SYLLABUS

DATE OF LAST REVIEW: 07/17/14
CIP CODE: 47.0106
SEMESTER: Departmental Syllabus
COURSE TITLE: Brazing/Swaging/Silver and Soft Soldering
COURSE NUMBER: MAPR0140
CREDIT HOURS: 3
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
TELEPHONE: Departmental Syllabus
EMAIL: Departmental Syllabus

KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES: None

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text for your particular class.

COURSE DESCRIPTION: This course teaches the proper methods of brazing similar and dissimilar metals used in the refrigeration industry. Also taught, are the methods, procedures, and tools used to swage tubing properly for the interconnection of refrigerant components, within a sealed system. Silver and soft soldering will then be used, to assemble and seal up the tubing of the refrigeration system. Upon completion of this course the student will be trained and proficient in the safe use of an oxygen/acetylene torch kit. This course must be completed and the student must pass a hands-on evaluation prior to having torch privileges for shop use. This course teaches the safe ignition, handling, and maintenance of oxygen and acetylene tanks, regulators, hoses, and tips.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative
learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I. Oxy/Acetylene Torch Safety
   A. Cylinders
   B. Regulators
   C. Torch
   D. Lighting Procedure
   E. Out door, In door; Handling/Storage

II. Turbo Torch

III. Propane Torch

IV. M.C. Oxy/Acetylene Kit.

V. Oral Exam/Qualifying

VI. Tube Fabrication
    A. Sizing Identification
    B. Cutting
    C. Bending
    D. Swaging

VII. Cleaning/Flux

VIII. Brazing
    A. Pinch point
    B. Slip joint
    C. Swage joint
    D. Service valve installation
    E. Dissimilar Metal Joint

IX. Flare Fittings

X. Turbo Torch Brazing

XI. Propane Soft Soldering

XII. Leak testing
    A. Dry Nitrogen pressurization
    B. Soap Bubbles
XIII. Competency Evaluations

EXPECTED LEARNER OUTCOMES:
A. The student will be able to use the swaging, bending, and flaring tools properly.
B. The student will be able to attach access valves, hot gas valves, liquid line drier filters.
C. The student will be able to silver solder similar and dissimilar metal tubing.
D. The student will be able to soft solder K, L, or M type copper tubing and pipe, of various sizes.
E. The student will be able to use a torch indoors in confined spaces.
F. The student will be able to safely ignite an Oxy/Acetylene torch indoors.
G. The student will be able to safely ignite an acetylene turbo torch indoors.
H. The student will be able to safely ignite a propane torch indoors.
I. The student will be able to inspect and maintain various torches used in appliance technology and repair.
J. The student will be able to demonstrate proper use and function of torches.

COURSE COMPETENCIES:
The student will be able to use the swaging, bending, and flaring tools properly.

1. The student will be able to use tube bending tools properly without kinking copper tubing.
2. The student will be able to swage 3/4, 3/8, 5/16, 1/4 inch copper tubing
3. The student will be able to attach access valves, hot gas valves, liquid line drier filters.
4. The student will be able to braze access valves without leaks.
5. The student will be able to braze hot gas valves without leaks or heat damage to the valve.
6. The student will be able to braze liquid line filter without leaks or heat damage to valve core.
7. The student will be able to silver solder similar and dissimilar metal tubing, to demonstrated standards.
8. The student will be able to soft solder K, L, or M type copper tubing and pipe, of various sizes.
9. The student will be able to use a torch indoors in confined spaces.
10. The student will be able to safely ignite an Oxy/Acetylene torch indoors.
11. The student will be able to safely inspect pressure gauges.
10. The student will be able to safely inspect tank security.
11. The student will be able to set hose pressure.
12. The student will be able to wear safety eyewear.
13. The student will be able to safely ignite and adjust flame heat.
14. The student will be able to extinguish flame in the correct sequence.

_The student will be able to safely ignite an acetylene turbo torch indoors._

15. The student will be able to safely inspect pressure gauges.
16. The student will be able to safely inspect tank security.
17. The student will be able to set hose pressure.
18. The student will be able to wear safety eyewear.
19. The student will be able to safely ignite and adjusts flame heat.
20. The student will be able to extinguish flame in the correct sequence.

_The student will be able to safely ignite a propane torch indoors._

21. The student will be able to wear safety eyewear.
22. The student will be able to safely ignite and adjusts flame heat.
23. The student will be able to extinguish flame in the correct sequence.

_The student will be able to inspect and maintain various torches used in appliance technology and repair._

24. The student will be able to inspect and maintain various torches used in appliance technology and repair.

_The student will be able to demonstrate proper use and function of torches._

25. The student will be able to observe all safety standards of proper torch use.
26. The student will be able to demonstrate the use of the correct torch kit with its associated task.

**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 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. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.
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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 at: 288-7670.