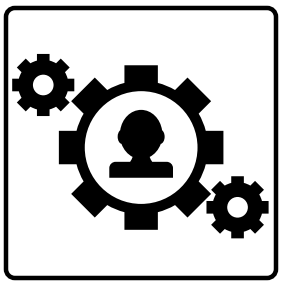

INDUSTRIAL MECHANICAL TECHNICIAN

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

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: _____

  _____

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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

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**.

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 OPTIONS

Arizona State University, Bellevue University, Colorado State University Global, Concordia University, Franklin University, Grand Canyon University (GCU), Lakeland University, Milwaukee School of Engineering (MSOE), Mount Mary University (MMU), Northern Michigan University, University of Maryland Global, University of Phoenix, UW-Green Bay, UW-Oshkosh, UW-Platteville, UW-Stevens Point, UW-Stevens Point at Marshfield, UW-Stout, UW-Whitewater, Western Governors University, and Wisconsin Private–Nonprofit Universities/Colleges.

For more information and additional opportunities, visit **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

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 and Industrial Hydraulics & Pneumatics courses 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 is recommended to be completed prior to obtaining 12 credits and is a graduation requirement unless you receive an exemption from your program advisor.

ADDITIONAL COURSES AS NEEDED

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

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
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 ✎ **-or-**	
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 ✎ **-or-**	
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** 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**.

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
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 ✎ **-or-**	
10801198	Speech ✎	3

Term		6 credits
10462104	Fluid Process Systems	3
10809198	Intro to Psychology ✎ **-or-**	
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 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.

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

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

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
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.

COURSE DESCRIPTIONS

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.

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.

COURSE DESCRIPTIONS

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.