

# Washtenaw Community College Comprehensive Report

## WAF 115 Oxy-Fuel Gas Cutting and Welding for Ironworkers Effective Term: Fall 2016

### Course Cover

**Division:** Advanced Technologies and Public Service Careers

**Department:** Welding and Fabrication

**Discipline:** Welding and Fabrication

**Course Number:** 115

**Org Number:** 14600

**Full Course Title:** Oxy-Fuel Gas Cutting and Welding for Ironworkers

**Transcript Title:** Oxy-fuel Cut/Weld Ironworkers

**Is Consultation with other department(s) required:** No

**Publish in the Following:** College Catalog , Web Page

**Reason for Submission:** New Course

### **Change Information:**

**Rationale:** The Ironworker's Union requested a pre-apprenticeship certificate to assist them in obtaining more qualified candidates prior to entering into their apprenticeship training program.

**Proposed Start Semester:** Fall 2016

**Course Description:** In this course, students will be introduced to Oxy-Fuel Gas Cutting and Welding, Soldering and Brazing processes and how they apply to the Union Ironworker trade in an industrial environment. The student will learn to apply Oxy-Fuel Welding (OFW) to various joint designs in all positions, apply proper Oxy-Fuel Cutting (OFC) techniques on carbon steel plates and structural shapes in multiple positions and perform soldering and brazing on copper plate and tube. Welding vocabulary, welding theory, safety precautions and safe work practices will be covered along with an introduction to standard welding symbols. This class is a required part of the regional Ironworker Local Union pre-apprentice certificate.

### Course Credit Hours

**Variable hours:** No

**Credits:** 4

**Lecture Hours: Instructor: 30 Student: 30**

**Lab: Instructor: 90 Student: 90**

**Clinical: Instructor: 0 Student: 0**

**Total Contact Hours: Instructor: 120 Student: 120**

**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. Safely set up equipment and perform an oxy-fuel cut on carbon steel plate.

#### **Assessment 1**

Assessment Tool: Fabricated Project

Assessment Date: Fall 2017

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 based on Iron Worker's Union quality acceptance criteria.

Standard of success to be used for this assessment: 80% of students will score 80% or above.

Who will score and analyze the data: Departmental faculty

2. Identify proper application of processes to complete an oxy-fuel welded project.

#### **Assessment 1**

Assessment Tool: Welded project

Assessment Date: Fall 2017

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 based on Iron Worker's Union quality acceptance criteria.

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

3. Identify proper applications, terms and materials for oxy-fuel processes.

#### **Assessment 1**

Assessment Tool: Written exam

Assessment Date: Fall 2017

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 based on Iron Worker's Union quality acceptance criteria.

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

### Course Objectives

1. Identify early history of the OFW/OFC processes.
2. Identify various weld, braze and solder joints.
3. Identify various welding, brazing and soldering blueprint symbols.
4. Define various OFW/OFC terms and applications.
5. Demonstrate proper OFW/OFC equipment set-up and potential safety hazards.
6. Demonstrate minor maintenance procedures on Oxy-Fuel equipment.
7. Identify the principles of Oxy-Fuel Cutting.
8. Explain the principles of the Oxy-Fuel Cutting process.
9. Demonstrate the Oxy-Fuel Cutting process on various thicknesses of mild steel plate.
10. Evaluate cut quality and troubleshoot Oxy-Fuel Cutting problems.
11. Explain the principles of Oxy-Fuel Welding.
12. Identify components and set up Oxy-Fuel Welding equipment.

13. Demonstrate the Oxy-Fuel Welding process on various thicknesses of mild steel plate.
14. Properly initiate, form and terminate beads with and without filler metal.
15. Evaluate weld quality and troubleshoot issues.
16. Explain the principles of the Oxy-Fuel Brazing process.
17. Demonstrate the Oxy-Fuel Brazing process on various materials.
18. Explain the principles of Air-Fuel Soldering on various materials.
19. Demonstrate the Air-Fuel Soldering process on various materials.
20. Describe the characteristics of various Oxy-Fuel gasses and their effects.
21. Identify various consumables and their applications.

## **New Resources for Course**

### **Course Textbooks/Resources**

Textbooks

Manuals

International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers.  
Welding for Ironworkers, International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers, 06-01-2015

International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers.  
Oxyfuel Gas Cutting and Welding, International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers, 06-01-2015

International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers.  
Introduction to Welding, International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers, 06-01-2015

Periodicals

Software

### **Equipment/Facilities**

<b><u>Reviewer</u></b>	<b><u>Action</u></b>	<b><u>Date</u></b>
<b>Faculty Preparer:</b> <i>Amanda Scheffler</i>	<i>Faculty Preparer</i>	<i>Dec 01, 2015</i>
<b>Department Chair/Area Director:</b> <i>Glenn Kay II</i>	<i>Recommend Approval</i>	<i>Dec 08, 2015</i>
<b>Dean:</b> <i>Brandon Tucker</i>	<i>Recommend Approval</i>	<i>Dec 14, 2015</i>
<b>Curriculum Committee Chair:</b> <i>Kelley Gottschang</i>	<i>Recommend Approval</i>	<i>Jan 21, 2016</i>
<b>Assessment Committee Chair:</b> <i>Michelle Garey</i>	<i>Recommend Approval</i>	<i>Jan 25, 2016</i>
<b>Vice President for Instruction:</b> <i>Michael Nealon</i>	<i>Approve</i>	<i>Jan 25, 2016</i>