

INDUSTRIAL TECHNOLOGY (IND)

Courses

IND 103 OSHA 10-Hr Healthcare (1)

Safety Orientation/OSHA 10 provides the student with an overview of the OSHA standards relevant to the construction industry. Various topics are presented in a 15-hour format. Among the subjects covered in the course are: an introduction to OSHA, electrical safety, fall protection, and excavation and trenching safety.

IND 104 Basic Electricity (3)

This course is an introduction to electricity, basic electrical components and their characteristics, circuit schematics and basic analysis of series and parallel DC circuits. Hands-on labs help guide student learners to assimilate this material.

IND 105 OSHA - 10 Hr Gen Industry Cert (1)

This course is offered in an online or face-to-face format. For the online course, all course activities are completed through an interactive self-paced website. In the face-to-face format, a variety of classroom and/or lab learning and assessment activities are used to present the material. In both formats students in this course will: explain job/site safety and precautions for job/site hazards; determine the uses of personal protective equipment (PPE); identify the safety equipment and procedures related to safe work practices and environment; identify fire prevention and protection techniques; explore Hazardous Communications (HazCom) including Material Safety Data Sheets (MSDS).

IND 107 OSHA - 10 Hour Const Ind Cert (1)

This course provides the student with an overview of the OSHA standards relevant to the construction industry. Various topics are presented in a 10-hour format. Among the subjects covered in the course are: and introduction to OSHA, electrical safety, fall protection, excavation and trenching safety.

IND 109 OSHA - 30 Hour Const Ind Cert (2)

Students will learn basic OSHA regulations and safety. The students will also learn how to read the OSHA manual properly. The course will stress the importance of personal protective equipment; fall protection, hazard recognition and other topics connect to on the job site safety. The course will also provide the student with an understanding of current safety regulation, established safety practices, and the impact of behavior and environment on injury prevention.

IND 111 OSHA - 30 Hour Const Ind Cert (3)

This course provides an overview of the Occupational Safety and Health Administration Construction Training Topics. This course is intended to provide entry level construction workers a broad awareness on recognizing and preventing hazards on a construction site. This course will also address real world challenges that electrical workers face on a daily bases. It will introduce avoiding oversights that could result in shock and arc flash accidents. The material presented will emphasize the rules specified by the National Fire Protection Association (NFPA) using NFPA 70E standards. After taking this course, students will be able to take the arc flash certification test.

IND 112 Fluid Power I (3)

This course provides fundamentals of pneumatics, air compressors, control valves, pneumatic cylinders, and electro-pneumatic controls; and basic pump principles, centrifugal pumps, magnetic drive pumps, diaphragm pumps, metering pumps and pump seals. Students learn how to operate, install, troubleshoot, analyze performance, and design basic pneumatic systems and pump systems. Students will learn how to read basic fluid power schematics.

IND 114 AC/DC Circuits (4)

AC/DC circuits address the basics of direct and alternating current circuits.

IND 116 Lathe/Mill/Grind for I.M. (3)

This course covers fundamental manual machine operator skills and basic precision measuring techniques. Specific course topics include machines, tools and measurements to produce an end product. Participants work independently and as small teams in completing the hands-on lab activities. Students will learn how to read basic blueprints.

IND 118 Industrial Fluid Power (3)

This course examines theory, applications, and operation of industrial hydraulic and pneumatic systems. The inspection, maintenance and repair of the various components are covered in this course. Interpretation of the various schematic symbols used in hydraulic and pneumatic circuit diagrams will be discussed.

IND 119 Advanced Fluid Power (2)

This course builds upon foundational fluid power concepts by exploring advanced hydraulic and pneumatic control systems. Topics include electro-pneumatic, electro-hydraulic systems, and advanced control methods. Students will learn to design, analyze, and troubleshoot complex circuits, interpret advanced schematic symbols, and apply concepts to modern industrial applications. Prerequisites: IND 118 Industrial Fluid Power

IND 127 Mechanical Systems (3)

This course provides understanding of mechanical energy transmission concepts along with lab experience to operate, install, analyze performance, and design basic mechanical transmission systems using chains, v-belts and spur gears. Students also learn how to safely move loads of different shapes and sizes using a variety of methods.

IND 146 Industrial Welding Basics (3)

This course introduces basic concepts of Industrial welding. Hands-on lab activities are provided for the participant to apply knowledge and develop skills in the following areas: Shop Safety, basics into GMAW and GTAW welding. Participants will work independently and as small teams in completing the lab activities.

