Industrial Maintenance Mechanic Technician

Overview

The Industrial Maintenance Mechanic Technology program provides entry level instruction in the installation, repair, and maintenance of a wide range of machinery found in the food processing, advanced manufacturing, and product distribution industries. The entry level skills covered include safety training and OSHA-10 Course Completion Certification, fundamentals of mechanical and electrical systems, industrial production equipment maintenance and repair, industrial process control programming, industrial robotic programming, maintenance and welding. These entry level skills are learned in both traditional lecture classes and hands-on training in sophisticated training laboratories. Effective writing, verbal communication, electronic communication, mechanical calculations, and computer skills are emphasized across the curriculum.

CNC Machining (CNC) Courses

CNC 270 Fundamentals of Computer Numerical Control (CNC)

Units: 2
Hours: 25 hours LEC; 33 hours LAB
Prerequisite: None.
Catalog Date: June 1, 2020

This course will prepare students with the introductory skills to operate a Computer Numerical Control (CNC) machine. Students will learn to set up, program, and operate CNC machinery. Instruction includes an overview of the machining process, metrology, inspection, and blueprint reading. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate safe manufacturing lab practices applicable to CNC machining.
- read and record measurements made with precision measuring tools.
- perform basic set-ups and operations required on CNC machines.

CNC 272 Applied Computer Numerical Control (CNC)

Units: 3
Hours: 36 hours LEC; 54 hours LAB
Prerequisite: CNC 270 with a grade of "C" or better
Catalog Date: June 1, 2020

This course will give students the skills, knowledge, and training to setup and operate a Computer Numerical Control (CNC) milling machine. Students will learn milling machine setup, CNC programming (coding), tooling, editing, and program debugging. Students will also learn skills needed for this industry such as blue print reading and geometric dimensioning and tolerancing. The order of operation will be taught as a skill development. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate order of operations for manufacturing.
- understanding geometric dimensioning and tolerancing.
- read machine shop blueprints.
- apply conversation programming protocol.
- determine thread pitch and size.

CNC 299 Experimental Offering in CNC Machining

Units: 0.5 - 4
Prerequisite: None.
CNC 499 Experimental Offering in CNC Machining

Industrial Maintenance Mechanic Technician (IMMT) Courses

**IMMT 120 Technical Documentation and Communication**

- **Units:** 2
- **Hours:** 36 hours LEC
- **Prerequisite:** None.
- **Catalog Date:** June 1, 2020

This course provides the student with basic workplace skills needed to enter the workforce as an industrial maintenance mechanic technician. Units of instruction include technical writing, digital form comprehension, communication skills, writing e-mail messages, Internet websites, critical thinking, problem solving, and conflict resolution. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- write a maintenance work order completion report accounting for services performed, items replaced, and hours charged to the maintenance work order.
- complete a maintenance work order report using a digital device.
- write a professional email.

**IMMT 121 Industrial Mechanics I**

- **Units:** 3
- **Hours:** 36 hours LEC; 54 hours LAB
- **Prerequisite:** IMMT 120, 130, and 140 with grades of "C" or better
- **Catalog Date:** June 1, 2020

This course is designed to introduce the student to the theoretical and practical applications of basic mechanical systems utilized in the industrial mechanical industry. Additional studies including plant safety, hand and power tool fundamentals, blueprint reading, principles of power transmission, properties of lubricants, shaft and coupling alignment, and conveyor systems. Components of this course will be offered online.

Students will need to have access to a computer and the Internet and have some familiarity with a computer.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- Apply problem-solving skills to the maintenance, operation, and repair of mechanical systems.
- Utilize tools and equipment in the maintenance, operation, and repair of mechanical systems.
- Explain the theory and demonstrate practical applications of basic mechanical systems utilized in industrial production and product distribution industries.

**IMMT 130 Technical Calculations**

- **Units:** 2
- **Hours:** 36 hours LEC
- **Prerequisite:** None.
- **Catalog Date:** June 1, 2020

This course focuses on building mathematical skills specific to the industrial maintenance mechanic trades; problem solving using metric (SI) units and English and metric unit conversions; solution of word problems involving length, area, volume, weight, strength of materials, work, power, energy, and efficiencies; exponents; problem solving using graphs and tables; algebraic solutions to applied problems. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- solve calculations related to Mechanical-Industrial Maintenance Mechanic Technology courses and mechanical systems using unit cancellation.
- use applied calculations and formulas to solve for pressure, flow, and electrical related problems.
- demonstrate problem-solving abilities and practical analytical thinking skills.
IMMT 140 OSHA 10 General Safety - IIPP

This class focuses on the training required for the OSHA 10-Hour General Industry card. Training includes safety policies, procedures, standards, and general industry safety and health principles. Topics for this course will include US Department of Labor’s Introduction to Occupational Safety and Health Administration (OSHA), Walking and Working Surfaces, Electrical Hazards, Hazardous Materials, Personal Protective Equipment, Machine Guarding, and Hazard Communication training modules. This course also covers Cal/OSHA’s Injury and Illness Prevention Program. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- successfully passing the OSHA 10-Hour General Industry exam.
- demonstrate the ability to properly preform a worksite hazard assessment.
- demonstrate the ability to properly don, doff, adjust, and wear PPE.

IMMT 230 Industrial Electricity I

This course provides instruction in power and control circuits and devices used the industrial mechanical industry. Units of instruction include a study of electron theory, magnetism, induction, alternating current, direct current, resistance, capacitance, transformers, electric motors, industrial equipment wiring diagrams, and electrical troubleshooting. Students will practice using electrical meters and test instruments in the laboratory. Electrical safety practices will also be covered. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- explain electrical theory, electrical circuit design, circuit interpretation, and related electrical phenomenon.
- design an electrical control schematic for a industrial processing system.
- demonstrate the ability to troubleshoot an electrical circuit.

IMMT 240 Industrial Fluid Power I

This course provides instruction in the principles of fluid power, hydraulic, pneumatic, and compressed air systems. Laboratory activities include operation, testing, maintenance, and troubleshooting of hydraulic, pneumatic, and compressed air systems. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- explain the theory and practical application of fluid power.
- operate and troubleshoot a compressed air system.
- explain how a hydraulic pump operates.

IMMT 250 Industrial Control Systems I

This course provides instruction in the fundamentals and programming of Programmable Logic Controls (PLC) and Variable Frequency Drives (VFD). Additional studies include Servo Divers, Industrial Sensors and Instrumentation. Components of this course will be offered online. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

Student Learning Outcomes

Upon completion of this course, the student will be able to:
• explain the fundamental concept of digital controls.
• design and program Programmable Logic Controller systems.
• program a Variable Frequency Drive.

IMMT 252 Industrial Control Systems II

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This course provides instruction in the fundamentals, design, programming, operations, and troubleshooting of industrial equipment. Students will need to have access to a computer and the Internet and have some familiarity with a computer.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

• successfully program a robotic control system.
• successfully troubleshoot a robotic electrical system.
• successfully troubleshoot a robotic mechanical system.

IMMT 299 Experimental Offering in Industrial Maintenance Mechanic Technician

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