WELD A251: PIPE WELDING LEVEL 2

Item	Value
Curriculum Committee Approval Date	12/12/2012
Top Code	095650 - Welding Technology
Units	3 Total Units
Hours	108 Total Hours (Lecture Hours 36; Lab Hours 72)
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

Second-level course for Oxygen-Acetylene, Shielded Metal Arc, Gas Metal Arc and Gas Tungsten Arc Welding for pipe welder qualification to achieve American National Standards (ANSI) certification. PREREQUISITE: WELD A200 or WELD A201 or WELD A226. ADVISORY: WELD A250. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate proper safety procedures.
2. Weld pipe in and out of position using the OAW process.
3. Weld pipe in 1G (Rolling), 2G (Horizontal), 5G (Fixed) and 6G (45° angle) positions using the SMAW process.

Course Objectives

- 1. Demonstrate personal SMAW,and OAW safety.
- 2. Demonstrate an understanding of SMAW currents, volts, and polarity.
- 3. Demonstrate an understanding of OAW torch flame characteristics and adjustments.
- 4. Demonstrate an understanding of OAW filler metals.
- 5. Weld vertical up and vertical down.
- 6. Demonstrate an understanding of multiple pass welding.
- 7. Demonstrate an understanding of SMAW electrode identification and use.
- 8. Determine pipe schedules and diameters.
- 9. Braze and solder pipe.
- 10. Demonstrate the various techniques of joining pipe using SMAW and OAW.

Lecture Content

Orientation Safety Equipment and Supplies Shielded metal arc welding Oxygen acetylene welding Classifications of Pipe and Fittings Schedules (pipe sizes and weights) Alloyed, high pressure, low pressure, etc. Stainless Aluminum Qualification Tests for Pipe Welders Different codes and specifications Testing procedures Preparations and Procedures to Make Pipe Welds Thermal cutting pipe ends prior to welding Cold cutting pipe ends prior to welding Beveling pipe ends prior to welding Terms and Definitions Oxy-acetylene welding American Petroleum Institute code Shielded metal arc welding American Society of Mechanical Engineers (ASME) codes American Petroleum Institute (API) code Other American national Standards Institute (ANSI) codes Testing procedures

Lab Content

Orientation Safety Equipment and Supplies Shielded metal arc welding Oxygen acetylene welding Classifications of Pipe and Fittings Schedules (pipe sizes and weights) Alloyed, high pressure, low pressure, etc. Stainless Aluminum Qualification Tests for Pipe Welders Different codes and specifications Testing procedures Preparations and Procedures to Make Pipe Welds Thermal cutting pipe ends prior to welding Cold cutting pipe ends prior to welding Beveling pipe ends prior to welding Terms and Definitions Oxy-acetylene welding American Petroleum Institute code Shielded metal arc welding American Society of Mechanical Engineers (ASME) codes American Petroleum Institute (API) code Other American national Standards Institute (ANSI) codes Testing procedures

Method(s) of Instruction

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

Instructional Techniques

Instructor demonstrations, evaluation and constructive critique, textbook readings, and instructional handouts.

Reading Assignments

Textbook reading as assigned by instructor

Out-of-class Assignments

Textbook reading as assigned by instructor

Demonstration of Critical Thinking

Written exams, lab projects evaluation

Required Writing, Problem Solving, Skills Demonstration

Critique and evaluation of practical and demonstrated techniques

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, William and Frank Marlow. Welding Essentials: Questions and Answers , 2nd ed. New York: Industrial Press, 2007