COURSE OUTLINE: MTF131 - FABRICATION 1

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Course Code: Title	MTF131: FABRICATION 1
Program Number: Name	4051: METAL FABRICATION 4053: WELDING TECHNIQUES
Department:	IRONWKR APPR./WELDING RELATED
Academic Year:	2024-2025
Course Description:	Plan and perform practical fitting projects in accordance with government safety regulations, manufacturer recommendations, and approved industry standards.
Total Credits:	3
Hours/Week:	3
Total Hours:	42
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:	MTF201, MTF211
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 6 Develop project plans relating to component and sub-assembly production. 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. **4053 - WELDING TECHNIQUES** VLO 1 Perform work responsibly and in compliance with the Occupational Health and Safety Act. VLO 2 Interpret engineering drawings and blueprints and produce basic graphics as required by industry. VLO 3 Recognize and understand use of welding symbols. VLO 4 Use layout and fabrication processes typical to the industry to determine correct form with accuracy.

	VLO 5	Select appropriate tools and devices to perform mathematical calculations and technical measurements for successful completion of a project.
	VLO 6	Perform weld applications utilizing Shielded Metal Arc (SMAW), Flux Core (FCAW) and Gas Metal Arc (GMAW Mig Welding) welding equipment.
	VLO 7	Use welding techniques according to industry standards.
	VLO 8	Create high quality welds on various types of materials and create joints in the flat, horizontal, vertical and overhead positions.
	VLO 9	Identify defect in welds, demonstrate how to prevent them and define procedures for correction of defective weld quality.
Essential Employability Skills (EES) addressed in this course:	EES 2	Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	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 7	Analyze, evaluate, and apply relevant information from a variety of sources.
	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:	CWB Post Secondary Package by CWB Education Publisher: CWB Group	

IPT`s Guide To Blueprint Interpretation by Grant E. Jacobs
Publisher: IPT Publishing & Training Ltd.

Welding Supplies available at LINDE and Air Liquide Sault Ste. Marie by Welding Supplies

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 planning and performing practical fitting projects in accordance with government safety regulations, manufacture`s recommendations and approved industry standards.	1. Plan and Set Up A Workspace. Potential Elements of the Performance: - Locate and set up sufficient space for work to take place - Plan a safe work environment - Ensure lighting is adequate - Describe appropriate ventilation and air flow requirements - Ensure proper material handling - Identify overhead hazards - Ensure and plan for proper work process flow 2. Select Materials From Specifications. Potential Elements of the Performance: - Understand the importance of heat numbers - Identify the components of receiving documentation - Identify structural shapes - Identify bolts, nuts and washers 3. Demonstrate Structural Fitting Techniques. Potential Elements of the Performance: - Understand the difference between actual and nominal dimensions - Understand symbols for structural shapes - Describe the importance of access holes - Identify the importance of following proper code references - Identify stiffener details - Describe the purpose of end plates - Explain the proper use of hole punch guides 4. Perform Assigned Practical Fitting Projects. Potential Elements of the Performance: - Demonstrate the ability to perform cutting and fitting exercises all or part of which may be used in one or more structural projects - Beam - Layout a 45 and 90 degree cope - Cut parts - Fit parts tack parts together - Channel - Layout a 45 and 90 degree cope - Cut parts - Fit parts tack parts together

	- Angle - Layout a 45 and 90 degree cope - Cut parts - Fit parts tack parts together - Box construction project - Layout parts - Bend - Fit parts - Tack parts - Elbows - Layout - Cut parts - Fit parts - Tack parts - Pipe projects - Use wrap from layout and pattern development - Form lateral branch - Form tee connection - Layout parts - Cut parts - Fit parts - Tack parts

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Angle Cope	15%
Beam Cope	15%
Channel Cope	15%
Cutting Project	10%
Flange Cut	15%
Pipe Miter	15%
Plate Fit Up Project	15%

Date: July 12, 2024

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