Lassen Community College Course Outline

WT-43 Advanced Shielded Metal Arc Welding 3.0 Units

I. Catalog Description

This is the last in a three-course sequence of fundamental elective classes dealing with the shielded metal arc welding (SMAW) process. Specialized filler rods will be selected and applied to joint designs which meet industry standards. Repeatable as required for qualification by the American Welding Society (AWS) D1.1, Section 4 Period of Effective. (Instructor Authorization Required for Course Repetition.)

Transfers to CSU only
153 Hours Lab, 153 Total Student Learning Hours
Scheduled:

II. Coding Information

Repeatability: Not repeatable
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

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

1. Safely setup and perform ten open-root groove welds in the 3G (vertical) position using the gas tungsten arc welding (GTAW) and SMAW processes on 3/8”plate.
2. Safely setup and perform ten open-root groove welds in the 4G (overhead) position using the gas tungsten arc welding (GTAW) and SMAW processes on 3/8” plate.
3. Complete two limited thickness AWS qualifications, using the SMAW process.

B. Course Objectives

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

1. Demonstrate the skills and knowledge needed to setup and operate the SMAW equipment safely.
2. Demonstrate the manipulative skills needed to make successful welds utilizing the SMAW process that will comply with industry standards.
3. Demonstrate the setup of a specified welding qualification procedure.
4. Apply the SMAW process to a qualification joint design recognized by the AWS.

IV. Course Content

A. Safety Precautions

1. Working conditions
2. Personal protection
3. Air contamination
4. Electrical shock
5. Radiation hazards

B. Shielded Metal Arc Welding - E7018 -1/8"

1. Current settings
2. Arc length
3. Electrode angle

4. Travel speed

C. Gas tungsten Arc Welding – ER70S-X
1. Current settings
2. Arc length
3. Electrode angle
4. Travel speed

D. Qualification Procedure
1. Joint design
2. Filler rod selection
3. Pre and postheat requirements
4. Bead sequence
5. Bead application
6. Polarity
7. Amperage

V. Assignments

A. Appropriate Readings
Standard text:"Welding Principles & Applications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments
Students will apply technical skills and understanding of course content by demonstrating application of the GTAW and SMAW processes to recognized joint designs which meet industry and shop standards.

C. Expected Outside Assignments
None

D. Specific Assignments that Demonstrate Critical Thinking
Students will be required to demonstrate understanding of welding with the GTAW and SMAW processes by applying technical information to multiple manipulative performance objectives, which meet welding department and industry specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
1. Completion of required manipulative performance objectives.
2. Participation in classroom learning activities.

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

Demonstration/Laboratory

VIII. Representative Texts and Supplies

Jeffus, Larry;*"Welding Principles & Applications*", 2017, 8th Edition, Delmar Cengage Learning, ISBN: 978-1-305-494695-5

Supplies: (required)
Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 11/29/2022