

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 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, and many other topics. The program emphasizes safety in the workplace and includes many hands-on and interactive classroom experiences, lab activities, and field trips.

Estimated tuition and fees: 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.

CHECKLIST:

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

- FAFSA (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: _____

mstc.edu
888.575.6782



MID-STATE
TECHNICAL COLLEGE

ADAMS CAMPUS
401 North Main
Adams, WI 53910

MARSHFIELD CAMPUS
2600 West 5th Street
Marshfield, WI 54449

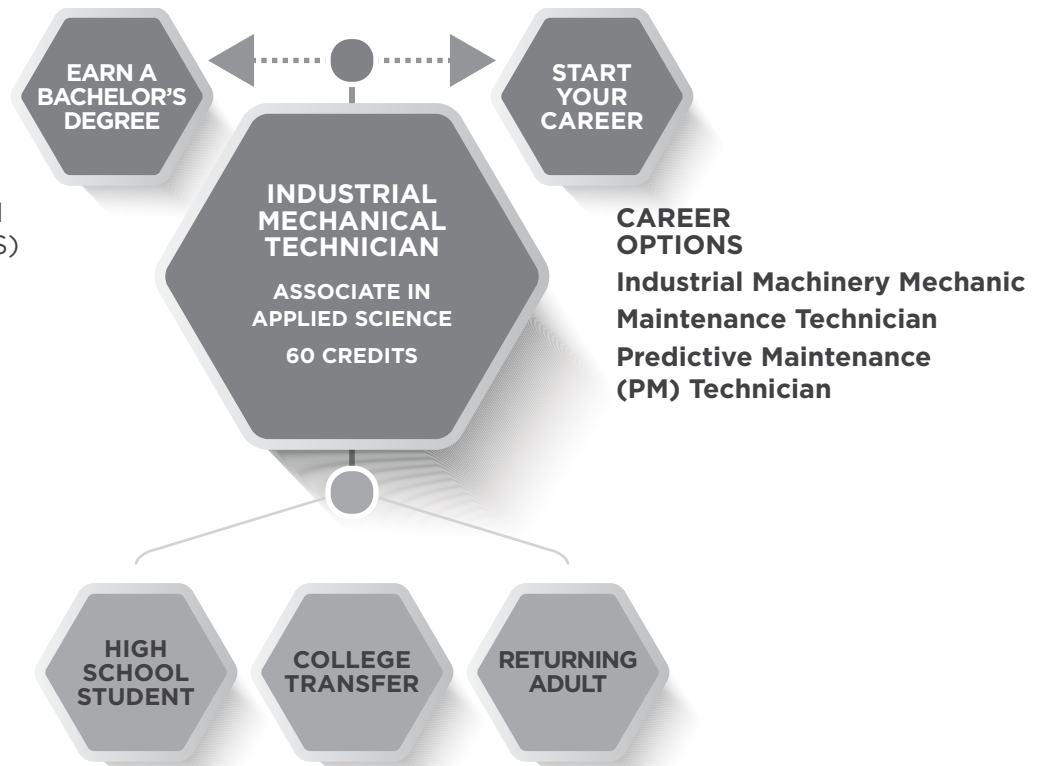
STEVENS POINT CAMPUS
1001 Centerpoint Drive
Stevens Point, WI 54481

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

BACHELOR'S DEGREE OPTIONS

UW-Oshkosh,
Organizational Studies
emphasis of Leadership and
Organizational Studies (BAS)

**For more information and
additional opportunities,
visit mstc.edu/transfer.**



College Credit • Dual Credit • Military Experience • Work Experience
Learn about Credit for Prior Learning at mstc.edu/cpl.

**BEGIN AT ANY POINT
IN THE PATHWAY**

OTHER OPTIONS

RELATED PROGRAMS

- Machine Tool Technician
- Stainless Steel Welding
- Welding

APPRENTICESHIP OPPORTUNITIES

- Maintenance Technician Apprenticeship
- Millwright/Maintenance Mechanic Apprenticeship

PROGRAM OUTCOMES

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

- Demonstrate safe work procedures.
- Install industrial equipment and systems.
- Maintain industrial equipment and systems.
- Troubleshoot industrial equipment and systems.
- Repair industrial equipment and systems.
- Communicate technical information.

TECHNICAL SKILLS ATTAINMENT

The Wisconsin Technical College System (WTCS) has implemented a requirement that all technical colleges measure program 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. Students will be assessed in the Mechanical Power Transmission course to fulfill the TSA requirement.

PROTECTIVE CLOTHING

Students are required to wear safety glasses at all times in the lab. Acquiring safety glasses is the responsibility of the student. Proper clothing is discussed in safety lectures.

NOTES:

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. (Not counted in the total credit value for this program.) Some students are exempt from this requirement. Please see your program advisor for more information.

GPS for Student Success

10890102 1 credit
Integrate necessary skills for student success by developing an academic plan, identifying interpersonal attributes for success, adopting efficient and effective learning strategies, and utilizing Mid-State resources, policies, and processes. This course must be completed prior to obtaining 12 credits and as a graduation requirement.

ADDITIONAL COURSES AS NEEDED

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

Intro to College Reading

10838104 2 credits
Provides learners with the opportunities to develop and expand reading skills, including comprehension and vocabulary skills. Learners apply reading skills to academic tasks and read to acquire information from a variety of sources.

Intro to College Writing

10831103 3 credits
Introduces basic principles of composition, including organization, development, unity, and coherence in paragraphs and multi-paragraph documents. The purpose of this course is to prepare students for successful entry into required program courses. This course is tuition bearing and under certain circumstances may qualify for financial aid. This course cannot be used to satisfy program completion requirements at Mid-State.
Prerequisite: Accuplacer Sentence Skills score of 60 or equivalent. Proficiency in word processing skills recommended.

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.
Prerequisite: Accuplacer Math score of 65, Accuplacer Algebra score of 30, ABE Math Prep V 76854785 and ABE Math Prep VI 76854786 with a grade of "S." (Note: ABE Math Prep V and VI courses cannot be used to satisfy program completion requirements at Mid-State.)

SAMPLE FULL-TIME CURRICULUM OPTION

| Term | | 15 credits |
|-------------|---|-------------------|
| 10462122 | Predictive, Preventive, and Reliability Maintenance | 2 |
| 10462132 | Machine Shop Fundamentals | 3 |
| 10605105 | Electrical Circuits I | 3 |
| 10801136 | English Composition 1 | 3 |
| 10804118 | Intermediate Algebra with Applications | 4 |

| Term | | 15 credits |
|-------------|--|-------------------|
| 10462107 | Industrial Safety | 2 |
| 10462110 | Material Handling | 2 |
| 10462133 | Electric Controls for Industrial Automation | 3 |
| 10623106 | Intro to AutoCAD | 1 |
| 10623114 | Intro to Inventor | 1 |
| 10801196 | Oral/Interpersonal Communication -or- | |
| 10801198 | Speech | 3 |
| 10804196 | Trigonometry with Applications | 3 |

| Term | | 16 credits |
|-------------|--|-------------------|
| 10442117 | Welding Fundamentals 1 | 1 |
| 10442118 | Welding Fundamentals 2 | 1 |
| 10462104 | Fluid Process Systems | 3 |
| 10462106 | Mechanical Power Transmission | 3 |
| 10605117 | Automation 1 - Beginning PLC | 3 |
| 10462131 | Industrial Electric Power Applications | 2 |
| 10809188 | Developmental Psychology -or- | |
| 10809198 | Intro to Psychology | 3 |

| Term | | 14 credits |
|-------------|---------------------------------------|-------------------|
| 10457119 | Fabrication Fundamentals 1 | 1 |
| 10457120 | Fabrication Fundamentals 2 | 1 |
| 10462120 | Industrial Hydraulics & Pneumatics | 3 |
| 10605118 | Automation 2 - Advanced PLC | 3 |
| 10806143 | College Physics 1 | 3 |
| 10809166 | Intro to Ethics: Theory & Application | 3 |

Total credits 60

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/classfinder.

SAMPLE PART-TIME CURRICULUM OPTION

| Term | | 9 credits |
|-------------|---|------------------|
| 10462122 | Predictive, Preventive, and Reliability Maintenance | 2 |
| 10462132 | Machine Shop Fundamentals | 3 |
| 10804118 | Intermediate Algebra with Applications | 4 |

| Term | | 7 credits |
|-------------|--------------------------------|------------------|
| 10462107 | Industrial Safety | 2 |
| 10462110 | Material Handling | 2 |
| 10804196 | Trigonometry with Applications | 3 |

| Term | | 8 credits |
|-------------|------------------------|------------------|
| 10442117 | Welding Fundamentals 1 | 1 |
| 10442118 | Welding Fundamentals 2 | 1 |
| 10605105 | Electrical Circuits I | 3 |
| 10801136 | English Composition 1 | 3 |

| Term | | 8 credits |
|-------------|--|------------------|
| 10462133 | Electric Controls for Industrial Automation | 3 |
| 10623106 | Intro to AutoCAD | 1 |
| 10623114 | Intro to Inventor | 1 |
| 10801196 | Oral/Interpersonal Communication -or- | |
| 10801198 | Speech | 3 |

| Term | | 8 credits |
|-------------|--|------------------|
| 10462106 | Mechanical Power Transmission | 3 |
| 10462131 | Industrial Electric Power Applications | 2 |
| 10605117 | Automation 1 - Beginning PLC | 3 |

| Term | | 8 credits |
|-------------|--------------------------------------|------------------|
| 10457119 | Fabrication Fundamentals 1 | 1 |
| 10457120 | Fabrication Fundamentals 2 | 1 |
| 10806143 | College Physics 1 | 3 |
| 10809188 | Developmental Psychology -or- | |
| 10809198 | Intro to Psychology | 3 |

| Term | | 6 credits |
|-------------|---------------------------------------|------------------|
| 10462104 | Fluid Process Systems | 3 |
| 10809166 | Intro to Ethics: Theory & Application | 3 |

| Term | | 6 credits |
|-------------|------------------------------------|------------------|
| 10462120 | Industrial Hydraulics & Pneumatics | 3 |
| 10605118 | Automation 2 - Advanced PLC | 3 |

