

## **Term IV Structural and Pipe Welding NCCER modules and Lab Hours**

### **Welding and Construction Safety (10 class hours)**

Covers safety equipment, protective clothing, and procedures applicable to the cutting and welding of metals.

### **29203-09 Physical Characteristics and Mechanical Properties of Metals (8 class hours)**

Explains physical characteristics, mechanical properties, composition, and classification of common ferrous and nonferrous metals. Identifies the various standard metal forms and structural shapes. Covers visual inspection, magnetic testing, and X-ray fluorescent spectrometry methods used to identify metals.

**NOTE:** No performance tasks for this module - All classroom lecture

### **29204-09 Preheating and Postweld Heat Treatment of Metals (8 class hours)**

Explains preheating, inter-pass temperature control, and post-heating procedures that sometimes need to be done to preserve weld strength, ductility, and weld quality. Covers the equipment used for heat treatment of metals.

### **29205-09 GMAW and FCAW –Equipment and Filler Metals (8 class hours / 2 lab hours)**

Describes general safety procedures for GMAW and FCAW. Identifies GMAW and FCAW equipment and explains the filler metals and shielding gases used to perform GMAW and FCAW. Explains how to set up and use GMAW and FCAW equipment.

### **29206-09 GMAW and FCAW – Plate (4 class hours / 71 lab hours)**

Explains how to set up GMAW and FCAW equipment and build a pad of stringer beads and weave beads using filler metals and shielding gas. Explains procedures to perform GMAW Multi-pass fillet welds on plate in various positions.

### **29305-10 GTAW – Low-Alloy and Stainless Steel Pipe (8 class hours / 121 lab hours)**

Explains how to set up GTAW equipment. Covers the procedures and techniques used to make V-groove pipe welds with GTAW in the 2G, 5G, and 6G positions for low-alloy and stainless steel pipe.

**NOTE:** 8 hours of classroom lecture which includes demonstrations. The remainder of class is task driven with booth instruction.

### **HANDS ON WELDING TEST: 2” Schedule 10 Stainless Steel 6G GTAW Pipe Weld**

**(10 hours practice and testing) Total Class Hours- 46 Total Lab Hours – 204 Total Clock Hours for Term IV - 250**