



## COURSE OUTLINE: MTF109 - OXY FUSION/BRAZE WEL

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

<b>Course Code: Title</b>	MTF109: OXY FUSION AND BRAZE WELDING
<b>Program Number: Name</b>	4051: METAL FABRICATION 4053: WELDING TECHNIQUES
<b>Department:</b>	IRONWKR APPR./WELDING RELATED
<b>Semesters/Terms:</b>	19F
<b>Course Description:</b>	This course teaches students how to safely set up Oxyfuel equipment, how to safely use the equipment, torch cut various thickness of metal materials, fusion weld with or without filler metal, and braze. Techniques needed to weld and cut, will develop hand eye skills required to be a welder.
<b>Total Credits:</b>	2
<b>Hours/Week:</b>	2
<b>Total Hours:</b>	30
<b>Prerequisites:</b>	There are no pre-requisites for this course.
<b>Corequisites:</b>	There are no co-requisites for this course.
<b>Substitutes:</b>	MTF136
<b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>	<p><b>4051 - METAL FABRICATION</b></p> <p>VLO 3 Prepare materials by utilizing fabrication machinery and equipment.</p> <p>VLO 5 Understand and use a variety of destructive and non-destructive methods to test welds.</p> <p>VLO 7 Complete all work in compliance with health and safety legislation and prescribed organizational practices and procedures to ensure safety of self and others.</p> <p>VLO 8 Work responsibly and effectively in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.</p>
<b>Essential Employability Skills (EES) addressed in this course:</b>	<p>EES 5 Use a variety of thinking skills to anticipate and solve problems.</p> <p>EES 10 Manage the use of time and other resources to complete projects.</p> <p>EES 11 Take responsibility for ones own actions, decisions, and consequences.</p>
<b>Course Evaluation:</b>	Passing Grade: 50%, D
<b>Other Course Evaluation &amp; Assessment Requirements:</b>	<ol style="list-style-type: none"> <li>1. Late hand in penalties will be 10% per day. Assignments will not be accepted past one week late unless there are extenuating and legitimate circumstances.</li> <li>2. If a student misses a test/lab he/she must have a valid reason (i.e. medical or family emergency documentation shall be required). In addition, the instructor MUST be notified PRIOR to the test or lab sitting. If this procedure is not followed the student will receive a mark of zero on the test/lab with no make-up option.</li> <li>3. Re-writes are NOT allowed for any written assignment, quiz or test.</li> <li>4. Repeats are NOT allowed for any shop test.</li> <li>5. Course attendance is mandatory. One percent (1 %) per hour will be deducted from the final</li> </ol>



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course grade for unexcused\* absence.

Valid reasons would include:

Doctors note

Family Death or Serious Illness supported by a written note.

**Course Outcomes and Learning Objectives:**

<b>Course Outcome 1</b>	<b>Learning Objectives for Course Outcome 1</b>
A trade curriculum that has been designed to provide students with a combination of theoretical knowledge and hands on skill in relation to the safe use and operation of Oxy\Fuel welding, cutting and heating equipment.	<p>1. Identify equipment and procedures required to assure personal safety while engaged in shop activities.</p> <p>Potential Elements of the Performance:</p> <ul style="list-style-type: none"><li>- identify proper work boots, gloves and eye protection</li><li>- identify recommended fabrics and materials for personal protective clothing</li><li>- understand the general organization and layout of the welding shop facility</li><li>- locate and identify shop lighting and ventilation controls</li><li>- locate and identify emergency exits</li><li>- identify and select proper shades of welding / cutting lens</li><li>- identify, select and adjust helmets for proper fit and vision</li><li>- understand procedures for evacuation of shop areas in the case of emergencies</li></ul> <p>2. Identify oxyacetylene cutting and welding equipment / accessories including their construction, operation, assembly and disassembly</p> <p>Potential Elements of the Performance:</p> <ul style="list-style-type: none"><li>- cylinders</li><li>- identification</li><li>- general construction</li><li>- pressure regulators</li><li>- manual valves</li><li>- manifold systems</li><li>- gages and hoses</li><li>- torch body</li><li>- tips for cutting, heating, welding</li><li>- cutting attachments</li><li>- flashback arrestors</li><li>- check equipment for safe operating condition</li></ul> <p>3. Identify, describe and demonstrate the theory of oxyacetylene cutting.</p> <p>Potential Elements of the Performance:</p> <ul style="list-style-type: none"><li>- set up equipment for oxyacetylene cutting</li><li>- select tip size and set cutting pressures for a given thickness of metal</li><li>- check equipment for safe operation</li><li>- pressurize, ignite, adjust and safely operate a cutting torch</li><li>- perform typical flame cutting operations to include</li><li>- square cut c/w re-start</li><li>- bevel cut c/w re-start</li><li>- piercing and making holes</li><li>- prepare plate edges for butt welding</li></ul>



4. Demonstrate the ability to recognize weld faults and control distortion.

Potential Elements of the Performance:

- name the factors that determine weld quality
- list the properties of a good weld
- identify and sketch three types of oxyacetylene welding flames
- name the factors that determine tip selection
- state the purpose of using a filler rod
- list the factors that determine filler rod selection
- state the cause and methods of control for welding faults
- state the cause and methods of control for distortion

5. Demonstrate the ability to deposit sound weld beads, tack welds

and butt joints with filler rod using fusion and brazing techniques.

- Potential Elements of the Performance:

- set up equipment for oxyacetylene welding
- select tip size and set welding pressures for a given thickness of metal
- pressurize, ignite, adjust and safely operate a welding torch
- check equipment for safe operation
- deposit weld beads on mild steel plate with filler rod
- prepare butt joints to specification for welding
- tack weld joints to maintain alignment
- butt weld mild steel plate in the flat, horizontal and vertical position with filler rod.

**Evaluation Process and Grading System:**

<b>Evaluation Type</b>	<b>Evaluation Weight</b>
Braze Welding	35%
Cutting	30%
Fusion Welding	35%

**Date:**

July 25, 2019

**Addendum:**

Please refer to the course outline addendum on the Learning Management System for further information.

