentation, group activity, and other projects. The study of self, conflict, and cultural contexts will be explored, as well as their impact on communication.
Prerequisite: High School GPA of 2.6 and MMR and MMW or Accuplacer Reading Skills of 236 and Writing of 237 or ACT of 15 Reading/16 English or College Reading and Writing with a C or better

Project Management
10196188
3 credits
Applies skills and tools necessary to design, implement, and evaluate formal projects. Each learner will examine the role of project management, create a project charter, define project work scope, manage project risks, and develop a network diagram, project schedule, and project budget.
Prerequisite: Nine core credits from a 101, 102, 103, 109, 196, or 623 program code.

Speech
10801198
3 credits
Explores the fundamentals of effective oral presentation to small and large groups. Topic selection, audience analysis, methods of organization, research, structuring evidence and support, delivery techniques, and other essential elements of speaking successfully, including the listening process, form the basis of this course. Includes informative, persuasive, and occasion speech presentations.
Prerequisite: High School GPA of 2.6 and MMR and MMW or Accuplacer Reading Skills of 253 and Writing of 262 or ACT of 21 Reading/19 English or completion of College Reading and Writing 1 10831104 with a "C" or better

Supervision
10196191
3 credits
Applies skills and tools necessary to perform the functions of a contemporary frontline leader. Students engage in operational planning, analyze organizational structures, review the staffing process, employ techniques to enhance employee personal and group effectiveness, and develop control techniques to measure effectiveness in the above areas.

Team Building & Problem Solving
10196189
3 credits
Applies skills and tools necessary to facilitate problem solving in a team environment. Each learner assumes the roles and responsibilities of team leadership in the stages of team development, uses a systematic problem-solving process, and employs consensus-building and conflict-management strategies.