Course Code: Title	MTF210: SHIELDED METAL ARC WELDING - ADVANCED
Program Number: Name	4051: METAL FABRICATION
Department:	IRONWKR APPR./WELDING RELATED
Semesters/Terms:	19F
Course Description:	This course revisits the skills presented in introductory-level courses involving shielded metal arc welding. It provides students with additional time in the shop to finish projects they may have started in the first two courses, with a focus on reinforcing the skills they have learned so that their applied skills are strengthened. Once students demonstrate mastery of these basic techniques, they will be introduced to t-class open route welding of plates as well as begin working on pipe welding.
Total Credits:	2
Hours/Week:	2
Total Hours:	30
Prerequisites:	MTF107, MTF137
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: Please refer to program web page for a complete listing of program outcomes where applicable.	**4051 - METAL FABRICATION** VLO 2 Apply knowledge of various welding and metal cutting techniques and theories to produce components and sub-assemblies. VLO 3 Prepare materials by utilizing fabrication machinery and equipment. VLO 5 Understand and use a variety of destructive and non-destructive methods to test welds. 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. VLO 8 Work responsibly and effectively in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.
Essential Employability Skills (EES) addressed in this course:	EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	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. 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.

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3. Re-writes are NOT allowed for any written assignment, quiz or test.
4. Repeats are NOT allowed for any shop test.
5. Course attendance is mandatory. One percent (1 %) per hour will be deducted from the final 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:

Course Outcome 1	Learning Objectives for Course Outcome 1
A trades 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 the SMAW welding process. Students must be able to complete all S-class tests to proceed on to T-class and pipe.	Identify and Select Personal Protective Equipment for Arc Welding Operations Potential Elements of the Performance: identify proper eye, hand and face protection identify proper footwear and clothing identify and select filter lenses describe the effects of exposure to ultra violet and / or infra red radiation locate and identify shop ventilation controls locate and identify emergency exits locate and identify manifold shut-off valves for the shop gas system identify hazards associated with the SMAW process understand emergency shop evacuation procedures Demonstrate and describe how to set up and operate a typical SMAW Workstation. Potential Elements of the Performance: identify, select and adjust welding helmets and lenses identify SMAW electrodes according to type, size, current type, polarity and welding position according to AWS and CSA designation identify and describe the various types of welding machine according to construction, duty cycle and current type perform a routine inspection of assigned workstation to determine the condition of welding machine, cables, electrode holders and related equipment understand the hazards of open circuit voltage (OCV) and arc voltage identify / set welding machine controls to their designated value(s) describe techniques for arc ignition, electrode manipulation and travel speeds produce trial weld beads to identify possible defects and verify current settings Demonstrate the ability to produce sound S- Class or T-Class welds as well as identify / troubleshoot and make corrective adjustments for weld defects. Potential Elements of the Performance: prepare material, ensure proper fit-up and use correct tacking

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procedures for the following welds
groove welds on various material thicknesses in the 1G (flat) position
groove welds on various material thicknesses in the 2G (horizontal) position
groove welds on various material thicknesses in the 3G (vertical) position
groove welds on various material thicknesses in the 4G (overhead) position
complete coupon bend procedures

Describe pipe weld operations.
Potential Elements of the Performance:
proper material preparation procedures
fit-up and tacking procedures
in the 2G position tack and feather
complete remaining welds, ``````` in 2G position then tack in 5G and complete welds
6G on various pipe diameters

Evaluation Process and Grading System:	

Evaluation Type	Evaluation Weight
Practical Tests	100%

Date:	July 25, 2019
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.