INDUSTRIAL TECHNICIAN CERTIFICATE
COURSE DESCRIPTIONS

Advanced Hydraulics (HYD02) – 30 hour course
A more in-depth look at hydraulic components and systems. Items to be covered will include complex systems of cartridge valves, proportional and servo controls, electrical feedback, closed and open loop control, and hydrostatic drives. Emphasis in the class and lab will be on understanding, troubleshooting and maintenance of these systems. *(Prerequisite: Basic Hydraulics)*

Basic Hydraulics (HYD01) – 30 hour course
Provides a basic understanding of the operation and maintenance of hydraulic components and systems. Topics to be covered in the classroom and in the lab setting: Principles of Hydraulics; Definitions and Terminology; Hydraulic Symbols and Schematics; Types of Circuits; Pumps (designs and applications); Motors (designs and applications); Cylinders (designs and application); Pressure, Direction and Flow Control Valves; Oil Filtration, Sampling and Fabrication; Fittings (use and identification). *(Prerequisite: Applied Mathematics)*

Basic Industrial Electricity (ELC02) – 30 hour course
The course is designed for participants with little or no previous background in the study of electricity. It is the first course in a series of courses that build one upon the other that are intended to prepare the participants for employment a field requiring a knowledge of industrial electricity and controls. The course consists of lecture, lab demonstrations and hands-on software based lab assignments. Areas to be covered include: Basic electrical physics and atomic structure, Electrical quantities and Ohm's law, Electrical safety, Series circuits, Parallel circuits, Combination circuits, Test equipment and measuring instruments, Magnetic induction, Direct current generators, Direct current motors, Alternating current, Electrical distribution, Inductance in AC circuits, Capacitance in AC circuits, Basic three phase circuits, Basic transformers, Basic single phase motors, and Basic three phase motors. *(Prerequisite: Applied Mathematics)*

Blueprint Reading (BPR01) – 30 hour course
Provides basic skills for blueprint applications. Class sessions will focus on the following: blueprint basics, understanding prints, print format, dimensioning blueprints, basic plane geometry review, threaded fasteners, weld symbols /fillet and groove welds, basic pipe welding symbols, machining drawings and basic hydraulic/ pneumatic/ electrical drawings.

Communicating on the Job (COTJ01) – 30 hour course
A fresh approach to communicating on the job, this course is interactive and applicable in formal and informal settings. Just come with an open mind while focusing on the following: learning to communicate effectively, busting-out the myths of communication, listening, and always remembering the non-verbal communication. Additionally, you will discover how to communicate effectively with superiors and subordinates as well as across cultures and genders, how to work as part of a team, and how to deal with conflict to create a winning situation. (This course is required for the master certificate.)

THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Business Training & Educational Services

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Industrial Motors & Motor Controls (ELC03) – 30 hour course
This course is intended for the participant with some working knowledge and/or experience in industrial electricity. Designed to help prepare participants for employment in the field of industrial electrical maintenance, this course consists of lecture, lab demonstration, and hands-on and software-based lab assignments. Areas covered include: Safety, Understanding electrical drawings, Motor transformer and distribution systems, Motor control devices, Motor principles, DC motors, Three phase AC motors, Single phase AC motors, Motor selection, Motor installation, Motor maintenance and troubleshooting, Motor starters, Relays and logic, Motor control devices and AC and DC drives. *(Prerequisite: Basic Industrial Electricity)*

Industrial Electronics & Controls (ELC04) – 30 hour course
The course consists of lecture and hands-on labs. The emphasis is on practical applications and understanding. Subject areas covered include: Introduction to Industrial Control Systems, Interfacing Devices, Thyristors, Controller Operation, Review of DC Motors, Review of AC Motors, Servo Motors, DC Drives, AC Drives, Process Control and Instrumentation, PLC Overview and Motion Control Overview.

Pneumatic Automation (PNE01) – 30 hour course
Provides an understanding of the operation and maintenance of pneumatic components and automation systems. Topics such as compressed air and vacuum systems, pneumatic logic systems, component operation, selection, maintenance and troubleshooting are emphasized in the class and lab environment.

PLC I (PLC01) – 30 hour course
Introducing the PLC - What it is and how it functions, number systems, introduction to PLC operations, input modules, output modules, putting together a modular PLC, introduction to Logic, programming a PLC, PLC processors, program and data organization, basic relay instructions, understanding relay instructions and the PLC input module, documenting your system, timer and counter instructions, introduction to comparison, data-handling, and sequencer instructions, including hands-on exercises using the Allen Bradley Compact Logix platform. The basis for the course will be the Allen Bradley Logix hardware and Studio 5000 software systems. *(Prerequisite: Industrial Motors & Motor Control)*

PLC II (PLC02) – 30 hour course
The course will include a review of basic ladder diagrams, analog inputs and outputs, operator interface techniques, specialty I/O modules, sensor interfacing, advanced mathematics and scaling techniques, and advanced trouble-shooting procedures utilizing Allen-Bradley RSLogix 5000 Software/CompactLogix Hardware. *(Prerequisite: PLC I)*

For more information: ati.osu.edu/ITC

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