Total credits 60

Automation 1 - Beginning PLC

106051173 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

106051183 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

College Physics 1

108061423 credits

Presents the applications and theory of basic physics principles. This course emphasizes problem solving, laboratory investigation and applications. Topics include laboratory safety, unit conversions and analysis, kinematics, dynamics, work, energy, power, temperature and heat.

Corequisite: Trigonometry with Applications 10804196

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 3.0 or Accuplacer Reading Skills of 236, Writing of 237 or ACT of 15 Reading/16 Writing. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements.

Electrical Circuits I

106051053 credits

An introduction to AC/DC electricity and the physical laws that apply to electronic circuits. Direct current (DC) covers basic definitions of voltage, current, and resistance and analysis of series and parallel resistive circuits.

Alternating current (AC) includes an introduction to AC generation, capacitors, inductors, and transformers and their applications in electronic circuits. Approximately 50 percent of the course is spent in the laboratory applying the principles and theory presented in the classroom.

Corequisite: Intermediate Algebra with Applications 10804118

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

English Composition 1

108011363 credits

Designed for learners to develop knowledge and skills in all aspects of the writing process. Planning, organizing, writing, editing, and revising are applied through a variety of activities. Students analyze audience and purpose, use elements of research, and format documents using standard guidelines. Individuals develop critical reading skills through analysis of various written documents.

Prerequisite: High School GPA of 3.0 or Accuplacer Writing of 262 or ACT of 20 or Intro to College Writing 10-831-103 with a grade of "C" or better or equivalent. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements. Proficiency in word processing skills recommended.

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.

Fluid Process Systems

104621043 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

104621312 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

104621203 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 Safety

104621072 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.

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 3.0 or Accuplacer Arithmetic of 263 and QAS 234 or ACT of 19 or QAS of 245, or Pre-Algebra 10834109 with a grade of "C" or better or equivalent. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements.

Intro 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.

Intro to Ethics: Theory & Application

108091663 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 3.0 or Accuplacer Reading Skills of 236, Writing of 237 or ACT of 15 Reading/16 Writing. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements.

Intro to Inventor

10623114 1 credit

This course is an introduction to Inventor by AutoDesk. Students will learn how to create 3D models of basic objects, add dimensioning, and generate multiview projections.

Corequisite: Intro to AutoCAD 10623106

Intro to Psychology

108091983 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 3.0 or Accuplacer Reading Skills of 236, Writing of 237 or ACT of 15 Reading/16 Writing. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements.

Machine Shop Fundamentals

104621323 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.

Material Handling

104621102 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

104621063 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

108011963 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 3.0 or Accuplacer Reading Skills of 236, Writing of 237, or ACT of 15 Reading/16 Writing. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements.

Predictive, Preventive, and Reliability Maintenance 10462122.....2 credits

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 108011983 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. Bring transcripts for further evaluation if they do not meet these requirements.

Prerequisite: High School GPA of 3.0 or Accuplacer Reading of 253, Writing of 262, or ACT of 21 Reading/19 Writing, or completion of Intro to College Writing and/or Intro to College Reading with a "C" or better or equivalent. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements.

Trigonometry with Applications 108041963 credits

Topics include circular functions, graphing of trigonometry functions, identities, equations, trigonometric functions of angles, inverse functions, solutions of triangles, complex numbers, DeMoivre's Theorem, polar coordinates, and vectors.

Prerequisite: Intermediate Algebra with Applications 10804118 with a grade of "C" or better. Students without Intermediate Algebra with Applications are encouraged to bring transcripts for individual course evaluation.

Welding Fundamentals 1 10442117 1 credit

An introduction to fundamental welding techniques with an emphasis on safe work habits that covers the processes of FCAW, GMAW, and OXY-Fuel cutting. Classroom instruction paired with lab activities are designed to provide fundamental skills in each of the welding processes covered in the class.

Welding Fundamentals 2 10442118 1 credit

An introduction to fundamental welding techniques with an emphasis on safe work habits that covers the processes of GTAW, SMAW and Plasma cutting. Classroom instruction paired with lab activities are designed to provide fundamental skills in each of the welding processes covered in the class.