Washtenaw Community College Comprehensive Report

WAF 233 Submerged Arc and Flux Core Arc Welding
Effective Term: Fall 2016

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Welding and Fabrication
Discipline: Welding and Fabrication
Course Number: 233
Org Number: 14600
Full Course Title: Submerged Arc and Flux Core Arc Welding
Transcript Title: Sub-Arc and Flux Core Welding
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: New Course
Change Information:
Rationale: This course is created for the WAF program update and to meet industry needs.
Proposed Start Semester: Fall 2016
Course Description: In this course, students are introduced to the Submerged Arc Welding (SAW) and Flux Core Arc Welding (FCAW) processes with automated and semi-automated wire feed systems. Safety, set-up, programming, industry applications as well as AC/DC polarities, waveform technology and applications on longitudinal (plate) and circumferential (pipe) are demonstrated.

Course Credit Hours

Variable hours: No
Credits: 3
Lecture Hours: Instructor: 30 **Student:** 30
Lab: Instructor: 30 **Student:** 30
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

Level 2

Requisites

Prerequisite
WAF 232 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Safely set-up automated and semi-automated welding equipment for SAW and FCAW.
   Assessment 1
   Assessment Tool: Skill assessment
   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: Skill checklist with rubric
   Standard of success to be used for this assessment: 80% of students will score 80% or higher.
   Who will score and analyze the data: Departmental faculty

2. Perform a 1" V-groove weld with the FCAW process in 2G, 3G and 4G positions.
   Assessment 1
   Assessment Tool: Welded samples
   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 welds will be scored as pass or fail in meeting applicable welding codes.
   Standard of success to be used for this assessment: 80% of students will pass inspection to applicable welding codes.
   Who will score and analyze the data: Departmental faculty

3. Perform a groove weld on 1" plate on DC and AC polarity in the flat position.
   Assessment 1
   Assessment Tool: Welded samples
   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 welds will be scored as pass or fail in meeting applicable welding codes.
   Standard of success to be used for this assessment: 80% of students will pass inspection to applicable welding codes.
   Who will score and analyze the data: Departmental faculty

Course Objectives

1. Demonstrate safe work practices on automated and semi-automated welding equipment.
2. Explain safety concerns when welding with various fluxes.
3. Identify the difference between granular and baked on fluxes.
4. Set-up FCAW equipment for semi-automated use.
5. Identify AWS specifications for FCAW electrodes.
6. Explain the AWS classification of FCAW electrodes.
7. Perform a pad weld on 1/2" steel plate in the flat, horizontal and vertical positions with the FCAW process.
8. Weld a 1" V-groove on steel plate in the horizontal, vertical and overhead positions with the FCAW process.
9. Weld a 2G, 5G and 6G joint on 6" Schedule 120 with the FCAW process.
10. Set-up SAW equipment for automated use.
11. Weld a longitudinal V-groove on 1" plate with the SAW process on DC.
12. Weld a longitudinal V-groove on 1" plate with the SAW process on AC.
13. Apply a circumferential pad weld on 6" pipe with the SAW process on DC.

14. Apply a circumferential pad weld on 6" pipe with the SAW process on AC.
15. Adjust the AC waveform to achieve various weld profiles with the SAW process.
16. Apply hard surfacing material on 1/2" plate with a semi-automated welding machine.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Reviewer	Action	Date
Faculty Preparer:		
Amanda Scheffler	*Faculty Preparer*	*Aug 30, 2015*
Department Chair/Area Director:		
Glenn Kay II	*Recommend Approval*	*Aug 30, 2015*
Dean:		
Brandon Tucker	*Recommend Approval*	*Oct 06, 2015*
Curriculum Committee Chair:		
Kelley Gottschang	*Recommend Approval*	*Dec 01, 2015*
Assessment Committee Chair:		
Michelle Garey	*Recommend Approval*	*Dec 07, 2015*
Vice President for Instruction:		
Michael Nealon	*Approve*	*Dec 14, 2015*