

University of Arkansas - Fort Smith
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General Syllabus

WELD 13844 TIG Welding - Basic

Credit Hours: 4

Lecture Hours: 2

Laboratory Hours: 4

Prerequisite or corequisite: WELD 12344 Introduction to Welding and Print Reading

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

In-depth study and practice of the gas tungsten arc welding process. Techniques of making welds in the flat and horizontal positions are mastered on carbon steel, aluminum, and stainless steel.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

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

1. Set up equipment
2. Perform fusion welds on steel, master torch and filler rod manipulations.
3. Demonstrate the safe use of gas tungsten arc welding equipment.
4. Identify and select all variables, i.e., electrical and mechanical, necessary to operate the equipment.
5. Correct set up the TIG welding power source and peripheral equipment.
6. Distinguish and grade various samples of aluminum, carbon steels, and stainless steels according to American Iron and Steel Institute's Standards.
7. Select the proper filler rods for a specific base metal in accordance with the American Welding Society's Filler Rod Classification System.
8. Complete torch and filler rod manipulations including correct work angles, travel angles, standoff distances and travel speeds.
9. Start and stop the welding process using both scratch start and high frequency assisted techniques.
10. Produce fillet welds in all three materials in various welding positions in accordance with the American Welding Society's Visual Inspection

Standards.

11. Produce groove welds in all three materials in the flat welding position which comply with American Welding Society's Visual Inspection Standards.
12. Select the correct shielding gas and adjust flow rates according to factory recommendations.
13. Polish stainless steel weld joints to meet U.S.D.A. requirements for sanitary welds.
14. Recognize and qualify weld defects according to American Welding Society's Standard for Visual Inspection.

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's standards and guidelines as well as evaluate how stakeholders are affected by the quality and safety of the finished welds.

III. Major Course Topics

- A. Safety and health practices including eye and body protection, shop regulations, equipment hazards and ventilation.
- B. Basic elements of oxy-fuel welding that are prerequisite to TIG.
- C. Use of equipment and accessories in TIG welding, i.e., non-consumable electrodes, proper selection of inert gas, correct procedure and technique on base metal.
- D. Welding assignments in flat and horizontal positions.