

## INDUSTRIAL MECHANICAL TECHNICIAN

### About the Industrial Mechanical Technician Program

The industrial mechanical technician program trains individuals to install, maintain, troubleshoot and repair machinery and equipment in an industrial environment. Units of instruction include mechanical drive systems, power transmission components, material handling techniques, hydraulics/pneumatics, welding, lubrication systems, piping, basic electrical concepts, electrical motor controls, and programmable logic controls. Students learn to perform predictive and preventive maintenance using a variety of troubleshooting techniques including laser machine alignment, vibration analysis, thermal imaging, and other condition monitoring technologies. Workplace safety is practiced throughout all areas of instruction.

### PROGRAM OUTLINE

TERM: 1		
Course #	Course Title	Credits
1010311500	MS Word Beginning Provides practice in using basic word processing functions and features of MS Word.	1.00
1010312600	MS Excel Beginning Develops skills in using basic spreadsheet functions of MS Excel for business users.	1.00
1044910000	Industrial Safety Fundamentals Introduces general safety for a manufacturing environment while raising the awareness of the worker to the hazards around them, and how to best protect themselves while working safely. Students will earn an OSHA 30 card and confined space certificate upon completion.	2.00
1046210300	Hydraulic Components and Schematics Students will learn how to operate the Basic Hydraulic Trainer and draw the schematic symbols in a circuit.	1.00
1046210500	Fixed Displacement Pumps Students will learn about Pascal's law and the relationship between pressure, force and area.	1.00
1046210700	Hydraulic Pressure Valves Students will identify different hydraulic valves and use them in an application.	1.00
1046210900	Analyze Basic Pneumatic Trainer Students will learn how to operate the Basic Pneumatic Trainer.	1.00
1046211200	Analyze Pressure Regulator and Actuator Students will understand how air compression will affect an actuator.	1.00
1046211500	Basic Electrical Circuits Students will learn how to measure voltage, current and resistance in an electrical circuit.	1.00
1046211700	Inductance and Capacitance Students will learn how to define and calculate inductance and capacitance in an electrical circuit.	1.00

Course #	Course Title	Credits
1046211900	Analyze Transformers Students will learn how to size a transformer and how to identify the step up and step down transformers.	1.00
1080119500	Written Communication Develops writing skills which include prewriting, drafting, revising, and editing. A variety of writing assignments is 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.	3.00
<b>TERM: 2</b>		
Course #	Course Title	Credits
1046212100	Mechanical Drive Systems Students will learn how to install a drive and properly align a shaft.	1.00
1046212400	Belt and Chain Drives Students will learn how to properly install and adjust drive components.	1.00
1046212700	Lubrication and Sealing Shafts Students will learn about proper lubricants and seals for an application.	1.00
1046212900	Common Bearings in Advanced Gear Drives Students will learn about several bearing styles and common use in a gear drive application.	1.00
1046213200	Pneumatic Valves and Air Logic Students will be able to identify common air valves and understand how air logic is used.	1.00
1046213500	Filtration and Servicing Components Students will understand air filtration and component lubrication in an air circuit.	1.00
1046213700	Hydraulic Valves in Actuator Students will learn how to identify various DCV's and use them in an application on the trainer.	1.00
1046213900	Hydraulic Check Valve Applications Students will learn the schematic symbols of a check valve and their application.	1.00
1046214100	Accumulators Used in Hydraulics Students will learn how to charge an accumulator and use them in an application.	1.00
1046214300	Mechanical Print Reading and Schematics Students will learn drawing symbols and understand how to interpret drawing dimensions.	1.00
1062012300	Three Phase Electric Motor Control Students will learn about safety, 3 phase power transformation and manual control of three phase motor control systems.	1.00
1062012500	Investigate Troubleshooting Methods Students will learn about the types and methods of troubleshooting for 3 phase motor control systems.	1.00

Course #	Course Title	Credits
1062012700	Troubleshooting Common Motor Circuits Students will examine the function and troubleshooting of reversing, automatic and timer controlled industrial motor control systems.	1.00
1080413400	Mathematical Reasoning An activity based approach is used to explore numerical relationships, graphs, proportional relationships, algebraic reasoning, and problem solving using linear, exponential and other mathematical models. Students will develop conceptual and procedural tools that support the use of key mathematical concepts in a variety of contexts. This course is not designed for Science, Technology, Engineering, or Math (STEM) students and/or others who require calculus. Prerequisite: 7785478000 Principles of College Math (C or better) or Accuplacer Algebra score $\geq 35$ or UW Math Placement Basic Math Skills score $\geq 250$ or ACT Mathematics score $\geq 18$ or Tailwind Math College Math Fund score $\geq 16$ .	3.00

