Course Outline

2026-2027 Catalog

WLD 20 - Beginning Welding

Catalog Description

Transfer Status: CSU

Unit(s): 4.00

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

Lab: 153.00 Contact hours/0.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Total: 170.00 Contact hours/34.00 Out of class hours/204.00 Total hours/4.00 Unit(s)

Course Description: This course includes oxyacetylene welding (OAW), oxyacetylene cutting (OFC-A) and shielded metal arc welding (SMAW) processes, in the flat and horizontal positions on various joint details. It will also include safety procedures, electrode identification, joint fit-up and alignment, base metal preparation, weld quality, beads and fillet welds, with focus on theory and practice. All welds will meet the American Welding Society (AWS) qualification standards.

Objectives

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

1. Safely operate the OAW unit for welding and cutting in the flat position.
2. Safely operate the SMAW units to weld in the flat and horizontal positions.
3. Safely operate the SMAW units on various joint fit-ups and alignment.
4. Demonstrate proper welding process of groove welds (with backing and open) per qualification procedures set by the AWS.
5. Demonstrate proper base metal, beads and fillet welds qualification procedures per requirements set by the AWS.
6. Identify and use the AWS classification of electrodes in selecting the correct electrode for the job.

Course Content

Topic Titles / Suggested Time Topic

Lecture

Topics	Lec Hrs
Introduction and safety	2.00
OAW and cutting equipment, setup and operation	2.00
Oxyfuel gasses and filler metal	1.00
Weld quality	1.00
OAW	1.00
Flame cutting	1.00
Base metal preparation	1.50
SMAW equipment and setup	2.00
SMAW electrodes	1.00
Joint fit-up and alignment	1.00
SMAW beads and fillet welds	1.50
SMAW groove welds with backing	1.00
SMAW open V-grove welds	1.00
Total Hours:	**17.00**

Lab

Topics	Lab Hrs
Introduction and safety	1.00
OAW and cutting equipment, setup and operation	6.00
Oxyfuel gasses and filler metal	2.00
Weld quality	6.00
OAW	20.00
Flame cutting	10.00
Base metal preparation	10.00
SMAW equipment and setup	12.00
SMAW electrodes	8.00
Joint fit-up and alignment	8.00
SMAW beads and fillet welds	30.00

Topics	Lab Hrs
SMAW groove welds with backing	15.00
SMAW open V-grove welds	25.00
Total Hours:	**153.00**

Methods of Instruction

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

Methods of Evaluation

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

Examples of Assignments

Reading Assignments

1. Read module 1 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 1-2 page 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 SMAW equipment setup in a 1-2 page paper.

Out-of-Class Assignments

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

Recommended Materials of Instruction

National Center for Construction Education and Research (NCCER). (2023). Welding Level One. *Pearson, 6th.* 9780137924530.

Other Learning Materials

All tools and PPE listed for WLD 20 on the Butte College Welding Technology website

Minimum Qualifications

Welding

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