

INDUSTRIAL MECHANICAL TECHNICIAN



Program Code 10-462-1
Expected Program Costs: \$11,100
Median Annual Salary: \$40,000

OVERVIEW

Always in demand, industrial mechanical technicians maintain, repair and operate machinery and equipment in an industrial environment. You will be introduced to industrial mechanical maintenance utilizing both classroom and lab experiences. These include: power transmission components and their applications, rigging and material handling techniques, hydraulics/pneumatics, bearings and their uses in industry, welding, machining, lubrication, pipefitting, fluid process pumps, electrical motor controls and programmable logic controls. You will learn to align, maintain, repair and replace machine components as well as gain understanding of predictive and preventive maintenance, all with a focus on safety in the workplace.

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

PROGRAM OUTCOMES

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

- Execute the services of an effective preventative 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 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 Machinist
Maintenance Scheduler
Maintenance Supervisor
Service Technician Specialist

Potential advancement generally requires further education.

ADMISSIONS PROCEDURES

To apply to the Industrial Mechanical Technician program, please submit the following documents to the MSTC Admissions Office:

1. Complete an MSTC application form and return it with the \$30 non-refundable application fee.

2. Complete the Accuplacer or ACT test. Minimum scores required:

- Reading-Accuplacer score of 55
- Sentence Skills-Accuplacer score of 60
- Math-Accuplacer score of 65
- ACT equivalents for above scores are acceptable.

If a student does not meet the required test scores, they may retest or complete an identified structured course(s) in the Academic Support Center.

- Written Communication, courses in mathematics and some science courses have placement requirements. Please refer to the course description section in the back of the catalog, listed under General Education, for course specific information.
3. Submit an official copy of all academic transcripts, including high school, college or university and HSED/GED.

Mid-State Technical College
Admissions
500 32nd Street North
Wisconsin Rapids, WI 54494

PROGRAM COURSE DESCRIPTION

10103106 // 3 credits

Microsoft Office-Introduction

Develops introductory skills in the Microsoft Office Suite (Word, Excel, Access, PowerPoint, and Outlook) while reinforcing the students' knowledge of computer concepts, Windows Explorer and Internet usage through demonstrations and lab exercises.

Students should possess basic keyboarding, mouse and Windows XP skills. Students may develop these skills in Academic Support Center computer training prior to enrolling or while concurrently enrolled in the Microsoft Office-Introduction course.

10462102 // 2 credits

Bearings & Lubrication Systems

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 // 3 credits

Fluid Process Systems

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 // 4 credits

Mechanical Power Transmission

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 // 3 credits

Industrial Automation

This course 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 equipment and systems.

10462110 // 2 credits

Material Handling

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.

10462114 // 3 credits

Metals & Machining

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, 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.

CURRICULUM

Term (18 credits)

10103106	Microsoft Office-Introduction	3
10462102	Bearings & Lubrication Systems	2
10605105	Electrical Circuits I	3
10623104	Mechanical Drafting Concepts	3
10801195	Written Communication	3
10804118	Intermediate Algebra with Applications	4

Term (14 credits)

10462108	Industrial Automation	3
10462110	Material Handling	2
10801196	Oral/Interpersonal Communication -or-	
10801198	Speech	3
10804196	Trigonometry with Applications	3
10809198	Intro to Psychology	3

Term (19 credits)

10462104	Fluid Process Systems	3
10462106	Mechanical Power Transmission	4
10462114	Metals & Machining	3
10605117	Programmable Logic Controllers - Beginning	3
10605127	Electrical Machines	3
10804195	College Algebra with Applications	3

Term (17 credits)

10462116	Metal Fabrication	3
10462120	Industrial Hydraulics & Pneumatics	3
10623106	Intro to AutoCAD	2
10806154	General Physics 1	4
10809143	Microeconomics -or-	
10809144	Macroeconomics Elective	3
		2

Total Credits 68

Please Note:

- The Industrial Mechanical Technician program has August and January start dates. We advise you to meet with an academic advisor or counselor to successfully plan your academic schedule.
- This curriculum sequence is only for student planning. Actual student schedules will vary depending on course availability.
- Degree completion time may vary based on student scheduling and course availability.
- For General Education course descriptions (800 level), see section marked under Course Descriptions.

INDUSTRIAL MECHANICAL TECHNICIAN

10462116 // 3 credits

Metal Fabrication

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.

10462120 // 3 credits

Industrial Hydraulics & Pneumatics

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

Prerequisite: Intermediate Algebra with Applications 10804118

10605105 // 3 credits

Electrical Circuits I

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: Intermediate Algebra w/Apps 10804118

10605117 // 3 credits

Programmable Logic Controllers-Beginning

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 // 3 credits

Electrical Machines

Designed to teach fundamentals of generators and motors. Covers DC and AC generators and motors.

Prerequisite: Electrical Circuits I 10605105 or Intro to Electronics 10605108

10623104 // 3 credits

Mechanical Drafting Concepts

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.

10623106 // 2 credits

Intro to AutoCAD

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. Computer skills and prior knowledge of drawing/drafting techniques is recommended.