



# INDUSTRIAL MECHANICAL TECHNICIAN

**Associate in Applied Science (AAS)**  
**Program Code: 10-462-1**  
**Total Credits: 60**

Mid-State's Industrial Mechanical Technician program will give you the hands-on foundation necessary to confidently maintain, repair, and operate mechanical and electrical machinery and equipment in an industrial environment. You will learn to align, maintain, repair, and replace machine components as well as gain understanding of predictive and preventive maintenance, reliability-centered maintenance, automation, and many other topics. The program emphasizes safety in the workplace and includes many hands-on and interactive classroom experiences and lab/shop activities.

**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).

## 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](http://mstc.edu/apply).
- ☐ Send official transcripts to:  
Mid-State Technical College  
Student Services  
1001 Centerpoint Drive  
Stevens Point, WI 54481
- ☐ Complete the Free Application for Federal Student Aid (FAFSA) at [fafsa.gov](http://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](http://mstc.edu/financial-aid).
- ☐ Set up student MyCampus account at [mstc.edu/mycampus-assistance](http://mstc.edu/mycampus-assistance).
- ☐ Schedule a New Student Advising appointment at [mstc.edu/advising](http://mstc.edu/advising).



[mstc.edu](http://mstc.edu) • 888.575.6782 • TTY: 711



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

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

**STEVENS POINT  
DOWNTOWN 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



## 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)

### INDUSTRIAL MECHANICAL TECHNICIAN

Associate in Applied Science (AAS) • 60 Credits

#### Start Your Career

- Industrial Machinery Mechanic
- Maintenance Technician
- Predictive Maintenance (PM) Technician
- Apprenticeship

## BACHELOR'S DEGREE

### BACHELOR'S DEGREE OPTIONS

For those interested in continuing their education, Mid-State offers transfer agreements with various four-year colleges and universities. For more information and additional opportunities, visit [mstc.edu/transfer](https://mstc.edu/transfer).

## OTHER OPTIONS

### RELATED PROGRAMS

- Advanced Manufacturing Technology
- Manufacturing Operations Management
- Metal Fabrication
- Precision Machining Technician
- Stainless Steel Welding
- Welding

### APPRENTICESHIP OPPORTUNITIES

- Maintenance Technician Apprenticeship
- Millwright/Maintenance Mechanic Apprenticeship

Employers will expect you, as an Industrial Mechanical Technician graduate, to be able to:

- [illegible]

## SAMPLE FULL-TIME CURRICULUM OPTION

Term	16 credits
10462102 Bearings and Lubrication	2
10462110 Material Handling	2
10462132 Machine Shop Fundamentals	3
10605105 Electrical Circuits I ☑	3
10801195 Written Communication <b>-OR-</b>	
10801136 English Composition 1 ☑	3
10804107 College Math ☑	3

Term	15 credits
10462107 Industrial Safety ☑	2
10462122 Preventive, Predictive, and RCM ☑	2
10462133 Electric Controls for Industrial Automation	3
10623106 Introduction to AutoCAD	1
10623114 Intro to Inventor	1
10801196 Oral/Interpersonal Communication ☑ <b>-OR-</b>	
10801198 Speech ☑	3
10809103 Think Critically and Creatively ☑	3

Term	16 credits
10462104 Fluid Process Systems	3
10462106 Mechanical Power Transmission	3
10605117 Automation 1 - Beginning PLC ☑	3
10462131 Industrial Electric Power Applications	2
10809198 Intro to Psychology ☑ <b>-OR-</b>	
10809188 Developmental Psychology ☑	3
31442320 Welding Foundations 1 ☑	1
31442321 Welding Foundations 2	1

Term	13 credits
10457119 Fabrication Fundamentals 1	1
10457120 Fabrication Fundamentals 2	1
10462120 Industrial Hydraulics & Pneumatics	3
10462134 Industrial Mechanical Capstone	2
10605118 Automation 2 - Advanced PLC	3
10809166 Intro to Ethics: Theory & Application ☑	3

**Total credits 60**

☑ 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	8 credits
10462110 Material Handling	2
10462132 Machine Shop Fundamentals	3
10804107 College Math ☑	3

