

# Industrial Mechanical Technician

Associate in Applied Science Degree (AAS)

## Overview

Always in demand, Industrial Mechanical Technicians operate, repair and maintain machinery and equipment in an industrial environment. You will be introduced to industrial mechanical maintenance utilizing both classroom and lab experiences, including metal fabrication, machining, materials science, refrigeration, hydraulics, lubrication, pipefitting, welding, graphics and electrical controls. You will also learn concepts

of component selection, power transmission application, repair and replacement of failed components, alignment, failure analysis and preventive and predictive maintenance techniques.

**The Industrial Mechanical Technician program is offered at the Wisconsin Rapids campus.**



installation of new mechanical, hydraulic and pneumatic equipment into an industrial system

- Choose suitable methods and proper technology to move and position industrial equipment and materials in a safe and effective manner

## Career Options

Industrial and Construction Apprenticeships  
Machine Operator  
Maintenance Technician  
Predictive Maintenance Technician  
Service Technician

## Potential for Advancement

Field Service Technician  
Industrial Sales Representative  
Journeyman: Millwright, Pipefitter, Sheet Metal  
Machine Assembler/Installer  
Maintenance Scheduler  
Maintenance Supervisor  
Service Technician Specialist  
*Potential advancement generally requires further education.*

## Program Outcomes

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

- Job plan and execute an effective preventive maintenance program for complex manufacturing processes and industrial machinery
- Use industry accepted and standardized terminology and methods to communicate effectively with co-workers, supervisors, subordinates, engineers and vendors
- Diagnose, service and repair industrial machinery and manufacturing equipment using appropriate tools, materials and methods
- Select appropriate mathematic and scientific principles to solve complex problems
- Display an ability to work safely and effectively as individuals and as members of cooperative teams
- Plan, specify and execute the proper

These requirements represent a minimum standard for admission to an associate degree program. These are the same scores required to meet the ability to benefit for Financial Aid eligibility. If a student does not meet the required scores in these academic areas, they may remediate and retest or complete an identified structured remediation course(s) in the Academic Support Center. Select associate degree and technical diploma programs may have higher and/or additional requirements, which define other remediation or coursework.

3. High school transcript or GED/HSED scores

Mid-State Technical College  
Admissions  
500 32nd Street North  
Wisconsin Rapids, WI 54494  
mstc.edu  
888.575.MSTC

## Program Course Descriptions

**10103103**  
**Intro to Microsoft Office** **1 credit**

This course is designed to introduce students to Microsoft Office and its capabilities. The student will be exposed to Windows, Word, Excel, Access and PowerPoint software.

**10462102**  
**Bearings & Lubrication Systems** **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.

**10462104**  
**Fluid Process Systems** **3 credits**

Course 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 will be studied. System design considerations for fluid media temperature, pressure, specific gravity, viscosity, solids concentrations and volume requirements will be analyzed. An introduction to refrigeration and air conditioning will provide the student with a basic understanding of these systems.

**10462106****Mechanical Power Transmission 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. Prerequisite: Admission to Industrial Mechanical Technician Program 104621

**10462108****Industrial Automation 3 credits**

This course introduces the fundamentals of industrial automation, numerical control equipment, industrial robotics, computer-aided manufacturing, group technology and integrated manufacturing systems. The purpose of the course is to familiarize the student with the terminology, capabilities, applications, and limitations of industrial automated equipment.

**10462110****Material Handling 2 credits**

This course 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 will be discussed. Practical applications and use guidelines will be presented to promote the safe and efficient utilization of this type of material handling equipment. Prerequisite: Admission to Industrial Mechanical Technician Program 104621

**10462114****Metals & Machining 3 credits**

A two-part class which introduces the basics of metal science and machine shop practice. Metallurgical concepts of steel and iron production, properties of metals, testing of metals, carbon and its role, heat-treating, steel designations, and cast iron and non-ferrous metals are introduced. Students will participate in lab exercises examining the properties of metal and an introduction to machine shop practices of safety, measurement and machining through the use of hand tools, drilling machines, saws and engine lathes. Students will be introduced to those concepts by both classroom presentation and hands-on shop experiences.

**10462116****Metal Fabrication 3 credits**

An introduction to structural steel and plate fabrication, sheet metal fabrication and basic electric arc and oxyacetylene welding. Fabrication techniques, metal selection, layout, cutting, bending, drilling, threading and joining will be presented. Information will be presented to the student followed by lab activities to provide a hands-on experience. The emphasis will be placed on developing an understanding of the tools, techniques, safe work habits and the application of metal fabrication skills.

**10605105****Electrical Circuits I 3 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% of the course is spent in the laboratory applying the principles and theory presented in the classroom. Corequisite: College Tech Math 1A 10804113

**10605117****Programmable Logic Controllers-Beginning 3 credits**

An overview of programmable logic controllers (PLC's) which provides a foundation of knowledge of the programming techniques, operation and maintenance of PLC's used in typical industrial automation.

**10605127****Electrical Machines 3 credits**

Designed to teach fundamentals of generators and motors. Covers DC and AC generators and motors. Prerequisite: Electrical Circuits I 10605105

**10606105****Intro to AutoCAD 2 credits**

This is an introductory course in computer aided drafting (CAD) using AutoCAD software. It will provide foundation skills in using CAD software to create and print two dimensional technical drawings. This course is available to students in any program. Prior knowledge of drafting techniques is recommended.

**10606142****Mechanical Drafting Concepts 3 credits**

Drafting media, drafting standards, reproduction processes, geometric construction, isometric and oblique pictorial drawings, dimensioning, tolerancing, parts drawing and part identification are included in this course.

**10606151****Hydraulics & Pneumatics 3 credits**

Basic principles of hydraulics and pneumatics are presented. Covers the development of hydraulics and pneumatics and some of the problems and advantages of the two systems. The principles of operation and the constructional features of pumps, motors, valves, seals, packing and conductors and the physical properties of liquids also are covered. Students learn to identify various parts of a circuit and to analyze them for their significant use. Prerequisite: College Technical Math 1A 10804113

**Curriculum****First Semester (18 Credits)**

10103103	Intro to Microsoft Office	1
10462102	Bearings & Lubrication Systems	2
10605105	Electrical Circuits I	3
10606142	Mechanical Drafting Concepts	3
10801195	Written Communication	3
10804113	College Technical Mathematics 1A	3
10809143	Microeconomics	3
	or	
10809144	Macroeconomics	3

**Second Semester (16 Credits)**

10462108	Industrial Automation	3
10462110	Material Handling	2
10801196	Oral/Interpersonal Communication	3
	or	
10801198	Speech	3
10804114	College Technical Mathematics 1B	2
10806143	College Physics 1	3
	Elective	3

**Third Semester (16 Credits)**

10462104	Fluid Process Systems	3
10462106	Mechanical Power Transmission	3
10605117	Programmable Logic Controllers-Beginning	3
10605127	Electrical Machines	3
10804116	College Technical Mathematics 2	4

**Fourth Semester (17 Credits)**

10462114	Metals & Machining	3
10462116	Metal Fabrication	3
10606105	Intro to AutoCAD	2
10606151	Hydraulics & Pneumatics	3
10809198	Intro to Psychology	3
	Elective	3

**Total Credits 67****Please Note:**

- The Industrial Mechanical Technician program has August and January starting dates. However, we advise you to meet with a counselor to successfully plan your academic schedule.
- For General Education course descriptions (800 level courses), see section marked under Course Descriptions.