

INDUSTRIAL MAINTENANCE (ZINM)

ZINM-1018 Industrial Programmable Logic Controllers (PLC) I 3.2 CEUs

Learn and apply the concepts of Programmable Logic Controllers (PLC). This is a hands-on introduction to industrial type applications of PLCs requiring motion control with a study of automated manufacturing and the functions PLCs serve in an industrial environment.

Contact hours: 32

Not financial aid eligible.

ZINM-1035 Industrial Hydraulics 3.2 CEUs

This course will cover high pressure fluid systems. Labs will cover industrial hydraulics and fluid power circuitry. Material will also address the components used on mobile and construction machinery. Information will be shared regarding troubleshooting systems and repairing equipment.

Contact hours: 32

Not financial aid eligible.

ZINM-1066 Electronics for Manufacturing Electricians 2.4 CEUs

This class was specifically designed for Electrical Apprentices at a local manufacturing company. The students will learn Electronic Relay Controls, Sequencing Controls, Electronic Timers and Advanced Systems, Electronic Sensors and Electronic Counter Systems.

Contact hours: 24

Not financial aid eligible.

ZINM-1076 Welding Seminar 0.8 CEUs

Tri-C Auto-Tech department welding seminar. Topics covered: Compliance with industry safety guidelines ; review of the fundamental skills of Stick, MIG, TIG and OxyFuel welding technologies ; how to light and operate an oxy-acetylene torch and practice of this skill .

Contact hours: 8

Not financial aid eligible.

ZINM-1077 Certified Production Tech (CPT) Training 16 CEUs

This program provides an industrywide accepted certification recognizing individuals who demonstrate mastery of the core competencies of manufacturing production through successful completion of the certification assessments. The CPT certification program will increase the level of performance of production workers and help both individuals in finding higher-wage jobs and employers in increasing the company's productivity and competitiveness.

Contact hours: 88

Not financial aid eligible.

ZINM-1079 Fluid Power for Maintenance Technicians 1 3.2 CEUs

This course addresses the practical application of fluid power principles used in the installation, maintenance and troubleshooting of industrial hydraulic and pneumatic systems and equipment.

Contact hours: 32

Not financial aid eligible.

ZINM-1080 Fluid Power for Maintenance Technicians 2 4 CEUs

Second part of course addresses the practical application of fluid power principles used in the installation, maintenance and troubleshooting of industrial hydraulic and pneumatic systems and equipment.

Contact hours: 40

Not financial aid eligible.

ZINM-1082 Industrial Maintenance Certificate Training Program 31 CEUs

The Industrial Maintenance Certification Program prepares individuals for a career in the high-demand industrial maintenance field. Taking a systems approach integrating electrical, mechanical, and IT, the program helps meet the demand for industrial maintenance technicians in Northeast Ohio's advanced manufacturing sector. The marriage of these three fields - better known as mechatronic systems - plays an ever-increasing role in manufacturing; from your car to your household appliances, from public transportation systems to electric power generators - in short, almost every aspect of daily life.

Contact hours: 310

Not financial aid eligible.

ZINM-1083 Electricity I - Direct Current 1.4 CEUs

Basic Electricity class for Direct Current theory and applications. This is a non-credit class developed for MRP corporation.

Contact hours: 14

Not financial aid eligible.

ZINM-1086 Basics of Process Control and Instrumentation 4.8 CEUs

Concepts of electronics circuitry, devices and instruments including purpose, function and operations of diodes, transistors, silicon controlled rectifiers (SCR) DIAC, TRIAC, FET and other solid state devices in electronic circuits. Special attention is paid to industrial devices that contain these devices.

Contact hours: 48

Not financial aid eligible.

ZINM-1090 Troubleshooting for Maintenance 9.6 CEUs

Use pneumatic and electrical diagnostic tools to troubleshoot simple and advanced pneumatic and hydraulic trainers in common failure modes. Explore advanced pneumatic and hydraulic operations. Troubleshoot simple PLC wiring and pneumatics on a running program. Introduce mechanical concepts such as alignment, and rigging. Review 5-whys and do practical troubleshooting on plant equipment.

Contact hours: 96

Not financial aid eligible.

