SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 48.0508
SEMESTER: Departmental Syllabus
COURSE TITLE: Advanced GMAW
COURSE NUMBER: WELD0230
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: WELD0130

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 shop/lab learning and assessment activities, students in this course will: explain gas metal arc welding process (GMAW); demonstrate the safe and correct set up of the GMAW workstation.; correlate GMAW 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 vertical position; build pads of weld beads with selected electrodes in the overhead position; produce basic GMAW welds on selected weld joints; and conduct visual inspection of GMAW 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. GMAW welding in the vertical position
   A. Fillet welds (3F)
   B. Groove welds (3G)
II. GMAW welding in the overhead position
   A. Fillet welds (4F)
   B. Groove welds (4G)
III. Weld inspection
   A. GMAW visual inspection
      1. Visual inspection criteria
      2. Common discontinuities in vertical and overhead positions
   B. GMAW non destructive testing
      1. Ultrasound testing
      2. Radiograph testing
      3. Penetrant testing
      4. Magnetic particle testing

EXPECTED LEARNER OUTCOMES:
Upon successful completion of this course:
A. The student will be able to Demonstrate the safe and correct set up of the GMAW workstation.
B. The student will be able to Correlate GMAW electrode classifications with base metals and joint criteria
C. The student will be able to Demonstrate proper electrode selection and use based on metal types and thicknesses
D. The student will be able to Build pads of weld beads with selected electrodes in the Vertical position
E. The student will be able to Build pads of weld beads with selected electrodes in the Overhead position
F. The student will be able to Produce basic GMAW welds on selected weld joints
G. The student will be able to Conduct visual inspection of GMAW welds

COURSE COMPETENCIES:
Demonstrate the safe and correct set up of the GMAW workstation.
1. Demonstrate proper inspection of equipment
2. Demonstrate proper use of PPE
3. Demonstrate proper placement of work piece connection
4. Check for proper setup of equipment
5. Inspect area for potential hazards/safety issues
6. Troubleshoot the GMAW equipment and perform minor maintenance
Correlate GMAW electrode classifications with base metals and joint criteria
7. Explain the AWS electrode nomenclature
8. Determine proper electrode for given joint based on material and position of weld
9. Determine proper type of electrodes to be used in a variety of industry applications
10. Identify proper electrode storage and handling
11. Identify consumables
Demonstrate proper electrode selection and use based on metal types and thicknesses
12. Identify consumables for various electrode sizes
13. Select the proper electrode type and size relative to metal size, type and thickness
14. Select the proper electrode type and size based on material specifications

Build pads of weld beads with selected electrodes in the Vertical position
15. Implement safety procedures and PPE
16. Implement proper equipment setup
17. Use the proper metal transfer
18. Create a pad of beads using GMAW
19. Weld exhibits proper uniformity and profile

Build pads of weld beads with selected electrodes in the Overhead position
20. Implement safety procedures and PPE
21. Implement proper equipment setup
22. Use the proper metal transfer
23. Create a pad of beads using GMAW
24. Weld exhibits proper uniformity and profile

Produce basic GMAW welds on selected weld joints.
25. Implement safety procedures and PPE
26. Implement proper equipment setup
27. Perform fillet weld in Vertical position
28. Perform a fillet weld in Overhead position
29. Perform a groove weld in a Vertical position
30. Perform a groove weld in an Overhead position
31. Use tools appropriate for the task

Conduct visual inspection of GMAW 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 tools for inspection

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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