SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 48.0508
SEMESTER: Departmental Syllabus
COURSE TITLE: SMAW
COURSE NUMBER: WELD0120
CREDIT HOURS: 3
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 classroom and/or lab/shop learning and assessment activities, students in this course will: describe the Shielded Metal Arc Welding process (SMAW); demonstrate the safe and correct set up of the SMAW workstation; associate SMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes in the flat position; build pads of weld beads with selected electrodes in the horizontal position; perform basic SMAW welds on selected weld joints; and perform visual inspection of welds.

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. SMAW Processes and equipment
   A. SMAW equipment
      1. Welding station components
      2. Power sources
      3. Welding leads
   B. SMAW process theory
      1. Machine settings
      2. Electrode specifications

II. SMAW welding in the flat position
    A. Fillet welds (1F)
    B. Groove welds (1G)

III. SMAW welding in the horizontal position
    A. Fillet welds (2F)
    B. Groove welds (2G)

IV. Weld inspection
    A. SMAW visual inspection
       1. Visual inspection criteria
       2. Common discontinuities in flat and horizontal positions
    B. SMAW destructive weld testing
       1. Weld test joint set up
       2. Preparing test specimens
       3. Destructive test criteria

EXPECTED LEARNER OUTCOMES:
Upon successful completion of this course:
   A. The student will be able to explain the Shielded Metal Arc Welding process (SMAW).
   B. The student will be able to demonstrate the safe and correct set up of the SMAW workstation.
   C. The student will be able to relate SMAW electrode classifications with base metals and joint criteria
   D. The student will be able to demonstrate proper electrode selection and use based on metal types and thicknesses
   E. The student will be able to build pads of weld beads with selected electrodes in the flat position
   F. The student will be able to build pads of weld beads with selected electrodes in the horizontal position
   G. The student will be able to perform basic SMAW welds on selected weld joints.
   H. The student will be able to perform visual inspection of welds

COURSE COMPETENCIES:
Explain the Shielded Metal Arc Welding process (SMAW).
   1. Differentiate between types and uses of current
   2. Identify the advantages and disadvantages of SMAW
   3. Identify types of welding power sources
4. Identify different components of a SMAW station
5. Describe basic electrical safety

Demonstrate the safe and correct set up of the SMAW workstation.

6. Demonstrate proper inspection of equipment
7. Demonstrate proper use of PPE
8. Demonstrate proper placement of workpiece connection
9. Check for proper setup of equipment
10. Inspect area for potential hazards/safety issues

Relate SMAW electrode classifications with base metals and joint criteria

11. Explain the AWS electrode nomenclature
12. Determine proper electrode for given joint based on material and position of weld
13. Determine proper type of electrodes to be used in a variety of industry applications
14. Identify proper electrode storage and handling

Demonstrate proper electrode selection and use based on metal types and thicknesses

15. Select the proper electrode type and size relative to metal size, type and thickness
16. Select the proper electrode type and size based on material specifications

Build pads of weld beads with selected electrodes in the flat position

17. Use the proper safety procedures and PPE
18. Use the proper setup procedures
19. Create a pad of beads using SMAW electrode
20. Weld exhibits proper uniformity and profile

Build pads of weld beads with selected electrodes in the horizontal position

21. Use the proper safety procedures and PPE
22. Use the proper setup procedures
23. Create a pad of beads using SMAW electrode
24. Weld exhibits proper uniformity and profile

Perform basic SMAW welds on selected weld joints.

25. Use the proper setup procedures
26. Use the proper safety procedures and PPE
27. Perform a fillet weld in horizontal position
28. Perform fillet weld in flat position
29. Perform a groove weld in a flat position
30. Perform a groove weld in a horizontal position
31. Use tools appropriate for the task

Perform visual inspection of welds

32. Identify common visual discontinuities and defects on welds
33. Determine causes of discontinuities and defects of welds
34. Inspect welds for pass/fail ratings according to industry standards
35. Use appropriate inspection tools

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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