



Course Outline

2026-2027 Catalog

WLD 42 - Introduction to Welding Inspection

Catalog Description

Transfer Status: CSU

Prerequisite: WLD 50 and NCCER Level II Welding Qualification

Unit(s): 2.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

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Course Description: This course instructs on the qualifications and knowledge requirements of a Certified Welding Inspector (CWI). Methods of testing, various procedures, and techniques of inspection. familiarize students with the basic concepts of destructive and nondestructive evaluation processes. Emphasis of record keeping methods used by the American Welding Society (AWS), American Society of Mechanical Engineers (ASME), American Petroleum Institute (API), and American National Standards Institute (ANSI).

Objectives

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

1. Apply testing symbols to weldments according to various welding standards.
2. Apply codes to weldments that are currently used in the welding industry.
3. Describe the role of a CWI in fabrication and the qualification of a welder.

Course Content

Topic Titles / Suggested Time Topic	
	<u>Lecture</u>
<u>Topics</u>	<u>Lec Hrs</u>
Introduction and safety	1.00
Application and scope	0.50
Standard welding terms and definitions	1.50
Weld joint geometry and welding/inspection symbols	2.50
Ethical and essential requirements for a CWI	1.50
Welding inspection operations	1.50
Quality assurance and quality control	1.00
Welding metallurgy	3.00
Preheating and post-weld heat treating	1.00
Weld and weld-related discontinuities	3.00
Welding procedure specifications	2.00
Qualification of welders and welding operations	2.00
Destructive testing of welds and base materials	2.50
Proof and leak tests	0.50
Nondestructive testing	3.00
Qualification of nondestructive testing personnel	1.00
Codes and standards	3.00
Metric practice	1.50
CWI personnel certification and recertification	0.50
Welding inspection safety considerations	1.00
Material properties	0.50
Total Hours: 34.00	

Methods of Instruction

- A. Discussion
- B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- C. Instructor Demonstrations
- D. Lecture

Methods of Evaluation

- A. Exams/Tests

- B. Projects
- C. Homework
- D. Written Assignments

Examples of Assignments

Reading Assignments

- 1. Read chapter 10 on Qualificaton of Welding Procedure Specifications and be prepared to discuss in class.
- 2. Read assigned AWS journal article and be prepared to discuss in class.

Writing Assignments

- 1. Write a 500-word essay explaining how the assigned AWS article can be implemented into an inspection and how it relates to the class.
- 2. Review the acceptance criteria from various welding codes and compare the differences between them and explain why these differences are acceptable.

Out-of-Class Assignments

- 1. Research the proper process to qualify a welding procedure to a determined code, and list the limitations and essential variables that have to be adhered to.
- 2. Define assigned weld defect vocabulary words and explain how to prevent these defects from occurring.

Recommended Materials of Instruction

AWS Committee on Methods of Inspection. (2015). Welding Inspection Handbook. *American Welding Society, 4th*. 9780871718556.
National Center for Construction Education and Research (NCCER). (205). Welding Level Two. *Pearson, 5th*. 9780138216160.

Other Learning Materials

All tools listed in the Full-Time Welding Program Semester 2 tool list on the Butte College Welding Technology website.

Minimum Qualifications

Welding

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Date: 04/20/2026