COURSE OUTLINE: IRN710 - WELDING LEVEL 2

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Course Code: Title	IRN710: WELDING - LEVEL 2
Program Number: Name	6171: IRONWORKER - LEVEL 2
Department:	IRONWKR APPR./WELDING RELATED
Semesters/Terms:	19F
Course Description:	Upon successful completion, the apprentice will be able to perform shielded metal arc welding in accordance with government safety regulations and the requirements of the specified trade related task. This includes explaining blueprints and drawings related to shielded metal arc welding projects, and performing shielded metal arc position welding procedures primarily focusing on horizontal and vertical positional welding and progressing to overhead position welding as experience suits.
Total Credits:	4
Hours/Week:	5
Total Hours:	40
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
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.
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: - Doctor` s note - Apprenticeship Ministry note - Family Death or Serious Illness supported by a written note.
Books and Required Resources:	Course Pack IRN710 by Alberta ILM

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
This curriculum has been designed to provide apprentices with a combination of theoretical knowledge and practical (hands on) skill in the safe use and operation of SMAW welding procedures and equipment. Its terminal objective is to develop the skills necessary to pass a CWB Plate Test in the required position(s).	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. Demonstrate a sound working knowledge of how to perform SMAW procedures and to correct / troubleshoot weld defects. Potential Elements of the Performance: - describe potential fire, fume and explosion hazards associated to the SMAW process - perform appropriate adjustments to SMAW equipment specific to the demands of single and multi-pass fillet welds - make single and multi-pass fillet welds on mild steel - perform appropriate adjustments to SMAW equipment specific to the demands of single and multi-pass groove welds - make single and multi-pass groove welds on mild steel - perform destructive tests on welded joints to verify overall soundness - identify common weld defects based upon fracture and / or bend test results - describe and diagnose the cause(s) of common weld defects 3. Demonstrate a sound working knowledge of how to prepare fillet and groove weld joints according to AWS and CSA workmanship standards. Potential Elements of the Performance: - describe fillet welds according to: - leg size - throat size - profile - size / strength vs. strength - the negative effects of undercut - quality and soundness - fit up and design - describe groove welds according to: - throat size - profile - size / shape vs. strength - the negative effects of under-fill - quality and soundness

	- fit up and design - the use of backing strips 4. Demonstrate a sound working knowledge of how to perform and pass a CWB Plate Test* Potential Elements of the Performance: - describe the physical dimensions of the CWB test plate assembly including: - bead sequence - position and number of stop / restarts - the acceptance criteria for the size and shape of the completed weld - describe the physical bend test procedure to include: - plate thickness, width and length - bevel angle - root opening - number and size of bend test coupons - describe the welding procedure to include: - preparation and condition of bend coupons - identification of face vs. root bend coupons - acceptance criteria for possible defects *S-Class Plate Test for Apprentices w/o a valid S-Class CWB Ticket *T-Class Plate Test for Apprentices with a valid S-Class CWB Ticket

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Shop Assignments	100%

Date: October 15, 2019

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