MONROE COUNTY COMMUNITY COLLEGE

Course Outcome Summary

Required Program Core Course

WELD 102 - Advanced Shielded Metal Arc Welding (SMAW)

Course Information

Division	**Applied Science & Engineering Technology**
Contact Hours	**120**
Theory	**40**
Lab Hours	**80**
Total Credits	**6**

Prerequisites **WELD100 or Equivalent**

Course Description

Advanced Shielded Metal Arc Welding (SMAW) concentrates on safe welding and thermal cutting practices associated with SMAW. Students will follow procedures to deposit sound welding techniques in the horizontal, vertical up and overhead positions using E6010 and E7018 electrodes. The student will also follow procedures to deposit sound welding techniques in the vertical pipe fillet (5F) position using E6010 and E7018 electrodes.

This course is a required core course for students pursuing an AAS Degree, Advanced Welding Certificate, or Basic Welding Certificate in Welding Technology.

Program Outcomes Addressed by this Course:

Upon successful completion of this course, students should be able to meet the program outcomes listed below:

1. Demonstrate safe welding, fabricating, and thermal cutting practices.
2. Perform cutting and gouging procedures using thermal cutting techniques.
3. Follow procedures to deposit sound welds using Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW) processes.
4. Describe American Welding Society (AWS) Standards as well as industrial standards as they relate to welding.
5. Identify and solve common weldability problems.
6. Demonstrate the proper use and care of common welding and fabricating equipment.
7. Identify weld defects, explain methods to prevent defects, and demonstrate proper defect repair.
8. Read prints and interpret welding symbols.
9. Explain knowledge of basic material and welding metallurgy.
10. Specify proper Personal Protective Equipment (PPE) required for applicable work environments.

Course Outcomes

In order to evidence success in this course, the students will be able to:

1. Practice safe welding, thermal cutting, and grinding habits in a lab environment.
    a. Applies to program outcome 1 and 10.
2. Integrate thermal cutting, gouging, and grinding operations as required to complete work.
    a. Applies to program outcomes 1, 2, 6, 9, & 10.
3. Follow verbal and written instructions to complete work assignments.
    a. Applies to program outcome 1, 2, 3, 4, 6, & 10.
4. Demonstrate the ability to properly set up, operate, and shut down applicable welding and cutting equipment.
    a. Applies to program outcome 1, 2, 3, 6, & 10.

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5. Correctly identify welding defects and explain methods to prevent reoccurrence as well as perform repair operations on such weld defects.
    a. Applies to program outcome 3, 4, 5, 6, 7, & 10.
6. Students will be able to deposit weld metal in fillet and groove weld joints on plate in all positions using E6010 and E7018 electrodes.
    a. Applies to program outcome 3, 5, 6, 7 & 10.
7. Students will be able to deposit weld metal using E6010 and E7018 electrodes in the 5F position on pipe fillet joints.
    a. Applies to program outcome 3, 5, 6, 7 & 10.
8. Demonstrate ability to pass SMAW conventional plate certification tests by successfully completing three guided bend tests, one each in the 2G, 3G, & 4G welding positions.
    a. Applies to program outcome 3, 4, 5, 6, 7 & 10.
9. Interpret and apply welds as indicated on a blueprint to a fabricated work piece.
    a. Applies to program outcome 3, 6, 8, & 10.
10. Identify, evaluate, and solve common weldability problems.
    a. Applies to program outcome 3, 5, 6, 8, & 10.

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By: Stephen Hasselbach