BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

WLD 20 - Beginning Welding **4 Unit(s)**

Prerequisite(s): NONE
Recommended Prep: Reading Level III; English Level II; Math Level II
Transfer Status: CSU
17 hours Lecture
153 hours Lab

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.

II. **OBJECTIVES**

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

A. Operate the OAW unit for welding and cutting in the flat position, in a safe manner.
B. Operate the SMAW units to weld in the flat and horizontal positions.
C. Operate the SMAW units on various joint fit-ups and alignment.
D. Demonstrate proper welding process of groove welds (with backing and open) per qualification procedures set by the AWS.
E. Demonstrate proper base metal, beads and fillet welds qualification procedures per requirements set by the AWS.
F. Identify and use the AWS classification of electrodes in selecting the correct electrode for the job.

III. **COURSE CONTENT**

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

Lecture

Topics	Hours
1. Introduction and safety	2.00
2. OAW and cutting equipment, setup and operation	2.00
3. Oxyfuel gasses and filler metal	1.00
4. Weld quality	1.00
5. OAW	1.00
6. Flame cutting	1.00
7. Base metal preparation	1.50
8. SMAW equipment and setup	2.00
9. SMAW electrodes	1.00
10. Joint fit-up and alignment	1.00
11. SMAW beads and fillet welds	1.50
12. SMAW groove welds with backing	1.00
13. SMAW open V-grove welds	1.00
Total Hours	17.00

Lab

Topics		Hours
1.	Introduction and safety	1.00
2.	OAW and cutting equipment, setup and operation	6.00
3.	Oxyfuel gasses and filler metal	2.00
4.	Weld quality	6.00
5.	OAW	20.00
6.	Flame cutting	10.00
7.	Base metal preparation	10.00
8.	SMAW equipment and setup	12.00
9.	SMAW electrodes	8.00
10.	Joint fit-up and alignment	8.00
11.	SMAW beads and fillet welds	30.00
12.	SMAW groove welds with backing	15.00
13.	SMAW open V-grove welds	25.00
Total Hours		153.00

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 Final Project
F. Lab Mid-term Project

VI. EXAMPLES OF ASSIGNMENTS

A. 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.
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 an order of operations for SMAW equipment setup.
C. Out-of-Class Assignments
    1. Answer review questions for module 2.
    2. Research the proper process for setting up OAW equipment using manufactures

publication.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. National Center for Construction Education and Research (NCCER). Welding Level One. 4th Edition. Pearson Education INC, 2010.

Materials Other Than Textbooks:

A. Safety equipment: safety glasses, welders hat, leather gloves, leather jacket, leather chaps, leather shoes, and proper protective clothing (no tennis shoes, tank tops, or shorts).
B. Tools: chipping hammer, wire brush, tip cleaners, 10 in. straight jaw locking pliers, combination square, silver pencil and soap stone.

Created/Revised by: Donald Robinson
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