IND 147 Mechanical Systems Reliability (3)

This course provides understanding of mechanical energy transmission concepts along with lab experience to operate, install, analyze performance, and design mechanical drive systems using right angle gears, bearings and couplings. Students learn how to setup and operate laser shaft alignment and apply vibration analysis to various power transmission systems. Prerequisite/Corequisite: Mechanical Systems or consent of instructor.

IND 150 Industrial Pumps (2)

Topics covered in this course include basic pump principles, centrifugal pumps, magnetic drive pumps, diaphragm pumps, gear pumps, metering pumps and pump seals. Various pumps will be inspected, disassembled, reassembled and installed in working systems.

IND 152 Electrical Control Systems I (3)

This course is an introduction to electrical control systems with focus on control devices, electric motors, manual/electric/magnetic motor control and overload/over current protection and monitoring. Lab experience helps develop skills to operate, install, design, and troubleshoot AC electric motor control circuits for various applications. Students will learn to read and draw wiring and ladder drawings. Prerequisite: IND 104 AC/DC Circuits

IND 204 Electrical Control Systems II (3)

This course provides an understanding of Reversing Motor Circuits, Solid State Devices and System Integration, Timing and Counting Functions, Relays and Solid State Starters, Sensing Devices and Controls. Hands-on labs help guide student learners to assimilate this material. Prerequisites: IND104 AC/DC Circuits; IND152 Electrical Control Systems I.

IND 207 Fluid Power II (2)

This course focuses on understanding of hydrodynamics, hydraulic principles, hydraulic circuitry and diagrams, piping, hydraulic valves and actuators, accumulators, hydraulic circuit maintenance and fluid maintenance. Students learn to operate, install, analyze performance, and design hydraulic and electrohydraulic systems. Prerequisite: Fluid Power I or consent of instructor.

IND 213 Advanced ECS (3)

This course focuses on motion and position control systems; servo motors, servo system feedback devices, and variable frequency drives. Hands-on labs help develop skills to operate, install, tune, and troubleshoot major types of AC and DC drives. Prerequisite: IND104 and IND152; or consent of instructor.

IND 217 Programmable Logic Controllers (PLC) (3)

This course examines types, installation, programming procedures, and troubleshooting of programmable logic controllers (PLC). Hardware and programming aspects as well as ladder logic symbols and operations necessary to develop a PLC program are covered in this course. Prerequisite: Electrical Control Systems II, Industrial Fluid Power, or consent of instructor.

IND 223 Commercial & Industrial Wiring (3)

This course covers the routing, labeling, and the installation of wiring and components in an electrical control panel as well as wiring electric motors and external devices. This course also includes basic conduit bending and installation, selecting wire for an application, soldering, running network cables, and learning techniques to keep wiring and control panels tidy and organized. Prerequisites: IND104 and IND152

IND 247 Industrial Process Control (3)

This course provides understanding of different types of process control systems like temperature, flow and level control. The course includes process control principles, thermocouples, RTD's, temperature measurement devices, On/Off temperature controllers, programmable process heat controllers, transmitters, process loop test equipment and final control elements. Using this information students learn to construct, test and operate systems found in industrial applications. Prerequisites: Electrical Control Systems I, Advanced Fluid Power, or consent of instructor.

IND 248 Prog Logic Controllers II (3)

This course builds on the knowledge gained in 'Programmable Logic Controllers' and focuses on the fundamentals of installing and troubleshooting of industrial communications networks using Control Net ; operation, installation, configuration and troubleshooting of the Device Net field-device network; and Human-to-Machine Interface (HMI) using Allen Bradley and Control Logix PLCs.

IND 252 Industrial Robotics (3)

This course examines types, applications and troubleshooting of industrial robots and subsystems. Included in this course is the programming of industrial robotic control software.

IND 256 Robotics II (4)

This course builds on the knowledge gained in Industrial Robotics and focuses on sensors, end effectors, control systems and maintenance. Students learn advanced commands and operators, create simulation objects, configure objects and design work cells.

IND 257 Robotics II (4)

This course builds on the knowledge gained in 'Robotics I' and focuses on sensors, end effectors, control systems and maintenance. Students learn advanced commands and operators, create simulation objects, configure objects and design work cells.