ZINM-1097 Industrial Machine Tool Fundamentals – Theory and Operation 6.4 CEUs

This course introduces machining operations as they relate to Industrial Maintenance. Topics include machine shop safety, job planning/setups, cutting speeds and feed rates, measuring tools and general print reading. Students will apply this learning with hands-on operation of a lathe, drilling machine, milling machine, grinders and layout instruments.

Contact hours: 64

Not financial aid eligible.

ZINM-1100 Electric Vehicle (EV) Technician

19.2 CEUs

The Electric Vehicle (EV) Technician training program is intended to address a global need for people who are skilled in diagnosing, servicing and repairing high-voltage EVs and commercial charging stations. Students in the EV Technician program receive both theoretical and laboratory instruction through a combination of multimedia learning resources and an electrical/electronics simulation software package (CircuitLogix Pro) to allow for the testing, validation and understanding of electrical and electronic circuits that are found in a typical EV. The program will also be highly beneficial to Automotive Service Technicians who have a strong background in vehicles powered by internal combustion engines (ICE), but lack the knowledge and skills in power electronics and data communication systems to safely perform service-related work on EVs and Hybrid Electric Vehicles (HEVs). Additionally, this program is relevant to electricians who will be installing, servicing and maintaining residential and commercial EV charging stations.

Contact hours: 192

Not financial aid eligible.

ZINM-1101 3G Welding

4 CEUs

In this weeklong course, you'll learn the skills necessary to perform a 3G 1" plate certification test using the Shielded Metal Arc Welding process. Get familiar with different stick electrodes, including E6010 1/8", E7018 3/32' and E7018 1/8". Perform your test on the last day of class and receive certification if your weldment is deemed serviceable.

Contact hours: 40

Not financial aid eligible.

ZINM-1102 6G Welding

4 CEUs

In this weeklong course, you'll learn the skills necessary to perform a 6G schedule 80 pipe certification test using the Shielded Metal Arc Welding (SMAW or Stick welding) process. Get familiar with different stick electrodes, including E6010 1/8", E7018 3/32' and E7018 1/8". Perform your test on the last day of class and receive certification if your weldment is deemed serviceable.

Contact hours: 40

Not financial aid eligible.

ZINM-1103 Basic Fillet Welding

2.4 CEUs

In this three-day course, you'll learn the skills necessary to perform a fillet weld using various welding processes and positions. Get familiar with different stick electrodes including E6010 1/8", E7018 3/32" and/or E7018 1/8".

Contact hours: 24

Not financial aid eligible.

ZINM-1104 Customized Hydraulics Training for Zoresco Equipment

Company

1.9 CEUs

In this course, students will learn the fundamentals of hydraulics and fluid power with an emphasis on the laws and principles of fluid power transmission, units of pressure and flow, materials and sizing, pressure losses through piping and compliance with OSHA safety standards for installing, maintaining and repairing hydraulic pneumatic systems. Extensive guided instruction and practice are provided.

Contact hours: 19

Not financial aid eligible.

ZINM-1105 Customized Electronics Training for Zoresco Equipment Company

1.9 CEUs

Students will learn the fundamentals of electricity with an emphasis on resistance, direct current voltage, electrical quantities and units of measurements.

Contact hours: 19

Not financial aid eligible.

ZINM-1106 3G Welding Test/Appointment Only

2.4 CEUs

This course is for test/appointment purposes only. It is reserved for students who did not pass their initial 3G welding certification test. This course requires department/program manager approval before enrolling.

Contact hours: 24

Not financial aid eligible.

ZINM-1107 AWS Welding Certification Exam

0 Contact Hours

Available by appointment only. This course is available for retake of STICK, MIG or TIG American Welding Society certifications.

Contact hours: 2

Not financial aid eligible.

ZINM-1109 6G Welding Test/Appointment Only

2.4 CEUs

This course is for test/appointment purposes only. It is reserved for students who did not pass their initial 6G welding certification test. This course requires department/program manager approval before enrolling.

Contact hours: 24

Not financial aid eligible.