Term	6 credits
10462107 Industrial Safety ☑	2
10462122 Preventive, Predictive, and RCM ☑	2
10623106 Introduction to AutoCAD	1
10623114 Intro to Inventor	1

Term	8 credits
10462102 Bearings and Lubrication	2
10605105 Electrical Circuits I ☑	3
10801195 Written Communication <b>-OR-</b>	
10801136 English Composition 1 ☑	3

Term	6 credits
10462133 Electric Controls for Industrial Automation	3
10809103 Think Critically and Creatively ☑	3

Term	10 credits
10462106 Mechanical Power Transmission	3
10462131 Industrial Electric Power Applications	2
10605117 Automation 1 - Beginning PLC ☑	3
31442320 Welding Foundations 1 ☑	1
31442321 Welding Foundations 2	1

Term	8 credits
10457119 Fabrication Fundamentals 1	1
10457120 Fabrication Fundamentals 2	1
10809166 Intro to Ethics: Theory & Application ☑	3
10801196 Oral/Interpersonal Communication ☑ <b>-OR-</b>	
10801198 Speech ☑	3

Term	6 credits
10462104 Fluid Process Systems	3
10809198 Intro to Psychology ☑ <b>-OR-</b>	
10809188 Developmental Psychology ☑	3

Term	8 credits
10462120 Industrial Hydraulics & Pneumatics	3
10462134 Industrial Mechanical Capstone	2
10605118 Automation 2 - Advanced PLC	3

**Total credits 60**

## 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 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 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 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 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 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.

## Automation 2 - Advanced PLC

**10605118 .....3 credits**

A lab intensive course covering advanced PLC topics and programming techniques, analog I/O, VFDs, basic HMI interfaces, industrial robotics and troubleshooting.

*Prerequisite: Automation 1 - Beginning PLC 10605117 or consent of instructor*

## Bearings and Lubrication

**10462102 .....2 credits**

Students are presented with information pertaining to the basic functions of bearing surfaces, bearing inspections, analysis of bearing failures and the importance of preventative maintenance.

## College Math

**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*

## Electric Controls for Industrial Automation

**10462133 .....3 credits**

Introduces the fundamentals of industrial motor controls, relay logic, ladder diagrams, industrial automation, and integrated manufacturing systems. The purpose of the course is to familiarize students with the terminology, capabilities, applications, and limitations of automated industrial controls through classroom and lab activities.

*Prerequisite: Electrical Circuits 1 10605105*

## Electrical Circuits I

**10605105 .....3 credits**

The study of Ohm's Law and its application to D.C. circuits. Major topics include: Ohm's Law, series circuits, parallel circuits, combination circuits, Kirchhoff's Laws, and power relationships.

*Corequisite: Intermediate Algebra with Applications 10804118 or College Mathematics 10804107*

## English Composition I

**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*

## Fabrication Fundamentals 1

**10457119 .....1 credit**

An introduction to structural shapes and sheet metal fabrication. Presents fabrication techniques, metal selection, and layout, cutting, bending, drilling, threading, and joining using manual equipment and techniques. Information is presented to the student and followed up with lab activities to provide a hands-on experience. Emphasizes developing an understanding of the tools, techniques, safe work habits, and application of sheet metal fabrication skills.

## Fabrication Fundamentals 2

**10457120 .....1 credit**

An introduction to plate steel and heavy fabrication. Presents fabrication techniques using heavy fabrication equipment. CNC Cutting, Plate and Tube bending, Sawing and Shearing equipment will be presented and followed up with lab activities to provide a hands-on experience. Emphasizes developing an understanding of the equipment, techniques, safe work habits, and application of heavy metal fabrication skills.

# COURSE DESCRIPTIONS

## Fluid Process Systems

### 10462104 .....3 credits

Provides a “hands-on” approach to the study of fluid handling systems. A wide variety of system components, including pumps, piping, seals and packing, flow control devices, flow measuring devices, and pressure vessels, are studied. System design considerations for fluid media temperature, pressure, specific gravity, viscosity, solids concentrations, and volume requirements are analyzed. An introduction to refrigeration and air conditioning provides the student with a basic understanding of these systems.

## Industrial Electric Power Applications

### 10462131 .....2 credits

Introduces concepts and applications of typical 3-phase power systems used in industry with focus on selection of overload devices, fuse sizing, wire selection, electrical motor theory and applications, and introduction to variable frequency drives through lecture and lab activities.

