SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 48.0508

SEMESTER: Departmental Syllabus

COURSE TITLE: Automated Welding and Cutting

COURSE NUMBER: WELD0270

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 set up and operation of various automated welding and cutting procedures including programming, weld settings, troubleshooting, and maintenance of equipment.

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. Intro to automated welding and cutting
   A. Safety
   B. Basic G and M code
   C. Overview of automated welding and cutting
II. CNC cutting machine
   A. Start up and basic maintenance
   B. Making a part for a CNC cutting program
   C. Nesting for CNC cutting machines
   D. Transferring files to CNC cutting machine
   E. Operating CNC cutting machine
F. Basic trouble shooting for CNC cutting machines

III. Robotic welding
   A. Start up and basic maintenance
   B. Making a robotic welding program
   C. Weld settings for robotic welders
   D. Operating a robotic welder
   E. Basic trouble shooting for robotic welders

EXPECTED LEARNER OUTCOMES:
Upon successful completion of this course:
A. The student will be able to explain safety concerns specific to automated welding and cutting.
B. The student will be able to use basic G and M codes for automated systems.
C. The student will be able to start up and provide basic maintenance of CNC cutting machine.
D. The student will be able to program a CNC cutting machine to make various parts.
E. The student will be able to perform basic troubleshooting for CNC cutting machine.
F. The student will be able to start up and maintain robotic welding station.
G. The student will be able to program a robotic welding station to make several welds.
H. The student will be able to provide basic troubleshooting for robotic welder.

COURSE COMPETENCIES:
The student will be able to explain safety concerns specific to automated welding and cutting.
1. The student will be able to define areas that should be avoided by operators while automated machinery is running.
2. The student will be able to define area that observers should avoid while automated machinery is running.
3. The student will be able to explain why automated safety systems are never to be overridden.

The student will be able to use basic G and M codes for automated systems.
4. The student will be able to define common G and M code commands.
5. The student will be able to fix errors with basic G and M code commands.
6. The student will be able to create a simple program from scratch using only G and M code.

The student will be able to start up and provide basic maintenance of CNC cutting machine.
7. The student will be able to demonstrate proper start up procedure for a CNC cutting machine.
8. The student will be able to locate places on CNC machine that require maintenance on a daily basis.
9. The student will be able to locate places on CNC machine that require maintenance on a weekly basis.
10. The student will be able to locate places on CNC machine that require maintenance on a monthly basis.
11. The student will be able to demonstrate proper consumable replacement for CNC machine.

The student will be able to program a CNC cutting machine to make various parts.
12. The student will be able to use shape library to create several common parts from sheet steel.
13. The student will be able to use a CAD or other program to create parts.
14. The student will be able to use nesting software to nest various parts onto a sheet.
15. The student will be able to download a part nest into a CNC machine and run program.

The student will be able to perform basic troubleshooting for CNC cutting machine.
16. The student will be able to list several common causes of CNC machine errors.
17. The student will be able to successfully use a trouble shooting guide to fix common problems with CNC machine.
18. The student will be able to define problems that should be fixed by a trained maintenance technician.

The student will be able to start up and maintain robotic welding station.
19. The student will be able to demonstrate proper start up procedure for a robotic welder.
20. The student will be able to locate places on robotic welder that require maintenance on a daily basis.
21. The student will be able to locate places on robotic welder that require maintenance on a weekly basis.
22. The student will be able to locate places on robotic welder that require maintenance on a monthly basis.
23. The student will be able to demonstrate proper consumable replacement for robotic welder.

The student will be able to program a robotic welding station to make several welds.
24. The student will be able to define different commands used by teach pendant to program robotic welder.
25. The student will be able to define different types of robot movement and what they are used for.
26. The student will be able to demonstrate how to teach a point to robotic welder.
27. The student will be able to demonstrate how to teach and run a weld with a robotic welder.

The student will be able to provide basic troubleshooting for robotic welder.
28. The student will be able to list several common causes of robotic welder errors.
29. The student will be able to successfully use trouble shooting guide to fix common problems with robotic welder.
30. The student will be able to define problems that should be fixed by a trained maintenance technician.

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.

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