

University of Arkansas - Fort Smith
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General Syllabus

WELD 24044 MIG Welding - Advanced

Credit Hours: 4

Lecture Hours: 2

Laboratory Hours: 4

Prerequisite: WELD 14044 MIG Welding –Basic

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Study and practice of gas metal arc welding and flux core arc welding on groove welds in all positions. Machine set-up and techniques for ferrous metals will be practiced. Metal transfers, including short circuit and spray, will be studied and practiced. Shielding gases and their effects on final weld quality will be evaluated. An American Welding Society workmanship sample will be fabricated and welded as required.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

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

1. Understand and demonstrate the electrical characteristics of the constant potential power source utilized in the GMAW and FCAW welding process.
2. Define the effects of voltage, wire feed speed, inductance, slope and electrical stick out as they pertain to the GMAW process and final weld quality.
3. Correctly set up the MIG welding power source and equipment for out of position welding
4. Produce welds in the 3G and 4G positions using short circuit arc welding meeting American Welding Society's Standards.
5. Produce welds in the 3G and 4G positions using flux core arc welding meeting American Welding Society's Standards.
6. Identify weld defects and determine acceptability according to American Welding Society's Visual and Destructive Testing Inspection Standards.

7. Replace and repair common maintenance items related to the MIG power source.

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 finished welds.

III. Major Course Topics

- A. Short Circuit 3G
- B. Short Circuit 4G
- C. Flux Core – Inter-shield 3G
- D. Flux Core – Inter-shield 4G
- E. Flux Core – Dual-shield 3G
- F. Flux Core – Dual-shield 4G