COURSE OUTLINE: MET621 - WELDING

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Course Code: Title	MET621: WELDING
Program Number: Name	6240: PLUMBER - LEVEL I
Department:	IRONWKR APPR./WELDING RELATED
Semesters/Terms:	19F, 20W, 20F
Course Description:	This course provides apprentices with a combination of knowledge and practical skill in the operation and safe use of oxy-acetylene flame cutting and fusion welding equipment. Trade specific skills are developed through the preparation and fusion welding of lap, tee and groove weld joints on both flat gage metal and small diameter pipe. Personal and shop safety are stressed throughout the course and are reinforced by means of an independent reading assignment complete with a final theory test.
Total Credits:	3
Hours/Week:	3
Total Hours:	24
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	MET721
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:	Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 - 59% 1.00 F (Fail)49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar`s office. W Student has withdrawn from the course without academic penalty.

Books and Required Resources:	ILM Welding Bundle *B* OXY/OXY/DIS by Alberta ILM Publisher: AK Graphics

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
This curriculum is based on the Welding Curriculum designed for Plumber Apprentices and approved by the Ministry of Training, Colleges and Universities. No changes should be made to it without prior examination of the specific Learning Outcomes / Content of the Ministry document.	1. Identify equipment and procedures required to assure personal safety while engaged in shop activities. Potential Elements of the Performance: - identify proper work boots, gloves and eye protection - identify recommended fabrics and materials for personal protective clothing - understand the general organization and layout of the welding shop facility - locate and identify shop lighting and ventilation controls - locate and identify emergency exits - identify and select proper shades of welding / cutting lens - identify, select and adjust helmets for proper fit and vision - understand procedures for evacuation of shop areas in the case of emergencies 2. Identify oxyacetylene cutting and welding equipment / accessories including their construction, operation, assembly and disassembly Potential Elements of the Performance: - cylinders - identification - general construction - pressure regulators - manual valves - manifold systems - gages and hoses - torch body - tips for cutting, heating, welding - cutting attachments - flashback arrestors - check equipment for safe operating condition 3. Identify, describe and demonstrate the theory of oxyacetylene cutting. Potential Elements of the Performance: - set up equipment for oxyacetylene cutting - select tip size and set cutting pressures for a given thickness of metal - check equipment for safe operation - pressurize, ignite, adjust and safely operate a cutting torch - perform typical flame cutting operations to include - square cut c/w re-start - bevel cut c/w re-start - piercing and making holes - list and sketch five (5) joint designs for welded joints - prepare plate edges for butt welding - prepare pipe ends for butt welding 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 in the flat position. 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 - butt weld a pipe joint in the horizontal fixed position

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Shop Assignments	100%

Date: July 25, 2019

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