BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

WLD 40 - Welding Equipment Maintenance and Service **2 Unit(s)**

Prerequisite(s): WLD 21 and NCCER Level I Welding Qualification
Co-requisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 154
Recommended Prep: Reading Level III; English Level II; Math Level II
Transfer Status: CSU
17 hours Lecture
51 hours Lab

This course is a study of the theory, application and practices for welding equipment. This will include the maintenance and service skills for the equipment used in the welding industry.

II. **OBJECTIVES**

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

A. Demonstrate electrical theory used in welding by setting up and operating various types of power sources.
B. Service and maintain welding equipment by hands on exercises.
C. Demonstrate a working knowledge of welding equipment and machines.
D. Make minor repairs and troubleshoot welding equipment through hands on lab assignments.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Introduction and safety	2.00
2. Welding processes	1.00
3. Allied processes	1.00
4. Operating principles	1.00
5. Power sources	1.00
6. Constant current machines	1.00
7. Constant voltage machines	1.00
8. Power supply rating	1.00
9. Cables, fasteners, electrode holders and ground clamps	1.00
10. Wire feed units	1.00
11. Operator equipment	1.00
12. Gas welding equipment	2.00
13. Gas tungsten arc welding (GTAW) torches and accessories	1.00
14. Portable equipment (arc welders)	1.00
15. Equipment sales	1.00
Total Hours	17.00

Lab

Topics	Hours
1. Introduction and safety	3.00

2.	Welding processes	3.00
3.	Allied processes	3.00
4.	Operating principles	3.00
5.	Power sources	6.00
6.	Constant current machines	6.00
7.	Constant voltage machines	3.00
8.	Power supply rating	3.00
9.	Cables, fasteners, electrode holders and ground clamps	2.00
10.	Wire feed units	2.00
11.	Operator equipment	2.00
12.	Gas welding equipment	6.00
13.	GTAW torches and accessories	3.00
14.	Portable equipment (arc welders)	3.00
15.	Equipment sales	3.00
Total Hours		51.00

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. Projects
D. Homework
E. Lab Projects
F. Lab Mid-term Project
G. Lab Final Project

VI. **EXAMPLES OF ASSIGNMENTS**

A. Reading Assignments
    1. Read assigned American Welding Society (AWS) journal article and be prepared to discuss in class.
    2. Read assigned equipment manual and be prepared to discuss in class.
B. Writing Assignments
    1. Write an essay explaining how the assigned equipment manuals can be implemented into the process and how it relates to the class.
    2. Describe an order of operations for equipment setup.
C. Out-of-Class Assignments
    1. Answer review questions for chapter 2.
    2. Research the proper process for setting up equipment using manufactures publication.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. National Center for Construction Education and Research (NCCER). Welding Level Two. 4th Edition. Pearson Education INC, 2010.
B. Michael J. Boss. Welding Equipment Maintenance and Service Lab Manual. Butte College Printing, 1996.
C. National Center for Construction Education and Research (NCCER). Welding Level One. 4th Edition. Pearson Education INC, 2010.

Materials Other Than Textbooks:

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

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