COURSE OUTLINE: MTF132 - GTAW WELDING 1

Prepared: Dave Holley
Approved: Corey Meunier, Dean, Technology, Trades, and Apprenticeship

Course Code: Title	MTF132: GAS TUNGSTEN ARC WELDING 1
Program Number: Name	4051: METAL FABRICATION 4053: WELDING TECHNIQUES
Department:	IRONWKR APPR./WELDING RELATED
Academic Year:	2024-2025
Course Description:	Perform welding procedures using Gas Tungsten Arc Welding (GTAW) process in accordance with government safety regulations, manufacturer recommendations, and approved industry standards.
Total Credits:	2
Hours/Week:	2
Total Hours:	28
Prerequisites:	There are no pre-requisites for this course.
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 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 5 Understand and use a variety of destructive and non-destructive methods to test welds. 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 3 Recognize and understand use of welding symbols. 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 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. 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
Curriculum based on demonstrating the knowledge and skills required to be competent in the gas tungsten arc welding process while following applicable industry standards and codes.	Upon successful completion of this course, the student will demonstrate the ability to: 1. Describe the power sources required for the gas tungsten arc welding process. - Constant current power sources. - Alternating current and direct current. - Power source requirements.

	- Power source options and features. - Power source set up and maintenance. 2. Describe the process requirements in regards to filler metals, electrodes and shielding gasses. - Shielding gasses. - AWS electrode classifications. - AWS and CSA filler metal classifications. - Proper selection of filler metals, electrodes and shielding gasses. 3. Understand the proper procedures and requirements for welding of various metals with the gas tungsten arc welding process. - GTAW aluminum and its alloys. - GTAW stainless steels and its alloys. - GTAW mild carbons steels and their alloys. 4. Describe maintenance and trouble shooting of gas tungsten arc welding equipment. - GTAW torch assembly. - GTAW flow meters and regulators. - GTAW hoses and cables 5. Demonstrate the ability to weld with the gas tungsten arc welding process. - Produce acceptable welds on mild steel.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
1F Lap Carbon Steel	15%
1F Lap/Tee Aluminum	15%
1F Lap/Tee Stainless Steel	15%
1F Tee Carbon Steel	10%
2F Lap Carbon Steel	15%
2F Tee Carbon Steel	10%
3F Tee Carbon Steel	10%
Employability Skills	10%

Date: July 12, 2024

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