**TERM: 3**

Course #	Course Title	Credits
1046217000	Pump Safety Installation and Operation Students will learn how to safety start a pump and proper pump installation.	1.00
1046217200	Cavitation and Pseudo Cavitation Students will learn about cavitation and simulate on the pump trainer.	1.00
1046217400	Pump Suction Students will learn how fluid enters a pump safely.	1.00
1046217600	Piping Components and Schematics Students will learn about various piping materials and components.	1.00
1046217800	Piping Configurations Using a Drawing Students will construct piping material and components into a circuit using a drawing.	1.00
1046218000	Design and PLC Program Students will learn about the main components of a PLC and how to write a program.	1.00
1046218200	PLC Troubleshooting Processes Students will learn how to troubleshoot a faulty PLC program.	1.00
1046218400	Evaluate Analog Inputs and Outputs Students will learn how to identify a PLC input/ output and how their application.	1.00
1080613900	Survey of Physics Emphasizes understanding basic physics concepts through laboratory investigation and applications. Topics include kinematics, dynamics, work, energy, power, temperature, heat, waves, electricity, magnetism, electromagnetic waves, optics, and atomic and nuclear physics.	3.00
1080916600	Intro to Ethics Theory and Application Provides a basic understanding of the theoretical foundations of ethical thought. Diverse ethical perspectives will be used to analyze and compare relevant issues. Students will critically evaluate individual, social and/or professional standards of behavior, and apply a systematic decision-making process to these situations.	3.00

Course #	Course Title	Credits
1080919900	Psychology of Human Relations Focuses on improving personal and job-related relationships through understanding and applying sound psychological principles. Topics include self-concept, motivation, emotions, stress management, conflict resolution, and human relation processes.	3.00
<b>TERM: 4</b>		
Course #	Course Title	Credits
1044214000	Intro to Welding Techniques Students will explore and perform basic welding techniques.	1.00
1046218600	Tag System Used in Process Control Students will learn how to identify circuit tags on the trainer as well as on a diagram.	1.00
1046218800	Loop Controller and Control Elements Students will learn how to install PID parameters.	1.00
1046219200	Sensors to Measure Liquid Level Students will change parameters in a program to maintain fluid levels.	1.00
1046219400	Validate Functions of PM Students will learn how to follow a PM checklist and understand the importance of using proper safety protocol.	1.00
1046219600	Create a PM Checklist and Schedule Students will learn how to create a PM checklist and develop a maintenance interval for an industrial machine.	1.00
1046219800	Industrial Maintenance Capstone Common core competency project	3.00
1080119600	Oral Interpersonal Communication Focuses upon developing speaking, verbal and nonverbal communications, and listening skills through individual presentations, groups activities, and other projects.	3.00

**Total Credits: 60.00**

Talk with an Academic Advisor about the program outline. Together, you will determine if credits you've already earned satisfy any requirements, discuss possible alternative courses, and choose the best classes if you're thinking of transferring.

## AT A GLANCE

### How You'll Learn



ON CAMPUS ONLINE CLASSES MULTIPLE START DATES FLEXIBLE PACE

### 2021 Start Dates

January 6	May 7	September 1
February 1	June 7	October 4
March 1	July 5	November 1

## 2022 Start Dates

January 5	March 1	June 6
February 7	May 2	July 11

[VIEW FULL ACADEMIC CALENDAR](#)

## Approximate Cost

**\$9,806\***

Financial Aid Eligible

\*Based on 10-level courses—materials, books, and fees may be additional

## What You'll Learn

- Practice industry recognized safety practices and guidelines, including the use of personal protective equipment in an industrial operating environment.
- Prepare and maintain documentation of work orders, repair work completed, and safety procedures implemented.
- Install, maintain, troubleshoot and repair industrial machinery and manufacturing equipment, using appropriate tools, materials, and methods.
- Troubleshoot and repair, mechanical drive systems, hydraulic systems, pneumatic systems, and pumping systems.
- Troubleshoot and repair industrial electrical equipment.
- Diagnose and repair process control systems.
- Develop an effective preventative maintenance program for manufacturing processes and industrial machinery.
- Interpret drawings, schematics, and specifications for industrial equipment.
- Use precision measuring equipment.
- Work as part of a maintenance team to troubleshoot, diagnose and repair industrial equipment and systems.
- Use standardized industrial terminology and methods to communicate effectively with co-workers, supervisors, subordinates, engineers, and vendors.

## Your Potential Careers

- Industrial Mechanical Technician
- Machinery maintenance
- Machinery repair

## Median Annual Salary

\$53,424	\$55,238	\$55,719
Local	State	National

EMS1 2020.1

## Get Started

Your application can be submitted online, it takes just a few minutes to complete.

[APPLY NOW](#)