

INDUSTRIAL MECHANICAL TECHNICIAN

Associates of Applied Science

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

SEMESTER: 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
1046212000	Basic Hydraulics for Industrial Mechanic Exposes the student to the theories and basic components of hydraulics. Basic component construction and operation is explored. The theory of function is supplemented by hands on disassembly and assembly of actual industrial components.	3.00
1046212500	Basic Pneumatics for Industrial Mechanic Exposes the student to the theories and basic components of pneumatics. Basic component construction and operation is explored. The theory of function is supplemented by hands on disassembly and assembly of actual industrial components.	3.00
1046212600	Industrial Electronic Concepts Introduces the student to basics of electricity needs by the industrial mechanic. Included are basic electrical theory, operation and use of the Volt-Ohm meter, AC and DC electric motors, motor controls and wiring, and applications as needed to install, operate, and control industrial machines.	3.00
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
SEMESTER: 2		
Course #	Course Title	Credits

Course #	Course Title	Credits
1046211000	<p>Mechanical Concepts 1</p> <p>This course is designed to give the student a basic understanding of the mechanical concepts that are found on industrial equipment. Since all industrial machinery is equipped with some type of mechanical drive, a firm understanding of these drives is necessary for both the industrial mechanical technician and the electro-mechanical technician.</p>	2.00
1046211100	<p>Mechanical Concepts 2</p> <p>This course is designed to further the understanding the industrial mechanical technician student has about the mechanical concepts found on industrial equipment. Since all industrial machinery is equipped with some type of mechanical drive, a definite understanding of these drives is necessary for the industrial mechanic. Prerequisite(s): 1046211000 Mechanical Concepts 1 (C or better) (concurrent enrollment allowed).</p>	2.00
1046214000	<p>Pneumatic Operations for Industrial Mech</p> <p>Provides the application of basic pneumatic principles into typical industrial circuits. The student will experience exercises with basic pneumatic components and simple air systems and how they are applied in circuits. Vacuum components and air logic systems will be included. Prerequisite(s): 1046212500 Basic Pneumatics for Industrial Mechanic (C or better).</p>	2.00
1046214200	<p>Hydraulic Operations for Industrial Mech</p> <p>Provides the application of basic hydraulic principles into typical industrial circuits, and helps develop skills in understanding hydraulic components and their interaction to each other in demonstration circuits. Prerequisite(s): 1046212000 Basic Hydraulics for Industrial Mechanic (C or better).</p>	2.00
1046215400	<p>Mechanical Print Reading and Schematics</p> <p>Allows the student to learn the symbols used in the maintenance industry and to put those symbols into circuits and diagrams. A unit is also given on blueprint reading consisting of basic symbols and reading the dimensions from various blueprints.</p>	1.00
1062012200	<p>Industrial Motor Control</p> <p>This course will lead you through the fundamentals of electric motor control and power circuits. You will learn to recognize and draw the basic symbols, the language of motor control, and how to apply these symbols, into current industrial format. Forward and reversing motor starters, contractors and frequency drives. 3-phase AC motors, single-phase, split-phase AC motors, and DC motors, motor starters and motor controls. Mounting and wiring of control systems for easy maintenance. You will also learn to draw and read ladder and wiring diagrams. You will be introduced to the logic used in motor control and be required to apply this logic in order to correctly interpret, design, and wire control circuits. Prerequisite(s): 1046212600 Industrial Electronic Concepts (C or better).</p>	3.00
1080413400	<p>Mathematical Reasoning</p> <p>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(s): 7785478000 Principles of College Math (C or better) or Accuplacer Algebra score ≥ 35 or UW Math Placement Basic Math score ≥ 250 or ACT Math score ≥ 18 or Tailwind Math CMath Fund score ≥ 16.</p>	3.00

SEMESTER: 3

Course #	Course Title	Credits
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1046214600	<p>Pump Systems</p> <p>Designed to give the student understanding and experience with various types of industrial pumps and drive mechanisms. Basic understanding of centrifugal pumps, theory of operation, installation, maintenance and troubleshooting of pumps and their systems. Students will work with Laser Alignment, and advanced linear slides, brakes and clutches. Prerequisite(s): 1046211000 Mechanical Concepts 1 (C or better) (concurrent enrollment allowed).</p>	3.00
1046215000	<p>Piping Systems</p> <p>Designed to give the student understanding and experience on how to select size, identify, and install a variety of piping fittings, and valves used in air, water, and other process systems.</p>	2.00
1046215200	<p>Troubleshooting PLC Systems</p> <p>Designed to use the basic and advanced electrical and electronic control devices in control simulated and actual automated industrial machines. Motor starters, PLC operations, air logic controllers, and electro pneumatic components will be investigated. Prerequisite(s): 1046212600 Industrial Electronic Concepts (C or better).</p>	3.00
1080613900	<p>Survey of Physics</p> <p>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.</p>	3.00
1080916600	<p>Intro to Ethics Theory and Application</p> <p>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.</p>	3.00
1080919900	<p>Psychology of Human Relations</p> <p>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.</p>	3.00
SEMESTER: 4		
Course #	Course Title	Credits
1044216600	<p>Fund of Welding Machine Tool Operations</p> <p>Introduces students to basic shielded metal arc welding, oxy-fuel arc cutting, and pipe welding operations. The students will also work with basic machine tools used in manufacturing and maintenance to develop skills using the lathe, drill press, band saw, and grinders.</p>	2.00
1046216000	<p>Industrial Fluid Process Control Systems</p> <p>Provides a hands-on approach to the study of fluid handling systems in industry. A wide variety of system components, including pumps, piping, flow control devices, flow measuring devices, level control, and related industrial instrumentation will be studied. Prerequisite(s): 1062012200 Industrial Motor Control (C or better).</p>	3.00
1046216400	<p>Preventative and Periodic Maintenance</p> <p>Designed to give the student the opportunity to research the items to be inspected in a preventive maintenance program. Students develop preventive maintenance schedules and perform actual inspections of mechanical, fluid power, and electrical systems.</p>	2.00

Course #	Course Title	Credits
1046219000	Industrial Maintenance Capstone Offers industrial maintenance students the opportunity to incorporate content from the first three semesters while focusing on personal interests within the field of industrial maintenance. Students will begin projects as preliminary proposals, further refine them through the design phase, and then develop them into a final project. This course culminates assessment of program outcomes for the Industrial Mechanical Technician. Prerequisite(s): 1062012200 Industrial Motor Control (C or better) and 1046211100 Mechanical Concepts 2 (C or better) and 1046215200 Troubleshooting PLC Systems (C or better).	2.00
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

Flexible Options



ON CAMPUS

Term Start Dates

Fall 2019: September 4

Spring 2020: January 8

Summer 2020: May 8

Approximate Cost

\$8,052*

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

Median Annual Salary

\$46,114	\$52,042	\$53,456
Local	State	National

EMSI 2018.3

Get Started

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

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