WELD A131: GAS TUNGSTEN ARC 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
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

GTAW (gas tungsten arc welding) Level 2 theory and practice covering aluminum and stainless steels and qualification requirements. PREREQUISITE: WELD A100 or WELD A101 or WELD A140. ADVISORY: WELD A130. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate proper safety procedures.
2. Join metals in the flat, horizontal, vertical and overhead positions.
3. Demonstrate tube and pipe welding.

Course Objectives

- 1. Demonstrate proper safety procedures.
- 2. Demonstrate proper set-up of GTAW equipment
- 3. Demonstrate proper selection of GTAW filler materials.
- 4. Demonstrate proper selection of GTAW tungsten electrode and tip preparation.
- 5. Demonstrate proper cleaning of parent base metal.
- 6. Demonstrate weld joint preparation.
- 7. Weld carbon steel, stainless steel, and aluminum in all positions.
- 8. Demonstrate expertise in theory and manipulative skills.
- 9. Weld tube to industrial standards.
- 10. Weld pipe to industrial standards.

Lecture Content

Safety Personal safety conduct Eye protection Ventilation Electric shock Safe care of equipment Power Sources Amperage Voltage Constant current Polarities Remote Controls High frequency (start continuous) (purposes and uses) Welding Torch Tungstens Pure, thoriated, striped Points for different metals Contamination Gases Inert and non-inert Flow rate Recommended gases for different metals Weld Preparation Cleanliness Porosity Contamination-oxides Fit-up Material and Filler Metals Carbon Steel Aluminums Stainless steels Other exotic metals Projects Carbon Steel 1. Tee joints, butt joints, lap joints and corner joints in flat, horizontal, vertical, and overhead positions. B. Aluminum 1. Tee joints, butt joints, lap joints and corner joints in flat, horizontal, vertical, and overhead positions. C. Stainless steels 1. Tee joints, butt joints, lap joints and corner joints in flat, horizontal, vertical, and overhead positions. D. Other metals (those that meet student needs) E. Tube welding n bsp; F. Pipe welding

Lab Content

Safety Personal safety conduct Eye protection Ventilation Electric shock Safe care of equipment Power Sources Amperage Voltage Constant current Polarities Remote Controls High frequency (start continuous) (purposes and uses) Welding Torch Tungstens Pure, thoriated, striped Points for different metals Contamination Gases Inert and non-inert Flow rate Recommended gases for different metals Weld Preparation Cleanliness Porosity Contamination-oxides Fit-up Material and Filler Metals Carbon Steel Aluminums Stainless steels Other exotic metals Projects Carbon Steel 1. Tee joints, butt joints, lap joints and corner joints in flat, horizontal, vertical, and overhead positions. B. Aluminum 1. Tee joints, butt joints, lap joints and corner joints in flat, horizontal, vertical, and overhead positions. C. Stainless steels 1. Tee joints, butt joints, lap joints and corner joints in flat, horizontal, vertical, and overhead positions. D. Other metals (those that meet student needs) E. Tube welding p; F. Pipe 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

Proficiency demonstrations, written examinations

Writing Assignments

Proficiency demonstrations, written examinations

Out-of-class Assignments

Proficiency demonstrations, written examinations

Demonstration of Critical Thinking

Written examinations and manipulative skill tests

Required Writing, Problem Solving, Skills Demonstration

Written examinations and manipulative skill tests

Eligible Disciplines

Welding: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience. : Title 5, section 53415.

Textbooks Resources

1. Required Galvery, William and Frank Marlow. Welding Essentials: Questions and Answers , 2nd ed. New York: Industrial Press, 2007 2. Required Jeffus, Larry. The Essential Welder/Gas Tungsten Arc Welding Classroom Manual, ed. Chicago: Delmar Thompson Learning, 0 Rationale: latest

Other Resources

1. Orange Coast College welding safety test booklet