

BUTTE COLLEGE

COURSE OUTLINE

I. CATALOG DESCRIPTION

WLD 158 - Shop Practices for Pipe and Tube Welders

0.5 - 1 Unit(s)

Prerequisite(s): WLD 22, WLD 24, WLD 25, WLD 26, WLD 28, WLD 30, WLD 32, WLD 34, WLD 36, WLD 40, WLD 42, WLD 50, WLD 56, WLD 154, WLD 156, WLD 160 and NCCER Level III Welding Qualification

Co-requisite(s): WLD 55

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

Transfer Status: NT

25.5 - 51 hours Lab

This is a supervised lab experience for pipe and tube welders. Students will practice skills in shielded metal arc welding (SMAW), gas metal arc welding (GMAW), flux core arc welding (FCAW), gas tungsten arc welding (GTAW), oxyacetylene welding (OAW), and oxy-fuel cutting (OFC) processes on several piping systems. Performance standards will meet the American Petroleum Institute (API) 1104 and American Society of Mechanical Engineers (ASME) Section IX. Students may enroll in this course up to 1 unit(s) to complete the entire curriculum of the course. Pass/No Pass Only. Open Entry/Open Exit.

II. OBJECTIVES

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

- A. Follow proper safety protocols when operating welding and cutting equipment.
- B. Cut, prepare, and weld various pipe joint designs.
- C. Follow procedures using the OAW, SMAW, GMAW, FCAW, and GTAW welding processes meeting API and ASME specifications for qualification.

III. COURSE CONTENT

A. Unit Titles/Suggested Time Schedule

Lab	
<u>Topics</u>	<u>Hours</u>
1. Introduction and safety	1.50
2. Cutting and welding large diameter pipe	4.00 - 8.25
3. Welding the root, hot pass, fill passes, and cover passes	4.00 - 8.25
4. Welding thin wall pipe with the OAW process	4.00 - 8.25
5. Welding thin wall pipe with the SMAW process	4.00 - 8.25
6. Welding in the 5G position	4.00 - 8.25
7. Welding a branch tee and a 5G butt joint detail	4.00 - 8.25
Total Hours	25.5 - 51

IV. METHODS OF INSTRUCTION

- A. Demonstrations
- B. Laboratory Experiments

V. METHODS OF EVALUATION

- A. Class participation

B. Practical Evaluations

VI. **EXAMPLES OF ASSIGNMENTS**

A. Reading Assignments

1. Read the manual for the OAW equipment and describe the steps for proper setup to the instructor.
2. Read the American Society of Mechanical Engineers (ASME) section IX code book for proper GTAW procedures and discuss with instructor.

B. Writing Assignments

1. Maintain a written log of your daily welding activities.
2. Write a summary of the American Petroleum Institute (API) 1104 requirements for certifications.

C. Out-of-Class Assignments

1. Not applicable

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Materials Other Than Textbooks:

- A. All tools listed in the Butte College Welding Technology Program Guide.
- B. A full list of tools can be found at www.butte.edu/departments/careertech/welding/tools.html

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