*Corequisite: Industrial Electric Control Applications 10462130*

## Industrial Hydraulics & Pneumatics

### 10462120 .....3 credits

Studies basic principles of hydraulics and pneumatics. Covers the advantages, disadvantages, and inherent problems with these systems. Includes the principles of operation and the constructional features of pumps, motors, valves, seals, packing, and conductors as well as the physical properties of liquids. Students learn to identify various parts of a circuit and analyze them for their use.

*Prerequisite: Intermediate Algebra with Applications 10804118*

## Industrial Mechanical Capstone

### 10462134.....2 credits

This course is designed for students near the end of their program to practice using industry-standard processes, documentation practices, and structures through approved projects.

## 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 AutoCAD

### 10623106 .....1 credit

This introductory course in computer-aided drafting (CAD) using AutoCAD software provides foundation skills in using CAD software to create and print two-dimensional technical drawings. This course is available to students in any program. Computer skills and prior knowledge of drawing/drafting techniques is recommended.

## Intermediate Algebra with Applications ☑

### 10804118 .....4 credits

This course offers algebra content with applications. Topics include properties of real numbers; order of operations; algebraic solution for linear equations and inequalities; operations with polynomial and rational expressions; operations with rational exponents and radicals; and algebra of inverse, logarithmic, and exponential functions.

*Prerequisite: High School GPA of 2.6 and MMM\_1 or Accuplacer Arithmetic of 263 and QAS 234 or ACT Math score of 19 or QAS of 245 or Pre-Algebra 10834109 with a “C” or better*

## Machine Shop Fundamentals

### 10462132.....3 credits

Students participating in this class will be introduced to common machine tools and their functions. Classroom activities and hands-on lab exercises will be used to introduce participants to some of the most common applications in machining. Lab activities will introduce students to shop safety and identification of machine tools. Students will also gain understanding of the basic processes performed with different machine tools and basic machine set up and operations.



# COURSE DESCRIPTIONS

## Material Handling

**10462110 .....2 credits**

Introduces the concepts and equipment that transport solid materials in the industrial production process. Various types of equipment, including rigging, cranes, mechanical conveyors, pneumatic conveyors, elevators, and lift trucks, are discussed. Practical applications and use guidelines are presented to promote the safe and efficient use of this type of material handling equipment.

## Mechanical Power Transmission

**10462106 .....3 credits**

A study of the systems and components that transmit power from the prime mover through the system. Gear trains, linkages, clutches, couplings, and flexible drives are evaluated mathematically in lab situations.

## 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*

## Preventive, Predictive, and RCM ☑

**10462122 .....2 credits**

Preventive, Predictive, and RCM (Reliability Centered Maintenance) is an exploration of the various maintenance systems and approaches used to maintain manufacturing and industrial facilities. Through various hands-on labs and class demonstrations, learners will explore Computerized Maintenance Management Systems (CMMS) as well as the techniques and tools associated with vibration analysis, thermography, precision alignment, and ultrasound.

## 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*

## Think Critically and Creatively ☑

**10809103 .....3 credits**

Provides instruction about critical and creative thinking that is in high demand in all occupations. Models, theories, and processes provide the foundation for learning logical thinking strategies. Students will apply a systematic approach to problem solving by analyzing the problem, assessing possible solutions, and making effective decisions. In addition, students will generate ideas and analyze complex issues. This course assists students with developing a critical thinking mindset which is essential at every level of personal and professional life.

*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*

## Welding Foundations 1 ☑

**31442320 .....1 credit**

An introductory welding course focusing on FCAW, GMAW and oxy-fuel cutting. Lecture and lab activities are designed to emphasize safe work habits.

## Welding Foundations 2

**31442321 .....1 credit**

An introductory welding course focusing on GTAW, SMAW and plasma cutting processes. Lecture and lab activities are designed to emphasize safe work habits.

## Written Communication

**10801195 .....3 credits**

Develops writing skills which include prewriting, drafting, revising, and editing. A variety of writing assignments are designed to help the learner analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. Also develops critical reading and thinking skills through the analysis of a variety of written documents.

*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*