



Course Outline

2026-2027 Catalog

WLD 162 - Pipe and Tube Welding Certification Practices

Catalog Description

Transfer Status: NT

Prerequisite: WLD 55, WLD 158

Unit(s): 1.00-2.00

Lab: 51.00-102.00 Contact hours/0.00-0.00 Out of class hours/51.00-102.00 Total hours/1.00-2.00 Unit(s)

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Course Description: 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. This course may be repeated to a maximum of 2.00 units to complete the entire curriculum of the course. Pass/No Pass only. Open Entry/Open Exit.

Objectives

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

1. Follow proper safety protocols when operating welding and cutting equipment.
2. Cut, prepare, and weld various pipe joint designs.
3. Perform code level welds on open groove pipe joints.
4. Demonstrate destructive testing of welds in accordance with the API and ASME codes.
5. Follow procedures using the SMAW, GMAW, FCAW, GTAW, and OAW welding processes meeting API and ASME specifications for qualification.

Course Content

Topic Titles / Suggested Time Topic	
	<u>Lab</u>
<u>Topics</u>	<u>Lab Hrs</u>
Introduction and safety	1.50
Cutting and welding large diameter pipe	7.00
Welding the root, hot pass, fill passes, and cover passes	7.00
Welding standard wall pipe to API and ASME codes	7.00
Welding in the 2G position to API and ASME codes	7.00
Welding in the 5G position to API and ASME codes	7.00
Welding in the 6G and complicated 6GR position to API and ASME codes	7.00
Destructive testing methods for API and ASME codes	7.50
Total Hours: 51.00	

Methods of Instruction

- A. Demonstrations
- B. Laboratory Experiments
- C. Welding

Methods of Evaluation

- A. Class participation
- B. Practical Evaluations

Examples of Assignments

Reading Assignments

1. Read the American Petroleum Institute (API) 1104 code book for proper SMAW procedures and discuss with instructor.
2. Read the manual for the GTAW equipment and describe the steps for proper setup to the instructor.

Writing Assignments

1. Write a summary of the American Society of Mechanical Engineers (ASME) Section IX requirements for certification.
2. Maintain a written log of your daily welding activities.

Out-of-Class Assignments

1. Not applicable

Recommended Materials of Instruction

Other Learning Materials

All tools listed in the Butte College Welding Technology Program Guide.

A full list of tools can be found at www.butte.edu/departments/careertech/welding/tools.html

Minimum Qualifications

Welding

Created/Revised by: Robinson, Donald

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