Prepared: Dave Holley Approved: Corey Meunier

Course Code: Title	WLD0121: WELDING
Program Number: Name	1120: COMMUNITY INTEGRATN
Department:	C.I.C.E.
Semester/Term:	17F
Course Description:	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 both OFG/SMA welding, cutting and heating equipment.
Total Credits:	2
Hours/Week:	2
Total Hours:	30
Essential Employability Skills (EES):	#4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #10. Manage the use of time and other resources to complete projects. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	1. 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 (as determined by instructor). 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. 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. Any absence without a written, valid reason will be deemed unexcused. Valid reasons would include: Doctors note

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	Family Death or Serious Illness supported by a written note.
Evaluation Process and Grading System:	

Evaluation Type	Evaluation Weight
Shop Assignments	65%
Theory Test	35%

Books and Required Resources:	Course Pack WLD121 by Alberta ILM
Course Outcomes and Learning Objectives:	Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will acquire varying levels of skill development relevant to the following learning outcomes:

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 both OFG / SMA welding, cutting and heating equipment

Learning Objectives 1.

Upon successful completion of this course, the student will demonstrate the ability to:

1. Personal Protective Equipment for Oxy-Fuel Gas Welding Cutting and Heating 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 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
- understand emergency shop evacuation procedures

2. Construction of Oxygen Acetylene and other Fuel Gas Cylinders.
Potential Elements of the Performance:
- describe the physical construction of both acetylene and oxygen cylinders
- locate and identify the built-in safety devices for both acetylene and oxygen cylinders

- identify both acetylene and oxygen cylinders, hoses, regulators and fittings
- identify basic physical properties and dangers associated with the use of acetylene gas
- identify basic physical properties and dangers associated with the use of oxygen gas
- describe proper procedures for cylinder handling
- pressurize and purge regulators, hoses, torch body and tips
- explain the dangers associated to the hazards of backfire and flashback
- explain the correct safe response to backfire and flashback
- perform specified procedures for flame ignition and adjustment

3. Observe Demonstrations of the Braze Welding and Fusion Welding Processes c/w their Required Equipment.
Potential Elements of the Performance:
- observe and identify fusion welding and braze welding equipment to include:

o gas supply (cylinders vs manifold lines)
o regulators
o hoses
o torch handles
o welding tips
o filler metals
o face and eye protection

- observe procedures for setting up, pressurizing, purging and shutting down oxyacetylene welding equipment
- describe potential fire, fume and explosion hazards associated with the welding, flame cutting and heating of metals
- observe and identify common welding techniques to include:

o base metal cleaning and preheating
o fusion welding of a mild steel bead and joint
o destructive testing of same
o braze welding of a mild steel bead and joint
o destructive testing of same

- complete a ‘Demonstration Report Form’ on the above course material

4. Perform Flame Cutting Operations on Mild Steel.
- observe and identify flame cutting equipment to include:

o gas supply (cylinders vs manifold lines)
o regulators
o hoses
o torch handles
o cutting tips

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o face and eye protection
- observe procedures for setting up, pressurizing, purging and shutting down oxyacetylene flame cutting equipment
- perform a routine inspection of individual workstation to determine the condition of the torch body, hoses, regulators and tips
- correct / report workstation deficiencies prior to the commencement of shop assignments
- perform flame cutting exercises on mild steel to include

o square cut a straight line
o square cut an 'S' shaped line
o bevel cut a straight line
o pierce mild steel and cut holes

5. Arc Welding Terms and Equipment.
Potential Elements of the Performance:
- Define or describe the following terms

o Fusion
o Penetration
o Leg Size
o Profile
o Defect / Discontinuity
- Describe the Basic Principles behind each of the following:

o SMAW Process
o Welding Current and Polarity
o AC and DC Welding Machines
o Arc Blow

6. CAS and AWS Classification of SMAW Electrodes.
Potential Elements of the Performance:
- identify, select electrodes by

o Classification
o Diameter
o Desired Weld Appearance
- Identify and select the correct operating current for electrodes based upon

o Diameter
o Joint Design
o Required Strength
- Identify the correct storage and handling procedures for each of the following electrode types

o Low Hydrogen
o Non-Low Hydrogen

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	7. Arc Welding Operations. Potential Elements of the Performance • adjust SMAW equipment and settings according to the demands of single and multi-pass fillet and groove welds • deposit single and multi-pass fillet welds on mild steel, in the flat position • identify and troubleshoot the cause(s) of weld defects • identify and explain limited repair and service activities related to electrode cables, holders, welding machines and protective equipment
CICE Modifications:	**<u>Preparation and Participation</u>** 1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes. 2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.) 3. Study notes will be geared to test content and style which will match with modified learning outcomes. 4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible. **A.** Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor. **B. Tests may be modified in the following ways:** 1. Tests, which require essay answers, may be modified to short answers. 2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding. 3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues. 4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices. **C. Tests will be written in CICE office with assistance from a Learning Specialist.** ***The Learning Specialist may:*** 1. Read the test question to the student.

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	2. Paraphrase the test question without revealing any key words or definitions. 3. Transcribe the student's verbal answer. 4. Test length may be reduced and time allowed to complete test may be increased. **D. Assignments may be modified in the following ways:** 1. Assignments may be modified by reducing the amount of information required while maintaining general concepts. 2. Some assignments may be eliminated depending on the number of assignments required in the particular course. ***The Learning Specialist may:*** 1. Use a question/answer format instead of essay/research format 2. Propose a reduction in the number of references required for an assignment 3. Assist with groups to ensure that student comprehends his/her role within the group 4. Require an extension on due dates due to the fact that some students may require additional time to process information 5. Formally summarize articles and assigned readings to isolate main points for the student 6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment **E. Evaluation:** Is reflective of modified learning outcomes. **NOTE:** Due to the possibility of documented medical issues, CICE students may require alternate methods of evaluation to be able to acquire and demonstrate the modified learning outcomes
Date:	Wednesday, September 6, 2017
	Please refer to the course outline addendum on the Learning Management System for further information.