Lassen Community College Course Outline

IT-72 Facilities Maintenance - Welding 2.0 Units

I. Catalog Description

This course is designed to prepare students with basic, through increasingly advanced, skills covering aspects of maintenance and repair procedures utilizing: soldering, brazing, welding, and joining of PVC. Field work will include fabrication, as well as maintenance and repair of equipment and facilities utilizing a portable shop.

Does Not Transfer to UC/CSU

102 Hours Lab, 102 Total Student Learning Hours
Scheduled: Spring

II. Coding Information

Repeatability: Take 1 Time
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 094500

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Safely perform soldering and brazing joint designs using GMAW (Gas Metal Arc Welding) to industry standards.
2. Safely perform welding applications to joint designs, which meet or exceeds American Welding Society (AWS) standards using GMAW.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Safely setup and assemble with soldering 10 lap joints, which meet industry standards.
2. Safely setup oxyacetylene equipment and perform 10 brazing lap joints on A36 steel that meet industry standards.
3. Safely setup oxyacetylene equipment and perform 10 brazing 2F joints on A36 steel that meet industry standards.
4. Safely setup GMAW equipment and successfully complete the AWS qualification in the vertical and overhead positions which meet or exceed the American Welding Society D1.1 Structural Welding Code standards.
5. Safely setup and assemble a water tight joint design, using soldering on copper tubing, which can withstand house water pressure for a minimum of 5 minutes.
6. Safely setup and assemble a water tight joint design with PVC which can withstand house water pressure for a minimum of 5 minutes.
7. Safely setup and perform maintenance, repair, and/or fabrication on selected equipment and/or facilities utilizing the GMAW and oxyacetylene equipment.

IV. Course Content

A. Safety

1. Safely setup and apply soldering utilizing propane heat.
2. Safely setup and apply brazing utilizing oxyacetylene.

3. Safely setup GMAW, SMAW, FCAW and apply to specified AWS joints.

B. Basic Maintenance Functions
1. Assemble a water tight joint design, using soldering, on copper tubing.
2. Complete the AWS welding qualification in vertical and overhead positions which meet or exceed the American Welding Society D1.1 Structural Welding Code Standards.

C. Basic Repair Functions
1. Use GMAW to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.
2. Use SMAW to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.
3. Use FCAW to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.
4. Use oxyacetylene to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.

V. Assignments

A. Appropriate Readings
Manufacturer specifications and diagrams [data sheets, parts lists, and procedures]. AWS D1.1 Structural Welding Code.

B. Writing Assignments
None required for a laboratory only class; however, some calculations and sketch work for AWS qualifications, maintenance and repair functions.

C. Expected Outside Assignments
Reading of manufacturer's specifications and preparation for maintenance, and repair functions. Reading of AWS D1.1 Structural Welding Code.

D. Specific Assignments that Demonstrate Critical Thinking
The student will identify, analyze and synthesize maintenance functions in the laboratory projects [student performance objectives], AWS welding qualifications, and lab quizzes.

VI. Methods of Evaluation

Each student will be given a course syllabus which will specify student performance objectives and grading policy. Students will be evaluated on completion of student performance objectives, class participation and quizzes.

In addition to the above measures of performance the student will also be evaluated on individual skill level in conjunction with multiple enrollments:

With continuous supervision, the student must be able to follow verbal and/or written instructions. Student will demonstrate this ability by completing specified projects, fabrications and/or repairs, and AWS qualifications (using GMAW) that meet or exceed industry standards.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☒ **Traditional Classroom Delivery** ☐ Correspondence Delivery

☐ Hybrid Delivery ☐ Online Delivery

Laboratory and Demonstration

VIII. Representative Texts and Supplies

Supplies

A list of required and recommended supplies will be included with the course syllabus.

IX. Discipline/s Assignment

Industrial Technology, Welding

X. Course Status

Current Status: Active
Original Approval Date: 2/5/1996
Revised By: Kory Konkol
Curriculum/Academic Standards Committee Revision Date: 11/29/2022
Reviewed for IPR with no recommended change: