

# Lassen Community College Course Outline

## WT 23 Power Plant & Field Pipe Welding IV

3.0 Units

### I. Catalog Description

This class deals with pipe welding in the 2G (vertical axis fixed), 5G (horizontal axis fixed), and 6G (45° axis fixed) positions using gas tungsten arc welding (GTAW) for the root pass and shielded metal arc welding (SMAW) for the fill and cover passes.

American Welding Society (AWS) pipe qualifications will be prepared and completed in the 2G, 5G and 6G positions. Repeatable as required for qualifications by the American Welding Society 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 ENGL 105 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. Complete five (5) 6G, five (5) 5G and five (5) 2G pipe joints, using the GTAW and SMAW processes on 6" schedule 80 pipe.
2. Complete a 2G, 5G, and 6G pipe qualification, using the GTAW and SMAW processes, 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 the manipulative skills needed to make successful pipe welds utilizing the GTAW and SMAW processes that will comply with industry standards.
2. Prepare and complete AWS pipe qualifications in the 2G, 5G and 6G positions.

### IV. Course Content

#### A. Safety Precautions

1. Electrical shock
2. Radiation hazards
3. Compressed gases
4. Air contamination

- B. Vertical Fixed Position (2G)**
  - 1. Tack welds
  - 2. Torch position
  - 3. Filler rod application
  - 4. Root pass - GTAW
  - 5. Fill and cover passes - E7018
- C. Horizontal Fixed Position (5G)**
  - 1. Tack welds
  - 2. Torch position
  - 3. Filler rod application
  - 4. Root pass - GTAW
  - 5. Fill and cover passes - E7018
- D. 45° Fixed Position (6G)**
  - 1. Tack welds
  - 2. Torch position
  - 3. Filler rod application
  - 4. Root pass - GTAW
  - 5. Fill and cover passes - E7018
- E. 2G Pipe AWS Qualification**
- F. 5G Pipe AWS Qualification**
- G. 6G Pipe AWS Qualification**

## **V. Assignments**

### **A. Appropriate Readings**

Text: "Welding Principles and 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 skill & understanding of course content by demonstrating application of specific welding processes to recognized joint designs which meet industry standards. Mixed format exams will also 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 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 student.

## **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, 8<sup>th</sup> 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

## **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: 02/15/2022