SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 48.0508

SEMESTER: Departmental Syllabus

COURSE TITLE: Aluminum Welding

COURSE NUMBER: WELD0255

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, http://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 metal preparation, GMAW, GTAW, safety and metallurgy as they apply to aluminum welding.

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 Aluminum Metallurgy
   A. Properties of aluminum
   B. Aluminum alloys and their uses
II. Aluminum inspection
   A. Weld profiles
   B. Heat Affected Zone (HAZ)
   C. Other flaws

III. GMAW of aluminum
   A. Flat position fillet welds
   B. Flat position groove welds
   C. Horizontal position fillet welds
   D. Horizontal position groove welds

IV. GTAW of aluminum
   A. Flat position fillet welds
   B. Flat position groove welds
   C. Horizontal position fillet welds
   D. Horizontal position groove welds

EXPECTED LEARNER OUTCOMES:
Upon successful completion of this course:
A. The student will be able to identify various aluminum alloys and their characteristics.
B. The student will be able to perform GMAW welds on aluminum in the flat and horizontal positions.
C. The student will be able to perform GTAW welds on aluminum in the flat and horizontal positions.
D. The student will be able to perform inspections on aluminum welds to check for conformance with specific criteria.

COURSE COMPETENCIES:
The student will be able to identify various aluminum alloys and their characteristics.

1. The student will be able to differentiate various aluminum alloys based on alloy naming system.
2. The student will be able to select proper filler metal for welding aluminum alloys with GMAW.
3. The student will be able to select proper filler metal for welding aluminum alloys with GTAW.

The student will be able to perform GMAW welds on aluminum in the flat and horizontal positions.

4. The student will be able to properly set up GMAW station for welding aluminum.
5. The student will be able to select proper shielding gasses for welding aluminum alloys with GMAW.
6. The student will be able to properly layout and tack aluminum coupons for GMAW.
7. The student will be able to properly prepare surface of aluminum for GMAW.
8. The student will be able to perform several fillet welds in the flat position to given performance standard.
9. The student will be able to perform a groove weld on aluminum in the flat position to given performance standard.
10. The student will be able to perform several fillet welds on aluminum in the horizontal position to given performance standard.
11. The student will be able to perform a groove weld on aluminum in the horizontal position to given performance standard.

   *The student will be able to perform GTAW welds on aluminum in the flat and horizontal positions.*

12. The student will be able to properly set up GTAW station for welding aluminum.
13. The student will be able to select proper electrode for welding aluminum alloys with GTAW.
14. The student will be able to prepare electrode for welding aluminum alloys with GTAW.
15. The student will be able to select proper shielding gasses for welding aluminum alloys with GTAW.
16. The student will be able to properly layout and tack aluminum coupons for GTAW.
17. The student will be able to properly prepare surface of aluminum for GTAW.
18. The student will be able to perform several fillet welds in the flat position to given performance standard.
19. The student will be able to perform a groove weld on aluminum in the flat position to given performance standard.
20. The student will be able to perform several fillet welds on aluminum in the horizontal position to given performance standard.
21. The student will be able to perform a groove weld on aluminum in the horizontal position to given performance standard.

   *The student will be able to perform inspections on aluminum welds to check for conformance with specific criteria.*

22. The student will be able to inspect weld beads for profile to determine acceptability to given specification.
23. The student will be able to inspect GTAW beads to determine if AC balance is in proper place.
24. The student will be able to inspect weld beads with DPT to determine acceptability to given specification.
25. The student will be able to inspect GMAW fillet weld with break test or macro etch specimen to determine penetration.
26. The student will be able to inspect GTAW fillet weld with break test or macro etch specimen to determine penetration.
27. The student will be able to inspect weld with bend test to determine acceptability to given specification.

**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.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty and staff that is free of bigotry and discrimination. KCKCC is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college’s policy on non-discrimination be administered without regard to race, color, age, sex, religion, national origin, physical handicap or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center in Rm. 3354 or call (913) 288-7670.