WELD A210: WELDING INSPECTION AND TESTING

Item	Value
Curriculum Committee Approval Date	11/15/2017
Top Code	095650 - Welding Technology
Units	4 Total Units
Hours	108 Total Hours (Lecture Hours 54; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	Yes
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

Course Description

This course covers physical tests, metallographic analysis, visual inspection, non-destructive examination of welds and chemical analysis of metals and alloys. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Visually evaluate completed welds to welding code standards.
2. Inspect welds using standard weld inspection tools.
3. Prepare welds for destructive and non-destructive examination.
4. Evaluate welds using metallographic equipment

Course Objectives

- 1. Demonstrate an understanding of the need for weld testing.
- 2. Use code books.
- 3. Visually inspect welds.
- 4. Use weld inspection measuring tools.
- 5. Use hardness testing equipment.
- 6. Use tensile testing equipment.
- 7. Use guided bend testing equipment.
- 8. Use shearing tests.
- 9. Use metallographic equipment.
- 10. Prepare specimens for testing.
- 11. Do macroscopic examinations.
- 12. Do microscopic examinations.
- 13. Do magnetic particle examinations.
- 14. Do dye penetration examinations.
- 15. Do eddy current examinations.
- 16. Read radiographic prints.
- 17. Do ultrasonic examinations.

Lecture Content

Need for Inspection and Testing Physical Testing Tensile tests-hardness tests Inspection tests-guided bend tests Shearing strength test Metallographic Examination Specimen preparation Macroscopic examination Microscopic examination Chemical Identification of Metals Rapid non-destructive spot tests Visual Inspection Weld size and location Contour Undercut Cracks Non-destructive Testing Magnetic particle testing Dye penetrant inspection Radiographic analysis Ultrasonic testing Eddy current testing

Lab Content

See Course Content.

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

Instructional Techniques

Lecture, textbook reading assignments, interactive computer programs, discussion, small group exercises, instructor feedback, slide lectures, intensive chalkboard lecture sessions, students working cooperatively, field trips, and hands-on demonstrations

Reading Assignments

Research paper related to welding inspection history, inspection methods, an individual inspection method or types of welding inspectors required. Demonstrate proficiency in testing and measuring welds and weld tests.

Writing Assignments

Research paper related to welding inspection history, inspection methods, an individual inspection method or types of welding inspectors required. Demonstrate proficiency in testing and measuring welds and weld tests.

Out-of-class Assignments

Research paper related to welding inspection history, inspection methods, an individual inspection method or types of welding inspectors required. Demonstrate proficiency in testing and measuring welds and weld tests.

Demonstration of Critical Thinking

Tests, final exam, laboratory reports, field trips/reports, lab and lecture notebooks

Required Writing, Problem Solving, Skills Demonstration

Research paper related to welding inspection history, inspection methods, an individual inspection method or types of welding inspectors required. Demonstrate proficiency in testing and measuring welds and weld tests.

Textbooks Resources

1. Required American Welding Society. Welding Inspection Handbook, ed. Miami: American Welding Society, 0 Rationale: Latest 2. Required Galvery, William and Frank Marlow. Welding Essentials: Questions and Answers , 2nd ed. New York: Industrial Press, 2007

Other Resources

1. Selected handout materials to be provided and distributed by the instructor.