COURSE OUTLINE: MTF237 - AUTOMATED CUTTING

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Course Code: Title	MTF237: AUTOMATED CUTTING
Program Number: Name	4051: METAL FABRICATION
Department:	IRONWKR APPR./WELDING RELATED
Academic Year:	2022-2023
Course Description:	Students will be learning top of the line CNC (Coordinate Numerical Controlled) equipment as well as coordinate drive track cutter. Each will be taught how to properly operate desk CNC software, complete start-up sequence, verify material and plasma components to produce quality parts.
Total Credits:	2
Hours/Week:	2
Total Hours:	28
Prerequisites:	MTF139
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 1 Interpret blueprints and produce basic drawings and bills of materials. 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 4 Create and use patterns and templates using common layout and measuring tools. 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 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. 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 A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	1. Late hand in penalties will be -10% per day. 2. If a student misses a test, 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 sitting. If this procedure is not followed the student will receive a mark of zero on the test with no make-up option. 3. Re-writes are NOT allowed for any written assignment, quiz or test. 4. Course attendance is mandatory. Any student that is not present for the first 3 classes in each course, will be deemed to have not completed the required safety orientation for the course and will not be permitted to continue. One percent (1 %) per hour will be deducted from the final course grade for unexcused* absence. Any unexcused attendance beyond 15% of the total allocated course hours will result in the student receiving a failing grade for the course. Valid reasons would include: Doctors note Family Death or Serious Illness supported by a written note. Unexcused absence* will be determined in a case by case basis by the instructor of each course.
Books and Required Resources:	Instructor Supplied Handouts by Instructor Kit: ILM Post Secondary Package by Alberta Government Publisher: AK Graphics, Sault College Print Shop IPT`s Metal Trades & Welding Publisher: IPT Publishing & Training Ltd

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 CNC controlled Plasma cutting table and Coordinate drive track cutter processes.	Define safety related concepts. Potential Elements of the Performance: Personal protection electrical safety grounding bonding radiation heat noise fumes high open circuit voltage compressed air pressure Explain the features of plasma arc cutting and Oxy/fuel gas equipment. Potential Elements of the Performance: Types of Power Supplies Torch models

	Gauge settings Hoses Fittings Tips and consumables Pressures Speed of travel Types of cuts Material types Material thickness Quality control Complete equipment start-up sequence and procedures. Potential Elements of the Performance: Turn on desktop computer. Confirm torch consumables match material thickness and cut quality desired for part. Verify air/gas supply. Power-up THC (height control). Main control box. Hypertherm plasma unit. Operate Desk CNC Software Potential Elements of the Performance: Initiate Desk CNC software. Follow operations instruction manual. Verify torch coordinates Ensure all safety screens or shields are in place Check measurements of cut piece Cut full quantity Follow proper shut-down procedures. Demonstrate the ability to produce templates for cutting. Potential Elements of the Performance: Complete traceable drawing that conforms to part requirements. Calculate kerf for inside and outside cuts to ensure correct dimensions. Conserve material with layout techniques. Use multiple cutting attachments to complete production requirements. Clean finished components for fabrication.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
CNC Plasma	45%
Employability Skills	10%
Tracking Cutter	45%

Date: June 27, 2022

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