Washtenaw Community College Comprehensive Report

WAF 150 Automated Welding and Cutting
Effective Term: Winter 2020

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Welding and Fabrication
Discipline: Welding and Fabrication
Course Number: 150
Org Number: 14600
Full Course Title: Automated Welding and Cutting
Transcript Title: Automated Welding and Cutting
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:
    Outcomes/Assessment
    Other:
Rationale: Small change made to increase student learning.
Proposed Start Semester: Fall 2019
Course Description: In this course, students are introduced to basic robotic welding and cutting. Safety, set-up, programming and industry applications are covered. Students will be exposed to five- and six-axis robotic applications of gas metal arc welding (GMAW), laser, spot and resistance welding as well as plasma, laser and water jet cutting methods.

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 1

Requisites

Prerequisite
WAF 140 minimum grade "C"
and

Prerequisite
WAF 232 minimum grade "C"
and
Prerequisite
NCT 120; minimum grade "C"

General Education

Request Course Transfer
Proposed For:

Student Learning Outcomes

1. Set up the basic components of a robotic cell for a weld or cut objective.
   Assessment 1
   Assessment Tool: Robotic cell component identification/operation
   Assessment Date: Winter 2022
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Departmentally-developed 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. Identify and perform safe work practices during a cutting and welding objective.
   Assessment 1
   Assessment Tool: Lab assignment
   Assessment Date: Winter 2022
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Departmentally-developed rubric
   Standard of success to be used for this assessment: 80% of students will achieve 80% or higher.
   Who will score and analyze the data: Departmental faculty

3. Program a robotic cell to perform a weld and cut operation on multiple axes.
   Assessment 1
   Assessment Tool: Cut and welded project
   Assessment Date: Winter 2022
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Departmentally-developed rubric
   Standard of success to be used for this assessment: 80% of students will achieve 80% or higher.
   Who will score and analyze the data: Departmental faculty

Course Objectives
1. Identify and perform safe work practices.
2. Program a robotic cell to perform a gas metal arc weld operation.
3. Program a robotic cell to perform a laser weld operation.
4. Program a robotic cell to perform a spot weld operation.
5. Program a robotic cell to perform a resistance weld operation.
6. Program a robotic cell to perform a laser cut operation.
7. Program a robotic cell to perform a water jet cut operation.
8. Program a robotic cell to perform a plasma cut operation.

9. Identify and troubleshoot a programming error.
10. Identify and troubleshoot a welding malfunction.
11. Identify and troubleshoot a cutting malfunction.
12. Properly set up a robotic arm for a given weld process.
13. Properly set up a robotic arm for a given cut process.
14. Identify and apply proper weld parameters.
15. Identify and apply proper cut parameters.
16. Program a robotic cell to perform a given function on five axes.
17. Program a robotic cell to perform a given function on six axes.

New Resources for Course

Course Textbooks/Resources
Textbooks
Manuals
Periodicals
Software

Equipment/Facilities
Computer workstations/lab

Reviewer	**Action**	**Date**
Faculty Preparer:		
Bradley Clink	*Faculty Preparer*	*Aug 05, 2019*
Department Chair/Area Director:		
Glenn Kay II	*Recommend Approval*	*Aug 06, 2019*
Dean:		
Brandon Tucker	*Recommend Approval*	*Aug 22, 2019*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Sep 14, 2019*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Sep 20, 2019*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Sep 26, 2019*