



# MANUFACTURING OPERATIONS MANAGEMENT

**Associate in Applied Science (AAS)**  
**Program Code: 10-196-5**  
**Total Credits: 60**

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.

**Estimated tuition and fees:** [mstc.edu/programcosts](http://mstc.edu/programcosts)

## 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](http://mstc.edu/advising).

### CHECKLIST:

This section will be completed when meeting with your academic advisor.

- FAFSA ([www.fafsa.gov](http://www.fafsa.gov))
- Financial Aid Form(s)  
Form(s): \_\_\_\_\_
- Follow-Up Appointment:  
Where: \_\_\_\_\_  
When: \_\_\_\_\_  
With: \_\_\_\_\_
- Official Transcripts  
Mid-State Technical College  
Student Services Assistant  
1001 Centerpoint Drive  
Stevens Point, WI 54481
- Other: \_\_\_\_\_  
\_\_\_\_\_



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**ADAMS CAMPUS**  
401 North Main  
Adams, WI 53910

**MARSHFIELD CAMPUS**  
2600 West 5th Street  
Marshfield, WI 54449

**STEVENS POINT CAMPUS**  
1001 Centerpoint Drive  
Stevens Point, WI 54481

**WISCONSIN RAPIDS CAMPUS**  
500 32nd Street North  
Wisconsin Rapids, WI 54494

# CAREER PATHWAY • BEGIN AT ANY POINT

HIGH SCHOOL STUDENT

COLLEGE TRANSFER

RETURNING ADULT

## CREDIT FOR PRIOR LEARNING AND EXPERIENCE

### CREDIT FOR PRIOR LEARNING AND EXPERIENCE

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

Learn about Credit for Prior Learning at [mstc.edu/cpl](https://mstc.edu/cpl).

## ASSOCIATE IN APPLIED SCIENCE (AAS)

### MANUFACTURING OPERATIONS MANAGEMENT

Associate in Applied Science (AAS) • 60 Credits

#### Start Your Career

- Manufacturing Supervisor
- Production Manager
- Quality Assurance Supervisor

## BACHELOR'S DEGREE

### BACHELOR'S DEGREE OPTIONS

UW-Oshkosh and UW-Platteville.

For more information and additional opportunities, visit [mstc.edu/transfer](https://mstc.edu/transfer).

## OTHER OPTIONS

### RELATED PROGRAMS

- Advanced Manufacturing Technology
- Industrial Mechanical Technician
- Metal Fabrication
- Precision Machining Technician
- Stainless Steel Welding
- Welding



## SAMPLE FULL-TIME CURRICULUM OPTION

Term		15 credits
10196189	Team Building & Problem Solving	3
10623126	Manufacturing Supervision <b>-or-</b>	
10196191	Supervision ☑	3
10462107	Industrial Safety ☑	2
10623114	Intro to Inventor	1
10801136	English Composition 1 ☑	3
10804107	College Mathematics ☑ <b>-or-</b>	
10804189	Introductory Statistics ☑	3
Term		15 credits
10102110	Employment Law	3
10623124	Budgets & Economic Impact for Manufacturing <b>-or-</b>	
10102121	Finance and Budgeting ☑	3
10103123	Excel-Beginning ☑	1
10623112	Manufacturing Practices	2
10801196	Oral/Interpersonal Communication ☑ <b>-or-</b>	
10801198	Speech ☑	3
10809166	Intro to Ethics: Theory & Application ☑	3
Term		15 credits
10196190	Leadership Development ☑	3
10196193	Human Resource Management	3
10605117	Automation 1 - Beginning PLC ☑	3
10623169	Manufacturing Operations Management Internship <b>-or-</b>	
10623168	Manufacturing Operations Capstone	3
10809198	Intro to Psychology ☑ <b>-or-</b>	
10809188	Developmental Psychology ☑	3
Term		15 credits
10102131	Entrepreneurial Management	3
10196192	Managing for Quality	3
10623132	Project Management for Manufacturing	3
10623171	Lean Six Sigma	3
10809172	Introduction to Diversity Studies ☑	3
<b>Total credits 60</b>		

☑ This course has options available to receive credit for prior learning (CPL) or work experience. Visit the website at [mstc.edu/cpl](http://mstc.edu/cpl) or contact your advisor for details.

Please Note:

- 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](http://mstc.edu/schedule).

## SAMPLE PART-TIME CURRICULUM OPTION

Term		6 credits
10462107	Industrial Safety ☑	2
10623114	Intro to Inventor	1
10801136	English Composition 1 ☑	3
Term		6 credits
10103123	Excel-Beginning ☑	1
10804107	College Mathematics ☑ <b>-or-</b>	
10804189	Introductory Statistics ☑	3
10623112	Manufacturing Practices	2
Term		9 credits
10196189	Team Building & Problem Solving	3
10623126	Manufacturing Supervision <b>-or-</b>	
10196191	Supervision ☑	3
10809166	Intro to Ethics: Theory & Application ☑	3
Term		9 credits
10102110	Employment Law	3
10623124	Budgets & Economic Impact for Manufacturing <b>-or-</b>	
10102121	Finance and Budgeting ☑	3
10801196	Oral/Interpersonal Communication ☑ <b>-or-</b>	
10801198	Speech ☑	3
Term		9 credits
10196190	Leadership Development ☑	3
10196193	Human Resource Management	3
10809198	Intro to Psychology ☑ <b>-or-</b>	
10809188	Developmental Psychology ☑	3
Term		6 credits
10196192	Managing for Quality	3
10809172	Introduction to Diversity Studies ☑	3
Term		6 credits
10605117	Automation 1 - Beginning PLC ☑	3
10623169	Manufacturing Operations Management Internship <b>-or-</b>	
10623168	Manufacturing Operations Capstone	3
Term		9 credits
10102131	Entrepreneurial Management	3
10623132	Project Management for Manufacturing	3
10623171	Lean Six Sigma	3
<b>Total credits 60</b>		

### MULTIPLE MEASURES

**Multiple Measures Writing (MMW):** High school GPA of 2.6 and 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 and 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 and successful completion of 1.0 credits 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 and 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 and successful completion of 1.0 credits of high school lab science course with a "C" or better

**Multiple Measures Science 2 (MMS\_2):** High school GPA of 2.6 and successful completion of 1.0 credits of high school chemistry with a "C" or better

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

# COURSE DESCRIPTIONS

## 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 ACT English score of 20 or completion of College Reading and Writing 1 10831104 with a "C" or better*

## Entrepreneurial Management

**10102131** .....3 credits

Introduces students to the concept of entrepreneurship. Learners study entrepreneurial practices primarily by developing a business plan for a venture of their choice. This includes comparing ways of going into business as well as developing marketing, legal, financial, products/services, management, and operations plans for a small business of their choice. Entrepreneurial behavior within companies is examined.

*Prerequisite: Twelve Business Management 10-102 credits or twelve Supervisory Management 10-196 credits or a combination of Business Management 10-102 and Supervisory Management 10-196 credits that total twelve.*

## 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.

# COURSE DESCRIPTIONS

## **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 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*

## **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.

## **Intro 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*

## **Introduction to Diversity Studies** ☑

**10809172** .....**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 ACT English score of 20 or completion of College Reading and Writing 1 10831104 with a "C" or better*

## **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 his/her 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 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*

# COURSE DESCRIPTIONS

## **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*

## **Project Management for Manufacturing 10623132.....3 credits**

Offers a systematic approach to coordinating, scheduling, and controlling activities, people, and resources during short-term and long-term projects. Some of the tools presented include Work Breakdown Structures, Activity Diagrams, and Gantt Charts.

## **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.