BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

WLD 30 - Heavy Plate Welding **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 32, WLD 34, WLD 36, WLD 42, WLD 56, WLD 156
Recommended Prep: Reading Level III; English Level II; Math Level II
Transfer Status: CSU
17 hours Lecture
102 hours Lab

This course includes the shielded metal arc welding (SMAW) processes and the flux cored arc welding (FCAW) Process, in the flat, horizontal, vertical and overhead positions on heavy plate (3/4" to 3" thick). It will also include safety procedures, electrode identification, joint fit-up and alignment, base metal preparation, weld quality, and beads, with focus on theory and practice.

II. **OBJECTIVES**

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

A. Operate the SMAW units to weld in the flat, horizontal, vertical, and overhead positions.
B. Operate the FCAW units to weld in the flat, horizontal, vertical, and overhead positions.
C. Operate the SMAW and FCAW units demonstrating the skill needed to weld heavy plate.
D. Demonstrate proper base metal and bead qualification procedures per requirements set by the American Welding Society (AWS).
E. Identify and use the AWS classification of electrodes in selecting the correct electrode for the job.
F. Master the skills needed to pass certification on heavy plate as per the requirements set by the AWS.

III. **COURSE CONTENT**

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

Lecture

Topics	Hours
1. Introduction and safety	2.00
2. Joint preparation of heavy plate for the SMAW process	1.00
3. Preheating of heavy plate weldments	2.00
4. Distortion control	1.00
5. Application of filler material	2.00
6. Interpass heat and control	1.00
7. Interpass testing techniques	1.00
8. Joint preparation of heavy plate for the FCAW process	1.00
9. Cover passes for heavy weldments	1.00
10. Repair of weld failures	1.00
11. Weld defects and causes	1.00
12. D 1.1 AWS structural code	1.00

13. Weld testing procedures of heavy plate	1.00
14. Visual inspection	1.00
Total Hours	17.00

Lab

Topics	Hours
1. Introduction and safety	2.00
2. Joint preparation of heavy plate for the SMAW process	6.00
3. Preheating of heavy plate weldments	12.00
4. Distortion control	6.00
5. Application of filler material	12.00
6. Interpass heat and control	8.00
7. Interpass testing techniques	8.00
8. Joint preparation of heavy plate for the FCAW process	10.00
9. Cover passes for heavy weldments	6.00
10. Repair of weld failures	7.00
11. Weld defects and causes	7.00
12. D 1.1 AWS structural code	6.00
13. Weld testing procedures of heavy plate	6.00
14. Visual inspection	6.00
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 2 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 welding a single vee open groove (SVOG) with backing with the FCAW process.

C. Out-of-Class Assignments
1. Research the proper process for setting up FCAW equipment using manufactures publication.
2. Answer review questions for module 6.

VII. RECOMMENDED MATERIALS OF INSTRUCTION

Textbooks:

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

B. National Center for Construction Education and Research (NCCER). Welding Level Two. 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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