

BUTTE COLLEGE

COURSE OUTLINE

I. CATALOG DESCRIPTION

WLD 32 - Integrated Welding Applications

3 Unit(s)

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 40, WLD 50, WLD 154 and NCCER Level II Welding Qualification

Co-requisite(s): WLD 28, WLD 30, WLD 34, WLD 36, WLD 42, WLD 56, WLD 156

Recommended Prep: NONE

Transfer Status: CSU

17 hours Lecture

102 hours Lab

In this course students will perform layout, fitting, welding, inspection of structural weldments, piping, tank, and low pressure vessel simulation. Shielded metal arc welding (SMAW), gas tungsten arc welding (GTAW), and flux cored arc welding (FCAW) processes are emphasized. Shop fabrication and field erection are simulated. Limited access welding is encountered.

II. OBJECTIVES

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

- A. Describe methods of integrated welding applications used in the welding industry.
- B. Apply the skills and practices of integrated welding techniques for various fabrication activities.
- C. Demonstrate proficient use of equipment and tools related to fabrication and various welding applications.
- D. Implement welding skills thus far developed on coupons and expand these skills to actual simulated application of the welding industry.

III. COURSE CONTENT

A. Unit Titles/Suggested Time Schedule

Lecture	
<u>Topics</u>	<u>Hours</u>
1. Introduction and safety	2.00
2. Welding skills (preassessment of students)	1.00
3. Weldment and joint design	2.00
4. Applications and equipment orientation	1.00
5. Project orientation	1.00
6. Blueprints of simulations	1.00
7. Metal movement control	2.00
8. Work points - methods of alignment	2.00
9. Limited access welding techniques	1.00
10. Fabrication and erection techniques	2.00
11. Finishing techniques	2.00
Total Hours	17.00

Lab

<u>Topics</u>	<u>Hours</u>
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1.	Introduction and safety	2.00
2.	Welding skills (preassessment of students)	5.00
3.	Weldment and joint design	12.00
4.	Applications and equipment orientation	10.00
5.	Project orientation	14.00
6.	Blueprints of simulations	10.00
7.	Metal movement control	10.00
8.	Work points - methods of alignment	10.00
9.	Limited access welding techniques	6.00
10.	Fabrication and erection techniques	11.00
11.	Finishing techniques	12.00
	Total Hours	102.00

IV. **METHODS OF INSTRUCTION**

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

V. **METHODS OF EVALUATION**

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

VI. **EXAMPLES OF ASSIGNMENTS**

- A. 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.
- B. Writing Assignments
 - 1. Write an 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.
- C. 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.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

- A. National Center for Construction Education and Research (NCCER) . Welding Level Three. 4 Edition. Pearson Education INC, 2010.
- B. National Center for Construction Education and Research (NCCER). Welding Level Two. 4th Edition. Pearson Education INC, 2010.
- C. A.E. Bennett and Louis J. Siy. Blueprint Reading for Welders. 8 Edition. Thomson, Delmar Learning, 2008.
- D. Robert L. O'Con & Richard H. Carr. Metal Fabrication A Practical Guide. 3 Edition. Fabricators & Manufacturers Association, 2010.

Materials Other Than Textbooks:

- A. All tools listed in the Butte College Welding Technology Program Guide.

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