

Welding Competencies – Cruz, Camarillo, 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

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 scale to interpret

3. THE ARC WELDING PROCESS
 - 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
 - f. Understands specialized arc welding equipment

4. THE OXY-ACETYLENE PROCESS
 - a. Identifies, organizes, plans and allocates resources for oxy-fuel gas cutting and heating operations
 - b. Understands equipment and accessories
 - c. Demonstrates setting up and adjusting equipment
 - d. Demonstrates joining metals, techniques

5. SHOP PROCEDURES
 - a. Works with a variety of technologies
 - b. Understands complex interrelationships
 - c. Performs cutting operations
 - d. Performs brazing operations
 - e. Makes fillet welds in all positions (flat, vertical, overhead, and horizontal) with E6010, E7018 and E7024 electrodes respectively)

6. WELDING PROJECTS
 - a. Understands preparation of projects
 - b. Understands layout
 - c. Understands finishing

7. METHOD OF EVALUATION – Student has successfully completed the 1/4" PLATE BEND TEST in the following position(s)
 - a. Flat position
 - b. Vertical position
 - c. Overhead position
 - d. Horizontal position

8. OXY-ACETYLENE CUTTING
 - a. Demonstrates hand cutting
 - b. Demonstrates machine cutting

9. ARC WELDING (SMAW)
 - a. Demonstrates 1/4" Single Vee 60 degrees including 100% penetration
 - b. Demonstrates 1/2" Single Vee 60 degrees including 100% penetration
 - c. Demonstrates 1/2" Double Vee 60 degrees including 100% penetration
 - d. Demonstrates 1" Single Vee 60 degrees included

10. PIPE
 - a. Demonstrates 6"-10", 30-60 degrees included
 - b. Demonstrates root opening
 - c. Demonstrates root pass: 6010 100% penetration
 - d. Demonstrates fill pass: 6010/7010/7018
 - e. Demonstrates cap pass: 6010/7010/7018
 - f. Demonstrates position: 2G, 5G, 6G
 - g. Demonstrates test: Visual, FACE and Root Bend

11. MIG
 - a. Demonstrates setup
 - b. Demonstrates amp/wire synchronized
 - c. Demonstrates gasses
 - d. Demonstrates thin to thin
 - e. Demonstrates thick to thick with joint prep
 - f. Demonstrates thin to thick
 - g. Demonstrates pipe to plate

12. METHOD OF EVALUATION – Student has successfully completed the 3/8" FACE AND ROOT BEND TEST in the VERTICAL position.

13. METHOD OF EVALUATION – Student has successfully completed the 1" BEND TEST in the following position(s)
 - a. Flat position
 - b. Horizontal position
 - c. Overhead position
 - d. Vertical position

14. 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)