BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

WLD 50 - Pipe Fitting and Cutting **2 Unit(s)**

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

Recommended Prep: Reading Level III; English Level II; Math Level II

Transfer Status: CSU

17 hours Lecture

51 hours Lab

This course assists students in pipe fitting, measurements, patterns, marking and layout tools used in the pipe welding industry. Techniques of fitting and cutting various pipe joint designs will be practiced.

II. **OBJECTIVES**

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

A. Correctly utilize the tools in pipe layout and fitting correctly.
B. Layout various pipe joint designs.
C. Cut and prepare to weld various pipe joint designs.
D. Lay out and cut eccentric and concentric reducers.

III. **COURSE CONTENT**

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

Lecture

Topics	Hours
1. Introduction and safety	2.00
2. Definitions (terms used in the pipe trade)	0.50
3. Basic trade math	0.50
4. Patterns	1.00
a. methods of laying out angles(formula) b. pre-made patterns	
5. Measurements	1.00
6. Reducers	1.00
7. Layout drawings	0.50
8. Tools	0.50
9. Pipe and fitting layouts	1.00
10. Cutting	0.50
11. Offsets	0.50
12. Trigonometry tables	1.00
13. Pipe sizes	0.50
14. Pipe bends	0.50
15. Miter turn fittings	0.50
16. Brackets	0.50

17. Linear expansion of piping	1.00
18. Conversion factors, table and graphs	1.00
19. Properties of pipe	1.00
20. Weight and volume	1.00
21. Cutting torch	1.00
Total Hours	17.00

Lab

Topics	Hours
1. Basic trade math	2.00
2. Patterns	4.00
a. methods of laying out angles(formula) b. pre-made patterns	
3. Measurements	3.00
4. Reducers	3.00
5. Layout drawings	5.00
6. Tools	2.00
7. Pipe and fitting layouts	5.00
8. Cutting	2.00
9. Offsets	2.00
10. Trigonometry tables	2.00
11. Pipe sizes	2.00
12. Pipe bends	2.00
13. Miter turn fittings	2.00
14. Brackets	2.00
15. Linear expansion of piping	3.00
16. Conversion factors, table and graphs	3.00
17. Properties of pipe	2.00
18. Weight and volume	2.00
19. Cutting torch	3.00
Total Hours	51.00

IV. **METHODS OF INSTRUCTION**

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

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 the layout procedures used for a three weld ninety 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 United Association article can be implemented into the process and how it relates to the class.
2. Describe an order of operations for laying out a branch assembly.

C. Out-of-Class Assignments
1. Research the proper process for setting up OFC equipment using manufactures publication.
2. Draw a template for an eccentric pipe reducer.

VII. RECOMMENDED MATERIALS OF INSTRUCTION

Textbooks:

A. Thomas W. Frankland. Pipe Template Layout. Most Current Edition. -, 1967.
B. Frankland, T. The Pipe Fitter's and Pipe Welder's Handbook. GLENCOE - McGraw-Hill, 1984.
C. Turns, Tube Inc. Pipe Fitter's Manual. Turns, Tube Inc, 1989.
D. National Center for Construction Education and Research (NCCER). Welding Level Two. 4th Edition. Pearson Education INC, 2010.
E. 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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