

# INDUSTRIAL EQUIPMENT MECHANIC (462)

Information provided includes course descriptions by subject only. For complete 2024-2025 programs/academic plans, please refer to Academic Programs (<http://catalog.blackhawk.edu/academics/>).

## **462-301 Electrical Fundamentals**

**Credits:** 1-3

This course is designed to introduce students to the basic concepts of DC electricity, single phase AC electricity, and three phase AC electricity. Students demonstrate proper safety procedures while examining basic electrical components such as resistors, capacitors, inductors, switches, indicators, relays, and basic test equipment. Students will be able to analyze and construct circuits, measure voltage, current, resistance, capacitance, and inductance as they apply to circuits.

**Aid Code:** 32 - undefined.

Complete Course Listing

## **462-302 Electrical Control System**

**Credits:** 1-3

In this course, students apply the basic principles related to electro-mechanical systems, as well as motors, transformers, frequency drives, and various electro-mechanical devices in order to enhance control systems. Students will be able to construct and troubleshoot starter and control circuits, utilizing both line and low voltage circuits. This course covers the fundamentals of National Electrical Code wiring, soldering, relay ladder logic, and lock-out-tag-out procedures.

**Aid Code:** 32 - undefined.

Complete Course Listing

## **462-303 Programmable Logic Controllers**

**Credits:** 1-4

This course is designed to introduce students to the basics of Programmable Logic Controllers (PLC's) used in industry. PLC's in both the online and offline modes, as well as ladder logic, logic gates, Boolean equations and truth tables will be explained and utilized in course demonstrations. While practicing proper safety procedures, students will examine discrete and analog input and outputs, hardware sensor interfacing and troubleshooting techniques, so they can program PLC's using timer, counter, latch, data movement, sequencing, and other instructions.

**Aid Code:** 32 - undefined.

Complete Course Listing

## **462-304 Electro-Mechanical Prints**

**Credits:** 1-2

This course illustrates for students the basic symbols related to electro-mechanical prints. Students will analyze and interpret electro-mechanical prints and line diagrams to understand the sequence of operations and troubleshoot systems.

**Aid Code:** 32 - undefined.

Complete Course Listing

## **462-306 Machining Prints**

**Credits:** 1-2

This course is designed to illustrate the basics of machining prints. Students will be able to breakdown machining prints and model isometric sketches as well as interpret orthographic projection drawings which include sections, auxiliary views, threads, fasteners, surface finishes, geometric dimensions, tolerances, and assembly points.

**Aid Code:** 32 - undefined.

Complete Course Listing

## **462-307 Maintenance Milling**

**Credits:** 1-3

This course is designed to outline for students the basics of milling fabrication processes that are common to the industrial maintenance field. Through demonstration and practice, emphasis will be placed on knowing the machine parts, their function, and performing simple milling operations for the student. Students will be able to demonstrate the basic use of mills, related safety, maintenance, metal cutting theory, cutting tools, and work holding for the mill.

**Aid Code:** 32 - undefined.

Complete Course Listing

## **462-308 Industrial Maintenance Metallurgy & Metrology**

**Credits:** 1-2

This course emphasizes the basics of metallurgy and metrology. The properties of iron and metals, testing and heat treating of metals, steel designations, and cast iron as well as non-ferrous metals are examined. Through the integration of mathematic skills, students will demonstrate the use of semi-precision measuring tools such as steel rules and screw thread gauges, as well as precision measuring instruments such as micrometers, go/no go plug gauges, go/no go thread gauges and assorted calipers.

**Aid Code:** 32 - undefined.

Complete Course Listing

## **462-309 Lathe Fabrication Processes**

**Credits:** 1-3

This course emphasizes the basics of lathe fabrication processes that are common to the industrial maintenance field. Students will practice the basics of metal turning techniques. Students will engage in the basic use of lathes, associated processes, while adhering to related safety standards as well as demonstrating the ability to work with lathe tools, and addressing maintenance issues.

**Aid Code:** 32 - undefined.

Complete Course Listing

#### **462-311 Fluid Systems**

**Credits:** 1-4

Students in this course will investigate the theory of fluid power. Common fluid principles will be analyzed and the basic system of the hydraulic unit will be the focus. Students will explore the theory of fluid pumping applications common in industry. While incorporating troubleshooting techniques, maintenance, filtration and safety procedures, students will be able to perform the construction of fluid systems including the basic plumbing, layout, cutting, threading, and installation of systems.

**Aid Code:** 32 - undefined.

Complete Course Listing

#### **462-312 Pneumatic Systems**

**Credits:** 1-3

This course is designed to inform students of the basics of pneumatics, while analyzing the advantages, disadvantages and inherent problems of this system. While incorporating safety principles, students will analyze the various parts of a pneumatic circuit for their use, which includes: examining the main parts of a pneumatic system, evaluating the characteristics of physical laws that apply to pneumatics, summarizing the laws governing pneumatics, identifying air conditioning and distribution equipment, adjusting pressure regulators to specified pressure, evaluating the characteristics and terms of pressure drop versus flow relationship, as well as the characteristics and terms of vacuum generation. Pneumatic safety principles will be introduced.

**Aid Code:** 32 - undefined.

Complete Course Listing

#### **462-313 Facility Prints**

**Credits:** 1-3

This course focuses on basic facility print reading fundamentals, and students will engage in understanding, interpreting, and utilizing architectural drawings and symbols. Students will visualize facility structures and interpret elevations, plan views, details, and sections from drawings as well as interpreting building specifications. This course will emphasize students' ability to analyze and interpret facility prints.

**Aid Code:** 32 - undefined.

Complete Course Listing

#### **462-314 Maintenance Management**

**Credits:** 1-2

Students in this course will engage in basic maintenance management and customer service skills. The basic principles of maintenance management and quality control are explored and practiced by students. Students will perform the duties of maintenance record keeping, ordering parts, shop operation, and customer service principles for both internal and external customers.

**Aid Code:** 32 - undefined.

Complete Course Listing

#### **462-322 Human Relations in the Industrial Setting**

**Credits:** 1-2

This course is designed to give students insight into how an individual's behaviors and abilities affect their relationships with others at work and with customers. Areas stressed include presenting a professional image in seeking employment, developing a positive work attitude, reliability on the job and an awareness of personal adjustments needed to succeed in the workplace. During this course, students will engage in an internship opportunity on or off campus.

**Aid Code:** 32 - undefined.

Complete Course Listing

#### **462-400 Fork Lift Truck Maintenance**

**Credits:** 0.05-10

**Aid Code:** 47 - undefined.

Complete Course Listing

#### **462-416 Paper Machine Maintenance**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

Complete Course Listing