ZINM-1110 Advanced 6G Welding

8 CEUs

In this Advanced 6G welding course, students will learn the skills to perform a 6G schedule 80 pipe certification test using the shielded metal arc welding process (SMAW or stick welding). This course will further advance students' welding skills to pipe. The student will learn the techniques required of a certified pipe welder. Students will become familiar with different stick electrodes, including E6010 1/8", E7018 3/32' and E7018 1/8". Students will be given the opportunity to perform their 6G schedule 80 pipe certification test during class. Lab practice is geared toward certification to ASME IX, Boiler & Pressure Vessel Code in the 6G position on carbon steel. Once practice and a weldment test piece are completed, the weldment will be tested at an internal or external source. Students will be awarded a certification if their weldments are deemed serviceable. This course is intended for an individual with previous SMAW welding experience who wants to advance their skills into learning. It is highly recommended that students have prior experience in beveled plate (3G or similar) welding prior to attending this course. Note: This is a noncredit course.

Contact hours: 80

Not financial aid eligible.

ZINM-1113 Process Automation**4.8 CEUs**

This N/C course is an introduction to automation concepts in the industry. AC/DC drives, PLC configuration, programming and troubleshooting are the main focus points. The course covers industrial robotic programming, operations and setup, including handling tool applications, testing and refining the program to interface with other production equipment. Variable frequency drives will also be discussed.

*Contact hours: 48**Not financial aid eligible.***ZINM-1200 Construction Orientation****3 CEUs**

This introduction to construction management principles includes recognition of professional practices, current issues and developments in construction, such as the stages of a construction project, management roles and responsibilities, and concepts for estimating, planning, and scheduling.

*Contact hours: 38.5**Not financial aid eligible.***ZINM-1201 Construction Print Reading****2 CEUs**

This course offers an overview of construction drawings for the major construction disciplines to understand presentation methods, interpretation, sequence of preparation, bid submittal processes, revision control and code requirements. Commercial building, structural, civil and highway drawings will be utilized. The course includes an introduction to the maintenance of traffic drawings and stormwater management-related drawings. Lecture: One hour. Laboratory: Two hours

*Contact hours: 36.4**Not financial aid eligible.***ZINM-1202 Construction Safety****3 CEUs**

This course presents the theories and principles of construction safety and health applied to real-world settings. Upon completion of the course materials and required attendance hours, students will receive their OSHA 30 certification. Lecture: Three hours

*Contact hours: 44.33**Not financial aid eligible.***ZINM-1203 Circuits and Electronics for Automation****3 CEUs**

This course is designed for non-EET majors and provides a basic understanding of electricity and electronics as applied to manufacturing settings. Foundational topics include electrical safety, basic circuit fundamentals, electronic components, transformers and machinery basics, which are necessary for an understanding of modern automation systems used in industry. Lecture: Two hours Laboratory: Two hours

*Contact hours: 50**Not financial aid eligible.***ZINM-1204 Utility Locating and Traffic Flagging****2 CEUs**

Learn the proper methods to locate and communicate to stakeholders existing communications, electrical, gas, oil, wastewater, water and other utility facilities in the ground. Become familiar with the basic operation of underground utility locating equipment. Also, Ohio Utility Protection Services (OUPS) and 811 procedures, work zone traffic control, safety and flagger requirements are introduced.

*Contact hours: 49.3**Not financial aid eligible.***ZINM-1205 Telecommunications Systems****3 CEUs**

This introduction to telecommunication systems with a focus on fiber optic technology covers the history, safety hazards, system drawings and fiber matrix, jargon, fiber and copper system components, cable and fiber types and specifications, splices and connectors, testing, overall network design and construction methods of telecommunication systems. The course includes lab activities to reinforce and demonstrate concepts.

*Contact hours: 49.3**Not financial aid eligible.***ZINM-1206 Equipment Operations I****3 CEUs**

This course is an introduction to the operations of directional bore machines, hydrovac units, excavating machines and related equipment for the construction of utility systems. Maintenance, equipment inspection and safety procedures will be covered. Students will perform basic operations of excavation through dedicated lab activities. Students must be 18 years or older due to the equipment used during lab activities per Occupational Safety and Health Administration (OSHA) regulations.

