ATIW-2300: SHIELDED METAL ARC WELDING

Cuyahoga Community College

Viewing: ATIW-2300 : Shielded Metal Arc Welding

Board of Trustees:
2002-01-24

Academic Term:
Spring 2019

Subject Code
ATIW - Appld Indus Tech - Ironworking

Course Number:
2300

Title:
Shielded Metal Arc Welding

Catalog Description:
Shielded metal arc welding principles and techniques. Includes required equipment tools and supplies, electrical and environmental safety, eye hazards associated with arc burn, and protective clothing requirements.

Credit Hour(s):
3

Lecture Hour(s):
3

Requisites

Prerequisite and Corequisite
ATIW-1600 Welding Fundamentals for Ironworkers or concurrent enrollment, or departmental approval.

Outcomes

Course Outcome(s):
N/A

Objective(s):
1. Demonstrate safe work practices.
2. List personal protective clothing and equipment.
3. Demonstrate proper handling of shielded metal arc welding equipment, tools and supplies.
4. Match welding machines to their electrical and performance characteristics.
5. Discuss electrode selection and elements of arc welding.
6. Weld various joints in all welding positions to specifications.

Methods of Evaluation:
1. Quizzes
2. Exams
3. Classroom participation
4. Demonstration of project assignments

Course Content Outline:
1. Safe work practices
   a. Electrical safety
   b. Welding cables

   c. Hollow castings and containers
   d. Arc rays
2. Protective clothing and equipment
   a. Welding hood
   b. Lens shade
   c. Protective clothing
3. Welding equipment and tools
4. Welding machines
   a. Electrical characteristics
   b. Performance characteristics
5. Electrode selection
   a. Mild steel and alloy electrodes
   b. Sizes and lengths
   c. American Welding Society (AWS) classifications
   d. F-group electrode designation
   e. Stainless-steel electrodes
   f. Cast iron electrodes
   g. Copper and copper alloy electrodes
   h. Aluminum and aluminum alloy electrodes
6. Welding joints
   a. Lap
   b. Tee
   c. V-groove butt
   d. Open-root corner
   e. Positions
   f. Specifications
   g. Preparation

Resources

Althouse, Turnquist, et al. *Modern Welding.* Tinley Park, Illinois: Goodheart-Willcox, 1997.

Bennett, A.E., and Soy Lewis. *Blueprint Reading for Welders.* 6th ed. Albany, New York: Delmar, 1999.

International Association of Bridge, Structural and Ornamental Iron Workers. *Welding Manual for Ironworkers, Manual No. 1: Introduction to Welding.* Washington, D.C.: AFL-CIO, 1990.

International Association of Bridge, Structural and Ornamental Iron Workers. *Welding Manual for Ironworkers, Manual No. 5: Shielded Metal Arc Welding.* Washington, D.C.: AFL-CIO, 1990.

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