

Introduction to Welding Competencies – 180 hours - Cervantes

1. ORIENTATION AND SHOP SAFETY
 - a. Understands welding shop safety practices and performs housekeeping duties
 - b. Demonstrates proper use of safety glasses and shop safety procedures
 - c. Performs safety inspections of equipment and accessories
 - d. Assesses basic equipment needs and use of accessories
 - e. Passed Safety Tests for all processes

2. MEASUREMENT/DRAWING
 - a. Demonstrates basic math skills
 - b. Demonstrates math concepts related to computing material needs and estimating costs, etc.
 - c. Demonstrates use of measurements including inches, feet, scales, areas and volume
 - d. Understands sketches and sketching
 - e. Understands scale drawings
 - f. Understands complicated and simple plans
 - g. Understands blue print reading using welding symbols

3. THE SHIELDED METAL ARC WELDING PROCESS (SMAW)
 - a. Identifies, organizes, plans and allocates resources for shielded metal arc welding
 - b. Understands fundamental steps and principles
 - c. Understands types of welders, equipment and selection
 - d. Understands rod selection (AWS classification)
 - e. Demonstrates running welds in all positions and joints
 - f. Understands specialized arc welding equipment

4. THE GAS METAL ARC WELDING PROCESS (GMAW)
 - a. Demonstrates knowledge of equipment and supplies
 - b. Demonstrates setup
 - c. Demonstrates amp/wire synchronized
 - d. Demonstrates knowledge of gasses and metal transfer
 - e. Understands electrode selection (GMAW) (FCAW)
 - f. Demonstrates knowledge of joint prep
 - g. Demonstrates ability of proper shut down procedures
 - h. Demonstrates ability to weld in all positions

5. THE OXY-ACETYLENE PROCESS (OFW) AND (OFC-A)
 - a. Identifies, organizes, plans and allocates resources for oxy-fuel gas cutting, welding and heating operations
 - b. Understands equipment and accessories
 - c. Demonstrates setting up and adjusting equipment
 - d. Demonstrates joining metals, techniques
 - e. Demonstrates hand cutting

6. PLASMA ARC CUTTING

- a. Understands Plasma Arc principals
- b. Demonstrates knowledge of Plasma Arc cutting equipment and supplies
- c. Demonstrates ability to prepare and layout material to be cut
- d. Demonstrates hand cutting

7. SHOP PROCEDURES

- a. Works with a variety of technologies
- b. Understands complex interrelationships
- c. Performs cutting operations
- d. Makes fillet welds in all positions (flat, vertical, overhead, and horizontal) with E6010, E6011, E7018 and electrodes respectively)

8. WELDING PROJECTS

- a. Understands preparation of projects
- b. Understands layout
- c. Understands finishing

9. METHOD OF EVALUATION (ALL PROCESSES)

- a. (SMAW) Visual inspection of ¼ inch plates in all positions and joints.
- b. (GMAW) Visual inspection of 1/8, 3/16, ¼ inch plates in flat and vertical positions with Butt, Lap, T-Joint and Inside and Outside Corner joints
- c. (OFW) Visual inspection of 1/8 inch plate in Flat position Corner Joint no filler. Butt and Lap joint with filler rod
- d. (OFC-A) Visual inspection of hand cut straight and round shapes on mild steel.
- e. Plasma Arc Cutting. Visual inspection of manual cut straight and round shapes on mild steel.

10. ESSENTIAL EMPLOYABILITY SKILLS/CAREER PREPARATION STANDARDS

- a. Demonstrates personal skill development (positive attitude, honesty, self-confidence, time management)
- b. Demonstrates effective interpersonal skills (group dynamics, conflict resolution, negotiations)
- c. Demonstrates academic skills, critical thinking and problem-solving in the workplace
- d. Demonstrates effective communication
- e. Demonstrates occupational safety issues and observe all safety rules
- f. Demonstrates career awareness and knowledge of pathways
- g. Demonstrates ability to adapt to changing technology
- h. Demonstrates ability to prepare for employment (resume, job application, job interview, portfolio development)