# WELD A224: ADVANCED WELDING LEVEL 2

| Item | Value |
|---|---|
| Curriculum Committee Approval Date | 04/22/2015 |
| Top Code | 095650 - Welding Technology |
| Units | 1.5 Total Units |
| Hours | 54 Total Hours (Lecture Hours 18; Lab Hours 36) |
| Total Outside of Class Hours | 0 |
| Course Credit Status | Credit: Degree Applicable (D) |
| Material Fee | Yes |
| Basic Skills | Not Basic Skills (N) |
| Repeatable | No |
| Grading Policy | Standard Letter (S) |

## Course Description

A second-level advanced welding course teaching the theory and practice of joining ferrous and non-ferrous metals. Includes certification requirements joint design and use of welding symbols. Lectures include preparation for Los Angeles City testing. PREREQUISITE: WELD A100 or WELD A101 or WELD A140. ADVISORY: WELD A223. Transfer Credit: CSU.

## Course Level Student Learning Outcome(s)

1. Demonstrate proper safety procedures.
2. Join metals utilizing the SMAW and GMAW welding processes.
3. Weld metals in and out-of-position.

## Course Objectives

- 1. Demonstrate an understanding and practice of personal welding safety.
- 2. Demonstrate safe use of arc welding machines.
- 3. Demonstrate safe use of oxygen acetylene cutting equipment.
- 4. Demonstrate an understanding of arc welding polarity.
- 5. Demonstrate an understanding of constant current welders.
- 6. Demonstrate an understanding of constant voltage welders.
- 7. Demonstrate an understanding of alternating current.
- 8. Demonstrate an understanding of air arc gouging.
- 9. Demonstrate an understanding of SMAW and GMAW.
- 10. Demonstrate the ability to join metals using either SMAW or GMAW.
- 11. Demonstrate the ability to join metals in and out of position.
- 12. Prepare metals for various geometric joints prior to welding.

## Lecture Content

1. Demonstrate an understanding and practice of personal welding safety. 2. Demonstrate safe use of arc welding machines. 3. Demonstrate safe use of oxygen acetylene cutting equipment. 4. Demonstrate an understanding of arc welding polarity. 5. Demonstrate an understanding of constant current welders. 6. Demonstrate an understanding of constant voltage welders. 7. Demonstrate an understanding of alternating current. 8. Demonstrate an understanding of air arc gouging. 9. Demonstrate an understanding of SMAW and GMAW theory. 10. Demonstrate the ability to join metals using either SMAW or GMAW. 11. Demonstrate the ability to join metals in and out of position. 12. Prepare metals for various geometric joints prior to welding.

## Lab Content

1. Demonstrate an understanding and practice of personal welding safety. 2. Demonstrate safe use of arc welding machines. 3. Demonstrate safe use of oxygen acetylene cutting equipment. 4. Demonstrate an understanding of arc welding polarity. 5. Demonstrate an understanding of constant current welders. 6. Demonstrate an understanding of constant voltage welders. 7. Demonstrate an understanding of alternating current. 8. Demonstrate an understanding of air arc gouging. 9. Demonstrate an understanding of SMAW and GMAW theory. 10. Demonstrate the ability to join metals using either SMAW or GMAW. 11. Demonstrate the ability to join metals in and out of position. 12. Prepare metals for various geometric joints prior to welding.

## Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

## Instructional Techniques

Lecture, demonstrations, skills evaluation, and critique

## Reading Assignments

Students will spend a minimum of one hour per week reading assigned material.

## Writing Assignments

Students will spend a minimum of one hour per week on written examinations

## Out-of-class Assignments

Students will spend a minimum of two hours per week demonstrating skill proficiency and completing written examinations.

## Demonstration of Critical Thinking

Proficiency demonstrations, written examinations

## Required Writing, Problem Solving, Skills Demonstration

Proficiency demonstrations, written examinations

## Eligible Disciplines

Welding: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

## Textbooks Resources

1. Required Galvery, W., and Frank Marlow. Welding Essentials: Questions and Answers, Second ed. New York: Industrial Press, 2007 Rationale: . 2. Required Galvery, W. Welding Essentials Second Edition, 2d ed. Industrial Press, 2009 Rationale: Industry standard

## Other Resources

1. Selected handout materials to be provided and distributed by instructor