



Course Outline

2026-2027 Catalog

WLD 30 - Heavy Plate Welding

Catalog Description

Transfer Status: CSU

Prerequisite: WLD 50 and NCCER Level II Welding Qualification

Unit(s): 3.00

Lecture: 17.00 Contact hours/34.00 Out of class hours/51.00 Total hours/1.00 Unit(s)

Lab: 102.00 Contact hours/0.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

Total: 119.00 Contact hours/34.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: This course includes the shielded metal arc welding (SMAW) processes and the flux cored arc welding (FCAW) Process, in the flat, horizontal, vertical and overhead positions on heavy plate (3/4" to 3" thick). It will also include safety procedures, electrode identification, joint fit-up and alignment, base metal preparation, weld quality, and beads, with focus on theory and practice.

Objectives

Upon successful completion of this course, the student should be able to:

1. Safely operate SMAW units to weld in the flat, horizontal, vertical, and overhead positions.
2. Safely operate FCAW units to weld in the flat, horizontal, vertical, and overhead positions.
3. Safely operate SMAW and FCAW units demonstrating the skill needed to weld heavy plate.
4. Demonstrate proper base metal and bead qualification procedures per requirements set by the American Welding Society (AWS).
5. Identify and use the AWS classification of electrodes in selecting the correct electrode for the job.
6. Master the skills needed to pass certification on heavy plate as per the requirements set by the AWS.

Course Content

Topic Titles / Suggested Time Topic

Lecture

<u>Topics</u>	<u>Lec Hrs</u>
Introduction and safety	2.00
Joint preparation of heavy plate for the SMAW process	1.00
Preheating of heavy plate weldments	2.00
Distortion control	1.00
Application of filler material	2.00
Interpass heat and control	1.00
Interpass testing techniques	1.00
Joint preparation of heavy plate for the FCAW process	1.00
Cover passes for heavy weldments	1.00
Repair of weld failures	1.00
Weld defects and causes	1.00
D 1.1 AWS structural code	1.00
Weld testing procedures of heavy plate	1.00
Visual inspection	1.00
Total Hours:	
17.00	

Lab

<u>Topics</u>	<u>Lab Hrs</u>
Introduction and safety	2.00
Joint preparation of heavy plate for the SMAW process	6.00
Preheating of heavy plate weldments	12.00
Distortion control	6.00
Application of filler material	12.00
Interpass heat and control	8.00
Interpass testing techniques	8.00
Joint preparation of heavy plate for the FCAW process	10.00
Cover passes for heavy weldments	6.00
Repair of weld failures	7.00

Topics	Lab Hrs
Weld defects and causes	7.00
D 1.1 AWS structural code	6.00
Weld testing procedures of heavy plate	6.00
Visual inspection	6.00
Total Hours: 102.00	

Methods of Instruction

- A. Discussion
- B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- C. Instructor Demonstrations
- D. Laboratory Experiments
- E. Lecture

Methods of Evaluation

- A. Exams/Tests
- B. Homework
- C. Lab Projects
- D. Lab Final/Mid-term Project

Examples of Assignments

Reading Assignments

1. Read module 2 and be prepared to discuss in class.
2. Read assigned AWS journal article and be prepared to discuss in class.

Writing Assignments

1. Write a 500-word essay explaining how the assigned AWS article can be implemented into the process and how it relates to the class.
2. Describe an order of operations for welding a single vee open groove (SVOG) with backing with the FCAW process.

Out-of-Class Assignments

1. Research the proper process for setting up FCAW equipment using manufactures publication.
2. Answer review questions for module 6.

Recommended Materials of Instruction

National Center for Construction Education and Research (NCCER). (2025). Welding Level Two. *Pearson, 6th*. 9780138216160.

Other Learning Materials

All tools listed in the Full-Time Welding Program Semester 2 tool list on the Butte College Welding Technology website.

Minimum Qualifications

Welding

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