

Lassen Community College Course Outline

WT 20 Power Plant & Field Pipe Welding I

3.0 Units

I. Catalog Description

This is the first of a four course sequence to prepare students in power plant and field pipe welding. This course deals with shop safety, oxyacetylene cutting (OAC), air carbon arc cutting (CAC-A), shielded metal arc welding (SMAW) and pipe welding. Pipe coupons will be prepared and welded in the horizontal rolled (1G) position. American Welding Society (AWS) welding qualifications on plate and pipe will be prepared and completed. Repeatable as required for qualification by the AWS D1.1 Section 4. Period of Effectiveness. (Instructor Authorization Required for Course Repetition.) This course has been approved for hybrid delivery.

Recommended Preparation: Successful completion of ENGL105 or equivalent multiple measures placement.

Transfers to CSU only

17 Hours Lecture, 102 Hours Lab, 34 Hours Out of Class, 153 Total Student Learning Hours
Scheduled: Spring and Fall

II. Coding Information

Repeatability: Unlimited Per AWS Qualification Requirements

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 set-up and perform a minimum of ten straight line cuts, seven inches long on 3/8" steel using OAC equipment.
2. Safely setup and perform gouging, cutting, and piercing on 3/8" ferrous metals using CACA equipment.
3. Apply E6010-1/8" and E7018-1/8" electrodes on 3/8" plate and 6" schedule 80 pipe joint designs, using SMAW equipment, which meets or exceeds the AWS D1.1 Structural Welding Code standards.
4. Complete a 3/8" - 1G plate and a 6" schedule 80 - 1G pipe qualification, using SMAW, which meets or exceeds the AWS D1.1 Structural Welding Code Standards.

B. Course Objectives

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

1. Demonstrate safe handling practices and use of: OAC, CACA and SMAW.
2. Demonstrate manipulative skills utilizing the SMAW process, on specified joint designs, which meet recognized industry standards.
3. Set-up and operate OAC and CACA equipment.

4. Demonstrate manipulative skills to weld pipe with the SMAW process in the horizontal rolled (1G) position.
5. Set-up and complete AWS qualifications on plate and pipe.

IV. Course Content

- A. Health & Safety Precautions**
 1. Safe working conditions
 2. Cylinders: Precautions and safe practices
 3. Shielded metal arc equipment
- B. Oxy-acetylene Cutting Torches, Equipment and Accessories**
 1. Cutting torches
 2. Cutting tips
 3. Oxy-fuel cutting procedures
- C. Air Carbon Arc Cutting**
 1. Air carbon arc cutting equipping and setup
 2. Air carbon arc cutting procedures
- D. Shielded Metal Arc Welding E6010 - 1/8" and E7018 - 1/8"**

Current settings

V. Assignments

A. Appropriate Readings

Standard college level 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 specific welding processes to recognized joint designs which meet industry standards. Mixed format exams will be administered throughout the course

C. Expected Outside Assignments

May include:

1. Reading and answering questions at end of chapters as assigned by the instructor
2. Pertinent supplementary literature
3. Field trips to construction sites
4. Take-home essays

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of welding concepts and practices by applying technical information to multiple manipulative performance objectives which meet critical industry specifications.

VI. Methods of Evaluation

Traditional Classroom Evaluation

Methods for determining student's grades will be accomplished by the following:

1. Performance on mixed format exams
2. Completion of required manipulative performance objectives
3. Participation in classroom learning activities

Hybrid Evaluation

Students will be expected to complete all quizzes, exams, online assignments and activities equivalent to in class assignments and activities for the online portion of the course. Electronic communication, both synchronous and asynchronous (chat/forum) will be evaluated for participation and to maintain effective communication between instructor and students.

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

Traditional Classroom Delivery

Lecture/Demonstration/Laboratory

Hybrid Delivery

A combination of traditional classroom and online instruction will be utilized. Each semester a minimum of 102 hours will be taught face-to face by the instructor and the remaining hours will be instructed online through the technology platform adopted by the District. Traditional class instruction will consist of exercises/assignments, lectures, visual aids, and practice exercises. Online delivery will consist of exercises/assignments, lecture posts, discussions, adding extra resources and other media sources as appropriate.

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

Heavy cotton workpants, in good repair

~~Ear plugs, pliers w/cutters, and welding hat.~~

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: 02/15/2022