Miami Dade College

Course Description

ETI1000 | Industrial Plant Tools and Equipment | 1.00 credits

Students will learn the knowledge and skills necessary to properly select, inspect, use, and care for the tools, test equipment, and lifting/handling equipment commonly used in the performance of assigned tasks in an industrial plant setting.

Course Competencies

Competency 1: The student will demonstrate an understanding of procedures concerning replacement parts and equipment by:

1. Differentiating between safety-related and non-safety-related parts and equipment
2. Discussing the environmental qualification program requirements associated with procuring and using spare parts
3. Differentiating between safety-related and environmentally qualified parts and equipment.
4. Demonstrating how to fill out and complete a parts request form

Competency 2: The student will demonstrate the ability to use manual and power-driven hand tools to perform work-related tasks by:

1. Describing the administrative control and checkout/return procedures, including those for tools contaminated with radioactive material explaining personal responsibility for tools
2. Identifying those tools that may not be removed from the shop or maintenance area and those tools that may not be taken into or removed from a radiologically controlled area
3. Describing the characteristics of each type of tool, including the proper function, application, limitation, and common failure precursors
4. Describing the proper use of various hand tools, including precautions and consequences of improper use
5. Describing the requirements for using insulated and non-sparking tools
6. Describing repairable and non-repairable defects in tools and general repair procedures
7. Explaining the reasons for maintaining tools in proper working order and describing procedures for maintaining tool cleanliness
8. Describing procedures for tagging and disposing of defective tools
9. Discussing proper methods for protecting tools, personnel, and equipment when using tools under the following conditions: working in a radiologically controlled area, working in a confined space, working from heights, working near open systems

Competency 3: The student will demonstrate proficiency using manual and power-driven hand tools by:

1. Identifying attachments (e.g., bits, blades, sockets, discs) for power-driven tools, and discussing the proper application for each attachment
2. Describing power sources that may be used for power-driven hand tools
3. Describing the proper procedure for assembling and disassembling connectors and adapters associated with various power-driven tools
4. Performing assigned tasks using: hammers and mallets, punches, wrenches - combination, socket, with extensions and adapters; adjustable open-end; adjustable pipe, in strap and chain; slugging; spanner; nut drivers; hexagonal (Allen); splined (Bristol); torque screwdrivers flat; Phillips; offset; holding/starting; pliers - slip joint; needle-nose; snap ring; locking; lockwire; vises and clamps; saws - wood cutting; metal cutting; knives, scissors, and shears; bolt/cable cutters; files; chisels, crimpers and wire strippers; conduit benders, pipe threaders, and cable strippers; electric and

pneumatic tools such as drills, grinders, wrenches, screwdrivers, saws; spot welder; heat gun; ground fault protectors; soldering equipment

Competency 4: The student will demonstrate an understanding of how to calibrate measuring and testing equipment by:

1. Explaining the need and requirements for maintaining an auditable calibration program
2. Explaining the use of information on a calibration sticker to determine calibration status
3. Determining the calibration status for tools and equipment that do not have calibration stickers attached
4. Explaining the steps to be taken when instruments and test equipment are found to be out of calibration or beyond the calibration due date

Competency 5: The student will demonstrate the ability to perform assigned tasks using measuring and test equipment by:

1. Identifying measuring and test equipment that may not be removed from the shops or maintenance area or be taken into a radiologically controlled area
2. Demonstrating the proper method for protecting measuring and test equipment under the following conditions: working in a radiological controlled area, working in a confined space, working from heights, working near open systems
3. Explaining procedures for obtaining measuring and test equipment including the following: special handling procedures for each type of test equipment, responsibilities for use and control of measuring and test equipment, actions to take if measuring and test equipment is dropped or damaged during use or yields questionable readings
4. Defining "or equivalent" as applied to measuring and test equipment and describing procedures to determine equivalency
5. Demonstrating the proper procedure to connect, operate, and disconnect each type of measuring and test equipment including the proper use of connectors, adapters, and leads
6. Demonstrating the proper methods to inspect, clean, and adjust each type of measuring and test equipment
7. Demonstrating the ability to read, interpret, and record measuring and test equipment indications

Competency 6: The student will demonstrate the ability to perform assigned tasks using lifting and handling equipment by:

1. Describing the precautions and signals used to lift components safely
2. Identifying equipment uses and limitations
3. Explaining equipment inspection requirements
4. Determining basic rigging strategies and safe load path designations for various lifting configurations
5. Calculating equipment ratings for various lifting configurations

Learning Outcomes

- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information