*Contact hours: 87.5**Not financial aid eligible.***ZINM-1207 Aerial Construction****3 CEUs**

This course is an introduction to common methods used in aerial construction with a focus on communication lines. Students will learn to work with materials for overhead communication and electrical systems. Students will also demonstrate working knowledge of pole climbing and aerial lifts involving the installation, repair and removal of guy assemblies and additional pole hardware. Lab activities will reinforce and demonstrate these concepts. Students must be 18 years or older due to the equipment used during lab activities per Occupational Safety and Health Administration (OSHA) regulations.

*Contact hours: 87.5**Not financial aid eligible.***ZINM-1208 Underground Construction I****3 CEUs**

Students will develop a working knowledge of construction specifications for buried and underground utility systems and practice construction methods in dedicated lab activities. We will focus on gas, water, sewer and communications utilities. Site restoration and safety protocols will be reviewed. Students will perform operations for horizontal directional drilling, basic excavation and the basic maintenance of utility pipes through dedicated lab activities. Students must be 18 years or older due to the equipment used during lab activities, per Occupational Safety and Health Administration (OSHA) regulations.

*Contact hours: 87.5**Not financial aid eligible.*

ZINM-1209 Advanced Construction Safety
3 CEUs

Students will discover detailed coverage of fall protection, aerial lift operations, fall restraints, confined spaces and excavations with a focus on utility construction. They will practice the use of equipment to solidify safe operations in the field. Students need to be 18 years or older due to equipment used during lab activities per Occupational Safety and Health Administration (OSHA) regulations.

Contact hours: 50

Not financial aid eligible.

ZINM-1210 Construction Methods and Materials
3 CEUs

Study common construction principles that affect job site performance, material selection and testing, and the general properties of traditional materials used. There will be a focus on the sustainability of materials and an introduction to nontraditional materials used in building assemblies.

Contact hours: 50

Not financial aid eligible.

ZINM-2023 Oatey Mold Technology/Plastics Injection Molding
12.9 CEUs

Oatey Contract Training

Contact hours: 129

Not financial aid eligible.

ZINM-2024 Advanced Instrumentation and Process Control
5 CEUs

Learn the concepts and practices in the measurement and control of mechanical process variables in industry. This course introduces methods of instrumentation, characteristics of instruments, sensors, data acquisition and presentation, measurement and analysis of basic dimensions, force, motion, pressure, temperature, fluid flow and fluid viscosity. This course is a technician-level approach to instrumentation and control techniques. The content is organized in a logical sequence, beginning with an introduction to the field of instrumentation and continuing through all the elements of a control system. • Systems approach to integrating instruments into a complex system • Comprehensive applications for instruments and controllers in typical industrial control systems • Examples that show how to install instruments and protect them from damaging environmental conditions

Contact hours: 50

Not financial aid eligible.

ZINM-2025 Relay Schematics and Motor Controls
3.6 CEUs

This comprehensive training program on schematics and motor controls technologies will strengthen your knowledge and skills in principles and troubleshooting with a mix of classroom instruction and hands-on exercises.

Contact hours: 36

Not financial aid eligible.

ZINM-2030 Introduction to Maintenance Technician Controls Electrical and Automation Technology

1.7 CEUs

The purpose of this course is to give students an introduction to the areas of industrial maintenance and electro-mechanical technology. The course prepares the cohort of students for upcoming courses in print reading, circuits and electronics for automation and robotics and programmable logic controller in process automation.

Contact hours: 17

Not financial aid eligible.

ZINM-2031 Summary of Maintenance Technician Controls Electrical and Automation Technology

1.7 CEUs

The purpose of this course is to give students a closing summary of learning in the areas of industrial maintenance and electro-mechanical technology. The course provides a summary, or close out, of learnings recently acquired in print reading, circuits and electronics for automation and robotics and programmable logic controller in process automation.

Contact hours: 17

Not financial aid eligible.

ZINM-2032 Reliability Centered Maintenance
4.8 CEUs

This course is reserved for current skilled maintenance mechanics at the NEORS. It covers the concepts and principles of troubleshooting and preventative and predictive maintenance, reliability-centered maintenance, elements of root cause and failure analysis for hydraulic systems. This course will be conducted at Tri-C. Tri-C provides a comfortable learning environment with overhead projection capabilities that can be connected to the instructor's laptop or PC. A qualified and experienced trainer will facilitate the class. Upon completion, each participant will receive a result associated with the class from the College.

Contact hours: 48

Not financial aid eligible.