Washtenaw Community College Comprehensive Report

WAF 104 Soldering and Brazing
Effective Term: Winter 2018

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Welding and Fabrication
Discipline: Welding and Fabrication
Course Number: 104
Org Number: 14610
Full Course Title: Soldering and Brazing
Transcript Title: Soldering & Brazing
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:
Consultation with all departments affected by this course is required.
Course description
Outcomes/Assessment
Objectives/Evaluation
Rationale: Update master syllabi due to course assessment
Proposed Start Semester: Winter 2018
Course Description: In this course, students are introduced to the soldering and brazing processes on copper tubing and fittings. Students practice braze butt, lap and tee joints on steel, and perform a variety of solder and braze joints on ferrous and non-ferrous materials. The student will apply safe work practices in the welding laboratory setting. The student's final copper tubing project will be pressurized to ensure proper soldering and brazing applications. This course is designed for non-welding majors. This class does not meet a requirement for welding certificates or degrees.

Course Credit Hours

Variable hours: No
Credits: 2
Lecture Hours: Instructor: 15 **Student:** 15
Lab: Instructor: 45 **Student:** 45
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 60 **Student:** 60
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Recognize and apply welding vocabulary.
   Assessment 1
   Assessment Tool: Written exam
   Assessment Date: Fall 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 80% of students will score 90% or higher
   Who will score and analyze the data: Departmental faculty

2. Recognize and interpret welding theory.
   Assessment 1
   Assessment Tool: Written exam
   Assessment Date: Fall 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 80% of students will score 90% or higher
   Who will score and analyze the data: Departmental faculty

3. Solder and braze a copper tubing project.
   Assessment 1
   Assessment Tool: Copper tubing project hydro pressure test
   Assessment Date: Fall 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: The project will be scored as pass or fail depending on the project holding pressure.
   Standard of success to be used for this assessment: 80% of students will complete a copper tubing project with no leaks.
   Who will score and analyze the data: Departmental faculty

Course Objectives

1. Recall and demonstrate safety measures when using oxy-fuel equipment.
2. Identify safety hazards in an oxy-fuel work environment.

3. Demonstrate the process of checking for leaks on an oxy-fuel system.
4. List the components of an oxy-fuel work outfit and describe their functions.
5. Properly set up oxy-fuel equipment for use.
6. Determine which flux to use for soldering and brazing
7. Discuss the importance of flux.
8. List the different forms of Soldering and Brazing flux.
9. Sweat a lap joint on copper plate.
10. Sweat copper tubing and coupling joint.
11. Sweat copper to stainless.
12. Braze a groove joint on mild steel in the flat and horizontal positions.
13. Braze a lap joint on mild steel in the flat position and in the horizontal position with and without a shelf to withstand a bend test.
14. Braze a tee joint on mild steel in the flat and horizontal positions to withstand a bend test.
15. Braze a lap joint in the flat position on copper plate to withstand bend test.
16. Braze a tee joint in the flat position on copper to withstand bend test.
17. Braze a lap joint, copper to stainless, in the flat position.
18. Braze copper tubing and coupling joints in all positions to complete a copper tubing project that will hold 400PSI.
19. Run a bead with and without filler rod in the flat position on carbon steel.

New Resources for Course

Course Textbooks/Resources

Textbooks

Hoffman, Dahle and Fisher. *Welding*, 2nd ed. Pearson, 2012, ISBN: 132350835X.

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Reviewer	Action	Date
Faculty Preparer:		
Glenn Kay II	*Faculty Preparer*	*Aug 17, 2017*
Department Chair/Area Director:		
Glenn Kay II	*Recommend Approval*	*Aug 17, 2017*
Dean:		
Brandon Tucker	*Request Conditional Approval*	*Aug 20, 2017*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Oct 23, 2017*
Assessment Committee Chair:		
Michelle Garey	*Recommend Approval*	*Oct 30, 2017*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Nov 06, 2017*