WELD A141: OCCUPATIONAL WELDING LEVEL 2

Item	Value
Curriculum Committee Approval Date	04/12/2023
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
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

Course Description

A second-level beginning course in arc and oxy-acetylene welding covering safety practices, use of welding, brazing, thermal and mechanical cutting equipment operations on various types of metal. ADVISORY: WELD A140. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate proper safety procedures.
2. Manipulate arc welding equipment by striking an arc and running weld beads with various welding electrodes.

Course Objectives

- 1. Demonstrate an understanding of basic welding processes and theory.
- 2. Demonstrate entry level welding skills with SMAW equipment.
- 3. Demonstrate entry level joint design and preparation.
- 4. Set up and adjust oxygen acetylene cutting equipment.
- 5. Cut metal using oxygen acetylene cutting equipment.
- 6. Set up oxygen fuel cutting equipment.
- 7. Cut metals with the oxygen fuel cutting equipment.
- 8. Set up and adjust various types of thermal cutting equipment.
- 9. Cut various metals using thermal cutting equipment.
- 10. Correctly identify SMAW welding machines.
- 11. Identify polarity and adjust the welding power source to the correct polarity.
- 12. Strike an arc with a shielded metal arc welding electrode.
- 13. Weld various SMAW electrodes in the flat position.

Lecture Content

Safety General safety rules Welding equipment safety Personal safety in welding Definition of welding Oxy-acetylene Welding Equipment Torch assembly Torch Regulators Cylinders Gas Manufacture Oxygen Acetylene Flame adjustments and applications Carburizing Neutral Oxidizing Torch Technique Thermal cutting theory and application Oxy-fuel cutting Carbon arc cutting Plasma arc cutting SMAW equipment and supplies DC and AC machines Cables and electrode holders Remote controlsl Classification of electrodes DC Arc welding Electrical principles Circuits Polarities Proper electrode selection AC Arc welding Characteristics of alternating current Advantages and disadvantages SMAW theory Starting electrode Arc length geometry Electrode angle Travel speed Stopping the process Weld metal preparation Thermal cutting Machining Grinding Metal joining Welding joints Proper joint preparation

Lab Content

Safety General safety rules Welding equipment safety Personal safety in welding Definition of welding Oxy-acetylene Welding Equipment Torch assembly Torch Regulators Cylinders Gas Manufacture Oxygen Acetylene Flame adjustments and applications Carburizing Neutral Oxidizing Torch Technique Thermal cutting theory and application Oxy-fuel cutting Carbon arc cutting Plasma arc cutting SMAW equipm ent and supplies DC and AC machines Cables and electrode holders Remote controlsl Classification of electrodes DC Arc welding Electrical principles Circuits Polarities Constant current machines Duty cycle Proper electrode selection AC Arc welding Characteristics of alternating current Advantages and disadvantages SMAW theory Starting electrode Arc length geometry Electrode angle Travel speed Stopping the process Weld metal preparation Thermal cutting Machining Grinding Metal joining Welding joints Proper joint preparation

Method(s) of Instruction

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

Instructional Techniques

Lecture, demonstrations, 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

Skill development demonstration and evaluation.

Required Writing, Problem Solving, Skills Demonstration

Written examinations.

Eligible Disciplines

Welding: Any bachelor's 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

Other Resources

1. William Galvery, Orange Coast College Safety Examination