ATIW-2310: WELDING SPECIALTIES

Cuyahoga Community College

Viewing: ATIW-2310 : Welding Specialties

Board of Trustees:
2002-01-24

Academic Term:
Spring 2019

Subject Code
ATIW - Appld Indus Tech - Ironworking

Course Number:
2310

Title:
Welding Specialties

Catalog Description:
In-depth study of welding and cutting techniques. Students will perform oxy-fuel gas welding and cutting techniques, arc cutting and gouging, and stud welding as applied to ironworking trade.

Credit Hour(s):
3

Lecture Hour(s):
3

Requisites

Prerequisite and Corequisite
ATIW-2300 Shielded Metal Arc Welding or concurrent enrollment, or departmental approval.

Outcomes

Course Outcome(s):
N/A

Objective(s):
1. 1. Explain welding and cutting techniques used by ironworkers.
2. 2. Demonstrate an understanding of oxy-fuel gas welding supplies and equipment through proper operation.
3. 3. Demonstrate an understanding of oxy-fuel gas cutting supplies and equipment through proper operation.
4. 4. Demonstrate an understanding of arc cutting and gouging supplies and equipment through proper operation.
5. 5. Demonstrate an understanding of stud welding, supplies and equipment through proper operation.

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

Course Content Outline:
1. Oxy-fuel gas welding
    a. Complete gas welding outfit
    b. Oxygen supply
        i. wrenches, valves, plugs
        ii. oxygen-bearing pellets

iii. dewar flasks
iv. oxygen manifold

c. Acetylene supply
i. cylinders
ii. acetylene manifold
iii. acetylene generator

d. Pressure regulator principles
i. stem regulator
ii. two-sage regulator
iii. master service regulator
iv. line regulator
v. pressure gauges

e. Oxyacetylene torch types
i. positive pressure torch
ii. injector torch
iii. welding tips

f. Air-acetylene torch

g. Oxy-fuel gas welding supplies
i. check valves
ii. flashback arrestors
iii. welding rods
iv. fluxes
v. firebricks
vi. carbon paste and forms
vii. pipe sealing compounds
viii. clamps

2. Oxy-fuel gas cutting
a. Complete portable oxy-fuel gas cutting outfit
b. Cylinder truck
c. Cutting torch
d. Torch guides
e. Cutting process
f. Cutting steel
g. Cutting ferrous alloy metals
h. Cutting cast iron
i. Automatic cutting

3. Arc cutting and gouging
a. Air carbon cutting and gouging
b. Oxygen cutting and gouging

4. Stud welding
a. Arc stud welding equipment
b. Power sources
c. Accessories
d. Finished weld inspection

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.

Bowditch, William. *Welding Technology Fundamentals.* Tinely Park, Illinois: Goodheart-Willcox, 1997.

Gibson, Stuart. *Advanced Welding.* Basingstoke, England: Macmillan, 1997.

Jeffus, Larry F. *Welding: Principles and Applications.* Albany: Delmar, 1999.

International Association of Bridge, Structural and Ornamental Iron Workers. *Welding Manual for Ironworkers, Manual No. 3: Oxy-Fuel Cutting and Welding.* Washington, D.C.: AFL-CIO, 1990.

International Association of Bridge, Structural and Ornamental Iron Workers. *Welding Manual for Ironworkers, Manual No. 4: Specialties.* Washington, D.C.: AFL-CIO, 1990.

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