WELD A211: GAS METAL ARC WELDING TRAINING LEVEL 1

Item	Value
Curriculum Committee Approval Date	12/12/2012
Top Code	095650 - Welding Technology
Units	1 Total Units
Hours	36 Total Hours (Lecture Hours 9; Lab Hours 27)
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), • Pass/No Pass (B)

Course Description

This course teaches Gas Metal Arc Welding Theory and practice on ferrous and non-ferrous metals covering welding standards set by the American Welding Society, American National Standards Institute and I-CAR in preparation for qualification and certification requirements. Students may also enroll in WELD A115 or WELD A215 for additional laboratory units. Each 54 hours of laboratory time earns one unit. Students will be given credit for laboratory course appropriate for the number of hours worked. PREREQUISITE: WELD A100, WELD A101 or WELD A140. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate proper safety procedures.
2. Correctly adjust the welding machine for material and thickness.
3. Weld in flat and horizontal positions.

Course Objectives

- 1. Demonstrate proper safety procedures.
- 2. Demonstrate expertise in GMAW theory.
- 3. Demonstrate an understanding of GMAW welding materials and filler requirements.
- 4. Correctly adjust GMAW welding equipment.
- 5. Demonstrate the relationship between amperage and voltage in GMAW welding.
- 6. Demonstrate correct preparation of materials prior to welding.
- 7. Weld in the flat and horizontal positions.
- 8. Discuss the criteria for acceptability of weldments to the ANSI/I-CAR.
- 9. Evaluate weld quality.
- 10. Discuss joint geometry and fit-up prior to welding.

Lecture Content

Safety Personal safety Eye protection Ventilation Electric shock Care of equipment Power Sources Constant voltage Polarity 110 and 220 power input Integrated circuits Inverters Wire feeder rollers Modes of transfer Welding Guns Liners Contact tips Nozzles Manipulation Welding Gasses Carbon dioxide Argon Blended gases Flow rates Regulator Flow Meters Adjustments Weld Preparation Material cleaning Contamination Porosity Fit-up Welding Variables Voltage Amperes/wire speed Wire composition Wire diameters Wire stick-out Wire spools Travel speed Joint Geometry Butt joints Lap joints Tee joints Corner joints Edge/flange joints Welding Positions Flat Horizontal

Lab Content

Safety Personal safety Eye protection Ventilation Electric shock Care of equipment Power Sources Constant voltage Polarity 110 and 220 power input Integrated circuits Inverters Wire feeder rollers Modes of transfer Welding Guns Liners Contact tips Nozzles Manipulation Carbon dioxide Argon Blended gases Flow rates Regulator Flow Meters Adjustments Weld Preparation Material cleaning Contamination Porosity Fit-up Welding Variables Voltage Amperes/wire speed Wire composition Wire diameters Wire stick-out Wire spools Travel speed Joint Geometry Butt joints Lap joints Tee joints Corner joints Edge/flange joints Welding Positions Flat Horizontal

Method(s) of Instruction

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

Instructional Techniques

Competency-based skills evaluation and written examinations.

Reading Assignments

1. Broad general theory by writing programs, program development 2. Psycho-motor skills 3. Vocabulary and meaning

Writing Assignments

1. Broad general theory by writing programs, program development 2. Psycho-motor skills 3. Vocabulary and meaning

Out-of-class Assignments

1. Broad general theory by writing programs, program development 2. Psycho-motor skills 3. Vocabulary and meaning

Demonstration of Critical Thinking

Written examinations and skills demonstration.

Required Writing, Problem Solving, Skills Demonstration

Written examinations and skills demonstration.

Textbooks Resources

1. Required Galvery, William and Frank Marlow. Welding Essentials: Questions and Answers , 2nd ed. New York: Industrial Press, 2007 2. Required Hobart Institute of Welding Technology. Gas Metal Arc Welding Basic , latest ed. Hobart, 2012 3. Required Hobart Institute of Welding Technology. Gas Metal Arc Welding Basic EW369 GMAWB, Latest ed. Hobart, 1997 Rationale: Industry standard textbook

Other Resources

1. Selected handout materials to be provided and distributed by instructor. Orange Coast College Safety Examination