National Center for Supply Chain Automation

MASTER SYLLABUS

Introduction to Welding and Cutting Processes

Semester Credit Hours: 3.00

Prerequisites: None

**COURSE DESCRIPTION**

Introduces technologies in Oxy/Acetylene welding (OAW), Oxy/Acetylene cutting (OAC), Oxy/Fuel cutting (OFC), SMAW (Stick), GMAW (MIG, FCAW)) and Plasma Arc Cutting (PAC), where applicable in the welding and welding education industries. The qualification and certification standards for entry level welders as established by The American Welding Society will be covered.

**STUDENT LEARNING OUTCOMES**

Upon successful completion of the course, students should be able to perform the following:

* List common welding processes;
* Identify classification of electrodes;
* Describe the SMAW (stick), GMAW (MIG), FCAW (Flux core), PAC (Plasma cutting), OAW (Oxy/Acetylene Welding) and OAC/OFC (Oxy/Acetylene cutting, Oxy/Fuel cutting) processes;
* Implement safe welding practices and perform housekeeping duties;
* Perform safety inspections of welding equipment and accessories;
* Set up and operate shielded metal arc welders;
* Set up and operate oxy-fuel gas cutting and heating operations;
* Demonstrate ability to communicate and work cooperatively with others;
* Make welds in all positions on mild steel (flat, vertical, overhead, and horizontal);
* Identify and use of constant voltage power sources, electrodes and gases;
* Set up and use of the plasma arc torch;
* Explain equipment set up and use.

**COURSE OUTLINE**

* Safety
* Manual OAW (Oxy/Acetylene welding) and OAC/OFC (Oxy/Acetylene cutting and Oxy Fuel cutting) processes
* Shielded metal arc welding (SMAW, stick)
* Gas metal arc welding (GMAW) and Flux cored arc welding (FCAW) technologies
* Plasma arc cutting (PAC) and air arc
* Metals
* Critical Thinking