WELD A226: ADVANCED WELDING LEVEL 4

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 fourth-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 A225. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate proper safety procedures
2. Join metals utilizing the SMAW, FCAW and GTAW 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 the ability to join metals using either SMAW or GMAW or FCAW or GTAW theories.
- 10. Demonstrate the ability to join metals in and out of position.
- 11. Prepare metals for various geometric joints prior to welding.

Lecture Content

I. Safety A. General safety rules B. Welding equipment safety C. Personal safety in welding I. Shielded metal arc welding (SMAW) A. Equipment 1. AC and DC machines a. Transformers b. Inverters 2. Constant current machines 3. Constant voltage machines 4. Combination machines B. Different Weld positions C. Weld Symbols D. Information on L.A. City Testing 1. Preparation for the written examination a. General knowledge a. Los Angeles City Code b. Code book interpretation II. Thermal Cutting A. Oxyacetylene cutting B. Plasma cutting IV. Gas tungsten arc welding (GTAW) A. Equipment 1. Machines a. Polarity applications 1. Alternating current 2. Direct current electrode positive 3. Direct current electrode negative 4. Torches 5. Regulators 6. Controls B. Welding wires C. Gases D. Application on various metals

Lab Content

I. Safety A. General safety rules B. Welding equipment safety C. Personal safety in welding I. Shielded metal arc welding (SMAW) A. Equipment 1. AC and DC machines a. Transformers b. Inverters ; 2. Constant current machines 3. Constant voltage machines 4. Combination machines B. Different Weld positions C. Weld Symbols D. Information on L.A. City Testing 1. Preparation for the written examination a. General knowledge a. Los Angeles City Code s p; b. Code book interpretation II. Thermal Cutting A. Oxyacetylene cutting B. Plasma cutting IV. Gas tungsten arc welding (GTAW) A. Equipment 1. Machines a. Polarity applications 1. Alternating current 2. Direct current electrode positive 3. Direct current electrode negative 4. Torches 5. Regulators 6. Controls b B. Welding wires C. Gases D. Application on various metals

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

Written examinations

Out-of-class Assignments

Students will spend a minimum of one hour per week demonstrating proficiency and completing written examinations.

Demonstration of Critical Thinking

Proficiency demonstrations, written examinations

Required Writing, Problem Solving, Skills Demonstration

Proficiency demonstrations, written examinations

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