

Welding - Student Learning Outcomes

WELD 100	Welding Technology	<p>1. Explain the legal responsibilities of Employers, Supervisors, and Welding Personnel with regard to "Right to Know" regulations. (ILO1, ILO3)</p> <p>2. Explain the hierarchy of ?Hazard Control? in a welding environment to include; Hazard Identification, Hazard Elimination, Administration Controls, Hazard Engineering Controls, and Applicable Personal Protective Equipment (PPE). (ILO1, ILO2, ILO3)</p> <p>3. Perform Oxy-Acetylene welding and cutting procedures safely to include; safe set-up of OFW and OFC equipment. (ILO1, ILO2, ILO3)</p> <p>4. Complete a written report based on information collected from a Technical Literature Review of ?Welding Technology and Its Many Uses in Our World Economy.? (ILO1, ILO4, ILO5)</p> <p>5. Define the physical and mechanical properties of steel and how these are influenced by Shield Metal Arc Welding (SMAW). (ILO1, ILO2)</p>
WELD 101	Gas Tungsten Arc Welding on Plate	<p>1. List at least five (5) different articles of Personal Protective Equipment and explain what welding environment hazard is being addressed by each article of PPE. (ILO1, ILO2)</p> <p>2. Demonstrate proper interpretation of a standard Material Safety Data Sheet (MSDS). (ILO 1, ILO2)</p> <p>3. Describe and Demonstrate the proper set-up and use of the major components and equipment used in Gas Tungsten Arc Welding (GTAW). (ILO1, ILO3)</p> <p>4. Safely perform acceptable welds on ferrous alloys applying the weld parameters according to the given WPS. (ILO1, ILO2, ILO3)</p> <p>5. Separate acceptable and unacceptable weld samples in accordance with predetermined specifications, standards and codes. (ILO1, ILO2)</p>
WELD 102	Arc Welding on Plate	<p>1. Discuss and explain the regulations governing welding related hazards such as; Industrial noise, electrical exposure, and radiation exposure. (ILO1, ILO2, ILO3)</p> <p>2. Set up and operate equipment and components used in Shielded Metal Arc Welding (SMAW) using a 3/32 Diameter, E-6010 filler in the 1G position. (ILO1, ILO2)</p> <p>3. Explain what parameters are influenced by the application of AWS D1.1 Specifications with regard to SMAW in Alaska in the Winter as compared to Brazil. (ILO1, ILO2, ILO5)</p> <p>4. Identify and apply the correct type, size, current settings, and technique for a given WPS. (ILO1, ILO2)</p> <p>5. Demonstrate applicable critical thinking skills to resolve problems pertaining to lay-out and welding per D1.1 specifications. (ILO1, ILO2, ILO4)</p>
WELD 103	Arc Welding on Pipe	<p>1. Explain a set of three existing hazards in the SMAW Pipe Welding environment and identify applicable standards. (ILO1, ILO4)</p> <p>2. Describe and demonstrate preparation of welded pipe sample for a ?Bend Test? method of Destructive Testing used to determine accept/reject status for SMAW Pipe weld samples. (ILO1, ILO2)</p> <p>3. Safely perform pipe joint preparation by cutting, grinding, and layout per the parameters of the given WPS. (ILO1, ILO2, ILO3)</p> <p>4. Safely perform appropriate SMAW welding procedures for a 5G Open Root weld on 6 inch pipe using E-6010 per the parameters of the given WPS. (ILO1, ILO2, ILO3)</p> <p>5. Explain three welding details and procedures that are common to pipe welding with regard to AWS, ASME, and API Standards. (ILO1, ILO2, ILO4)</p>

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WELD 104	Gas Tungsten Arc Welding on Pipe	<p>1. Describe four major hazards related to GTAW on Pipe and potential abatement of these hazards as they pertain to shop safety, industrial safety, and personal safety. (ILO1, ILO2, ILO3)</p> <p>2. Explain and safely demonstrate multiple beading and application in GTAW for welding on pipe and tube. (ILO1, ILO2, ILO3)</p> <p>3. Select the proper welding filler materials for welding on various alloys as specified on the given WPS. (ILO1, ILO2, ILO3)</p> <p>4. Identify, recognize, and safely apply the essential variables associated with pipe and tube welding using the open root technique per the given WPS. (ILO1, ILO2, ILO3)</p> <p>5. Reference the appropriate Welding Codes (AWS, API, and/or ASME) to determine the acceptance criteria for the welding of 6 inch schedule 80 carbon steel pipe in the 5 G position and safely complete one join per given WPS. (ILO1, ILO2, ILO3, ILO4)</p>
WELD 105	Flux Core Arc Welding Techniques	<p>1. Discuss three (3) welding hazards specifically associated with the FCAW process and list potential abatement action for these hazards. (ILO1, ILO2, ILO3)</p> <p>2. List the two most common shielding methods used in FCAW and define the advantages and disadvantages of the various shielding methods. (ILO1, ILO2)</p> <p>3. Set up the equipment used in FCAW, set up all parameters associated with welding ¼ inch steel plate, and safely demonstrate the adjustment of essential variables per the given WPS. (ILO1, ILO2, ILO3)</p> <p>4. Fabricate various assigned weld joints safely demonstrating and using the forehand and backhand welding techniques per the given WPS. (ILO1, ILO2, ILO3)</p> <p>5. Explain the relationship between a Welding Code, a Welding Standard, a Procedure Qualification Record (PQR), and a Welding Procedure Specification (WPS). (ILO1, ILO4)</p>