

University of Arkansas - Fort Smith
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General Syllabus

WELD 22844 ARC Welding - Advanced

Credit Hours: 4

Lecture Hours: 2

Laboratory Hours: 4

Prerequisite: WELD 12844 ARC Welding - Basic

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Study and practice of advanced arc welding techniques, using mild steel electrodes in the horizontal, vertical, and overhead positions on structural plate. Emphasis on identifying and analyzing defects in welding joints will be studied.

B. Additional Information

This course is the second course of arc (SMAW) welding. This course is a continuation of WELD 12845. Out of position welding in the 2G, 3G and 4G positions with E6010 and E7018 electrodes. Two different methods for the root pass on open V butt welds will be used. Testing of weldments will be done with destructive and non-destructive methods.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Demonstrate the safe use of oxy-fuel cutting equipment, arc welding equipment and proper eye, clothing and hearing protection.
2. Demonstrate control of electrode angles and travel speed by size and appearance of weld beads according to code standards.
3. Perform acceptable weld clean-up procedures before, during and after welding according to code standards.
4. Evaluate finished project for design and fit according to weld codes and standards testing procedures.
5. Attach fixtures and/or jigs required to complete a weldment according to code standards.

6. Perform a groove weld according to essential variables of American Welding Society D1.1 structural welding code for guided bend test.
7. Identify and demonstrate the use of welding symbols of the American Welding Society.
8. Identify and correct all weld defects that occur in out-of-position welding according to American Welding Society D1.1 structural welding code essential variables and welding procedures.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students must analyze situations and make decisions in materials and techniques and make judgments in accordance with American Welding Society standards.

Quantitative Reasoning: Students must make precision measurements and figure acceptable tolerances within American Welding Society guidelines.

Ethical Decision Making

Students will evaluate work to meet American Welding Society standards and guidelines as well as evaluate how stakeholders are affected by the quality and safety of the completed welds.

III. Major Course Topics

- A. Oxy-fuel cutting equipment and arc welding equipment
- B. Electrode angles and travel speed by size and appearance of weld beads according to code standards
- C. Weld codes and standards
- D. Fixtures and/or jigs
- E. Groove welds according to essential variables of American Welding Society D1.1 structural welding code for guided bend test
- F. Welding symbols of the American Welding Society
- G. Identification of weld defects that occur in out-of-position welding according to American Welding Society D1.1 structural welding code essential variables and welding procedures