WELD A253: PIPE WELDING LEVEL 4

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

Fourth-level course for Shielded Metal Arc, Gas Tungsten Arc Welding for pipe welder qualification to achieve American National Standards (ANSI) certification. PREREQUISITE: WELD A200, WELD A201, or WELD A226. ADVISORY: WELD A252. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

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

Course Objectives

- 1. Demonstrate personal SMAW,and GTAW safety.
- 2. Demonstrate an understanding of SMAW,and GTAW currents, volts, and polarity.
- 3. Weld vertical up and vertical down.
- 4. Demonstrate an understanding of multiple pass welding.
- 5. Demonstrate an understanding of SMAW electrode identification and use.
- 6. Determine pipe schedules and diameters.
- 7. Demonstrate an understanding of GTAW shielding gasses.
- 8. Demonstrate an understanding of GTAW filler materials.
- 9. Demonstrate the various techniques of joining pipe using SMAW and GTAW.

Lecture Content

Orientation Safety Equipment and Supplies Shielded metal arc welding Gas tungsten arc 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 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 Gas Tungsten Arc Welding A. Different codes and specifications (ANSI) B. Testing Procedures

Lab Content

Orientation Safety Equipment and Supplies Shielded metal arc welding Gas tungsten arc 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 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 Gas Tunsten Arc Welding A. Different codes and specifications (ANSI) B. 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