SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 48.0508
SEMESTER: Departmental Syllabus
COURSE TITLE: Welding Codes and Advanced Inspection
COURSE NUMBER: WELD0280
CREDIT HOURS: 4
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
TELEPHONE: Departmental Syllabus
EMAIL: KCKCC issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES: WELD0100

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, www.kckccbookstore.com, for the required texts for your particular class.

COURSE DESCRIPTION:
Through a variety of classroom and/or shop/lab learning and assessment activities, the students in this course will: learn destructive and non destructive testing methods, how to interpret them to code, and how to use a code to set up welding procedures and qualification tests.

METHOD OF INSTRUCTION:
A variety of instructional methods may be used depending on content area. These may include but are not limited to lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I. Inspection methods
   A. Destructive examination
      1. Weld bend tests
2. Tensile tests
3. Impact tests
4. Fillet weld break tests
5. Macro etch specimens

B. Non Destructive examination
1. Visual inspection
2. Magnetic particle testing
3. Die penetrant testing
4. Ultrasound inspection
5. Radiographic inspection

II. Welding codes
A. AWS
B. ASME
C. API
D. SAE

III. Code testing
A. Reading and writing a WPS
B. Inspecting set up of weldment
C. Inspecting welding during process
D. Visual inspection of finished weldment
E. Preparation of test specimens
F. Testing of specimens

EXPECTED LEARNER OUTCOMES:
Upon successful completion of this course:
A. The student will be able to Explain how different testing methods ensure quality welds
B. The student will be able to Define codes, organizations and what industries they cover
C. The student will be able to Inspect welds to various codes
D. The student will be able to Properly prepare test weldments for welding
E. The student will be able to Properly prepare specimens for destructive testing
F. The student will be able to Test destructive test specimens and interpret results for pass/fail status to given codes
G. The student will be able to Properly prepare test weldments for NDE
H. The student will be able to Use various NDE to determine welds are acceptable to various codes

COURSE COMPETENCIES:
Explain how different testing methods ensure quality welds
1. Identify various testing methods used in industry
2. Define whether or not various testing methods are destructive or nondestructive
3. Describe what various testing methods check for and how it ensures quality welds

Define codes, organizations and what industries they cover
4. Identify several commonly used welding codes
5. Identify major code creating organizations and correctly match the codes they publish
6. Identify industries that commonly use welding codes and match them to their code

Inspect welds to various codes
7. Define visual acceptance criteria to a given code
8. Visually inspect groove welds to provided code and properly identify pass/fail status
9. Visually inspect fillet welds to provided code and properly identify pass/fail status

Properly prepare test weldments for welding
10. Determine joint preparation and geometry for a weld test to a given code
11. Prepare plates to have proper edge preparation for a given weld test
12. Properly tack plates for test weldment
13. Inspect tacked test plates for proper fit up within given code

Properly prepare specimens for destructive testing
14. Determine proper layout for test specimens for given weld test
15. Demonstrate ability to get proper test specimens for bend tests
16. Demonstrate ability to get proper macro etch and break test specimens for fillet welds
17. Demonstrate proper surface preparation for face and root bend tests
18. Demonstrate proper surface preparation for macro etch test specimens

Test destructive test specimens and interpret results for pass/fail status to given codes
19. Demonstrate ability to perform root and face bend tests and inspections to given code
20. Demonstrate ability to perform side bend tests and inspections to given code
21. Demonstrate ability to perform fillet weld break tests and inspections to given code
22. Demonstrate ability to perform macro etch weld tests and inspections to given code

Properly prepare test weldments for NDE
23. Determine what if any preparation must be done to prepare for MT
24. Determine what if any preparation must be done to prepare for DPT
25. Determine what if any preparation must be done to prepare for UT
26. Determine what if any preparation must be done to prepare for RT

Use various NDE to determine welds are acceptable to various codes
27. Demonstrate ability to perform and inspect welds with MT
28. Demonstrate ability to perform and inspect welds with DPT
29. Demonstrate ability to perform and inspect welds with UT
30. Demonstrate ability to perform and inspect welds with RT

ASSESSMENT OF LEARNER OUTCOMES:
Student progress is evaluated by means that include, but are not limited to, exams, written assignments and class participation.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome at any time.

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