BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

WLD 162 - Pipe and Tube Welding Certification Practices **1 - 2 Unit(s)**

Prerequisite(s): WLD 55, WLD 158
Recommended Prep: Reading Level III; English Level II; Math Level II
Transfer Status: NT
51 - 102 hours Lab

This is a supervised lab experience to help prepare students to meet the required standard for qualification papers in welding codes using American Petroleum Institute (API) 1104 and American Society of Mechanical Engineers (ASME) Section IX. 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 in preparation for weld performance tests with certified welding inspectors (CWI) or contractors. Students may enroll in this course up to 2 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. Perform code level welds on open groove pipe joints.
D. Demonstrate destructive testing of welds in accordance with the API and ASME codes.
E. Follow procedures using the SMAW, GMAW, FCAW, GTAW, and OAW welding processes meeting API and ASME specifications for qualification.

III. **COURSE CONTENT**

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

Topics	Lab Hours
1. Introduction and safety	1.50
2. Cutting and welding large diameter pipe	7.00 - 14.00
3. Welding the root, hot pass, fill passes, and cover passes	7.00 - 14.00
4. Welding standard wall pipe to API and ASME codes	7.00 - 14.00
5. Welding in the 2G position to API and ASME codes	7.00 - 14.00
6. Welding in the 5G position to API and ASME codes	7.00 - 14.00
7. Welding in the 6G and complicated 6GR position to API and ASME codes	7.00 - 14.00
8. Destructive testing methods for API and ASME codes	7.50 - 16.50
Total Hours	51 - 102

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 GTAW equipment and describe the steps for proper setup to the instructor.
   2. Read the American Petroleum Institute (API) 1104 code book for proper SMAW 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 Society of Mechanical Engineers (ASME) Section IX requirements for certification.

C. Out-of-Class Assignments
   1. Not applicable

VII. RECOMMENDED MATERIALS OF INSTRUCTION

Materials Other Than Textbooks:

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

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