SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 48.0508
SEMESTER: Departmental Syllabus
COURSE TITLE: Advanced GTAW
COURSE NUMBER: WELD0240
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: WELD0140

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: explain the gas tungsten arc welding process (GTAW); demonstrate the safe and correct set up of the GTAW workstation; relate GTAW electrode and filler metal classifications with base metals and joint criteria; build proper electrode and filler metal selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes and filler material in the flat position; build pads of weld beads with selected electrodes and filler material in the horizontal position; perform basic GTAW welds on selected weld joints; and perform visual inspection of GTAW 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. GTAW welding in the vertical position
   A. Fillet welds (3F)
   B. Groove welds (3G)
II. GTAW welding in the overhead position
   A. Fillet welds (4F)
   B. Groove welds (4G)
III. Weld inspection
   A. GTAW visual inspection
      1. Visual inspection criteria
      2. Common discontinuities in vertical and overhead positions
   B. GTAW 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 GTAW workstation
B. The student will be able to Relate GTAW electrode and filler metal classifications with base metals and joint criteria
C. The student will be able to Build proper electrode and filler metal selection and use based on metal types and thicknesses
D. The student will be able to Build pads of weld beads with selected electrodes and filler material in the Vertical position
E. The student will be able to Build pads of weld beads with selected electrodes and filler material in the Overhead position
F. The student will be able to Perform basic GTAW welds on selected weld joints
G. The student will be able to Perform visual inspection of GTAW welds

COURSE COMPETENCIES:
Demonstrate the safe and correct set up of the GTAW 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 GTAW equipment and perform minor maintenance
Relate GTAW electrode and filler metal classifications with base metals and joint criteria
7. Identify electrode classifications
8. Explain the AWS electrode and filler metal nomenclature
9. Determine proper electrode and filler metal for given joint based on material and position of weld
10. Determine proper type of electrodes to be used in a variety of industry applications

*Build proper electrode and filler metal selection and use based on metal types and thicknesses*

11. Use safety hazard precautions and PPE
12. Properly prepare the tungsten electrode profile relative to base material
13. Perform weld using GTAW process appropriate to electrode size and filler metal size
14. Select the proper electrode and filler metal type and size relative to metal size, type and thickness
15. Select the proper electrode and filler metal type and size based on material specifications
16. Use tools appropriate for the task

*Build pads of weld beads with selected electrodes and filler material in the Vertical position*

17. Use safety hazard precautions and PPE
18. Demonstrate proper equipment setup and troubleshooting
19. Create a pad of beads using GTAW process
20. Weld exhibits proper uniformity and profile

*Build pads of weld beads with selected electrodes and filler material in the Overhead position*

21. Use safety hazard precautions and PPE
22. Demonstrate proper equipment setup and troubleshooting
23. Create a pad of beads using GTAW process
24. Weld exhibits proper uniformity and profile

*Perform basic GTAW welds on selected weld joints*

25. Conduct proper base metal preparation
26. Use safety hazard precautions and PPE
27. Demonstrate proper equipment setup and troubleshooting
28. Perform fillet weld in Vertical position
29. Perform a fillet weld in Overhead position
30. Perform a groove weld in a Vertical position
31. Perform a groove weld in a Overhead position
32. Use tools appropriate for the task

*Perform visual inspection of GTAW welds*

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