WELD 1310

Division: Career and Technical Education
Department: Industrial Technology
Course: WELD 1310
Title: Welding Inspection
Catalog Description:

This course is for welding technology majors. It presents skills and techniques to assist welders to better perform their duties. Procedure and qualification testing welds and welders are studied. The course covers inspection procedures and includes destructive and non-destructive testing for the various welding defects.

General Education Requirements: N/A
Semesters Offered: TBA
Credit/Time Requirement: Credit: 2; Lecture: 2; Lab: 0
Clock/Hour Requirements: 30
Offered for Non-Credit: Yes
Prerequisites: WELD 1020

Corequisites: WELD 1300

Justification:

This course has been approved by the program advisory committee. Course material meets American Welding Soc iety Certified Welding Inspector (CWI) requirements.

Student Learning Outcomes:

Upon successful completion, students will be able to:

- interpret codes and specifications
- interpret blueprints and drawings
- obtain a working knowledge of weld symbols and non-destructive testing symbols
- perform non-destructive tests on weldments
- perform destructive tests on weldments.

Content:

Course objectives will be accomplished by providing students with learning experiences in the following subject areas:

- requirements for inspectors
- duties of an inspector
- understanding and working knowledge of symbols, welding specifications, and qualification of welding procedures
- qualification of welders and welding operators
    - plate and structural members
    - pipe welding
    - welding position
    - testing of qualification welds
    - qualification records
    - retests
    - standardization of tests
- weldment defect
    - dimensional defects
    - structural discontinuities
    - defective properties
- testing of welds (destructive)
    - chemical tests
    - met allographic tests
    - hardness tests
    - mechanical tests
- non-destructive testing of weldments
    - visual inspection
    - magnetic particle inspection
    - liquid penetrant inspection
    - radiographic inspection
    - ultrasonic inspection
    - Eddy current
    - leak tests
    - proof tests
- heat-treatment operations
    - preheating
    - interpass temperatures control
    - post heat treatments
    - controlled cooling rate
    - heat-treatment terms.

General Education Outcomes:

1) Read effectively, constructively, and critically.

Students will read the required text, as well as other assigned readings. Students must be able to answer questions on exams and synthesize information into laboratory experiences.

9) Respond with informed sensitivity to an artistic work or experience.

Students will visually inspect weld quality for appearance, uniformity, and consistency. Professional welding is judged heavily on the aesthetic aspect.

Applied Education Outcomes:

1) Students will acquire entry-level skills specific to and appropriate for employment in their chosen field of study.

Students will understand codes and standards established by American Welding Society (AWS) and American National Standards Institute (ANSI).

2) Students will become aware of industry specific certification and develop skills sufficient to acquire the same.

Students will learn and perform destructive and non-destructive tests on weldments.

Key Performance Indicators:

Student Learning Outcomes will be assessed by two or more of the following Key Performance Indicators:

- inspection of welds
- tests
- quizzes
- competency in subsequent courses and on the job.

Representative Text and/or Supplies:

- *Welding Inspection Technology,* current edition, Education Department, American Welding Society.
- Larry Jeffus, *Welding Principles and Applications,* current edition, Delmar Publishers.

Optimum Class Size: 10
Maximum Class Size: 20

Signatures:

I hereby submit this course syllabus:

Alan Palmer, M. Ed., Associate Professor

I hereby find this course consistent with the goals and resources of the Industrial Technology Department:

Alan Hart, AAS, Instructor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)