

**WLD 32 - Integrated Welding Applications****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: In this course, students will learn proper use of manual / CNC fabrication equipment. Perform layout, fitting, and welding of fabrication projects. Gas metal arc welding (GMAW), shielded metal arc welding (SMAW), and flux cored arc welding (FCAW) processes will be utilized. Shop fabrication and field erection are simulated. Working from fabrication drawings will be emphasized.

Objectives

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

1. Demonstrate proficient use of manual / CNC equipment and tools related to fabrication and various welding applications.
2. Implement welding skills thus far developed on coupons and expand these skills to actual simulated application of the welding industry.
3. Describe methods of integrated welding applications used in the welding industry.
4. Apply the skills and practices of integrated welding techniques for various fabrication activities.
5. Utilize fabrication drawings to fabricate welding projects.

Course Content**Topic Titles / Suggested Time Topic****Lecture**

<u>Topics</u>	<u>Lec Hrs</u>
Introduction and safety	2.00
Welding skills (preassessment of students)	1.00
Weldment and joint design	2.00
Applications and equipment orientation	1.00
Project orientation	1.00
Blueprints of simulations	1.00
Metal movement control	2.00
Work points - methods of alignment	2.00
Limited access welding techniques	1.00
Fabrication and erection techniques	2.00
Finishing techniques	2.00

Total Hours: 17.00**Lab**

<u>Topics</u>	<u>Lab Hrs</u>
Introduction and safety	2.00
Welding skills (preassessment of students)	5.00
Weldment and joint design	12.00
Applications and equipment orientation	10.00
Project orientation	14.00
Blueprints of simulations	10.00
Metal movement control	10.00
Work points - methods of alignment	10.00
Limited access welding techniques	6.00
Fabrication and erection techniques	11.00
Finishing techniques	12.00

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 4 and be prepared to discuss in class.
2. Read assigned American Welding Society (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 the order of operations for the fabrication, erection, and welding for a simulation assigned in class.

Out-of-Class Assignments

1. Research finishing techniques used within industry and write a detailed explanation of what the advantages and disadvantages of the techniques are.
2. Answer review questions for module 1.

Recommended Materials of Instruction

Bennett, A., & Siy, L. (2015). *Blueprint Reading for Welders*. Cengage, 9th. 9781305098268.

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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