

Program Information

Industrial Welding

2024/2025

Program Overview	MITT's Industrial Welding certificate program helps students build a strong foundation of the knowledge and skills required to design and build products by cutting and joining materials using ferrous and non-ferrous materials. Students work independently or in teams using current welding and fabrication equipment to complete projects in a learning environment that simulates an industrial welding shop.
Area of Study	Skilled Trades
Credential	Certificate
Program Length	1 Year Full time (10 months)
Delivery	In-Classroom
Work-Integrated Learning	No
Open to International Students	No
CIP Code	48.0508

Career Outcomes

- Welder
- Fabricator

- Welding Inspector
- Pipefitter
- Boilermaker
- Structural Welder
- Sheet Metal Worker
- Ironworker
- Millwright
- Underwater Welder

All Courses

Course Name	Description	Hours
Welding Safety and Orientation (W-100)	This course introduces students to essential workplace safety practices for welding and industrial environments. Topics include health and safety regulations, workers' rights, WHMIS, and shop safety protocols. Students learn proper use of personal protective equipment (PPE), fire safety, fume and gas handling, and ventilation system functions to ensure respiratory health.	64 hours
Hand and Power Tools (W-110)	This course trains students in the safe selection, operation, and maintenance of hand and power tools used in welding and fabrication. Tools covered include grinders, drills, shear, iron worker, and measuring instruments. Students apply their skills through a hands-on metalworking project, reinforcing precision, tool handling, and safety techniques.	100 hours

Math and Science for Welders (W-120)	This course equips students with math and science skills essential for precision welding. Math topics include fractions, decimals, geometry, and trigonometry for accurate measurements and calculations. The science component covers metallurgy fundamentals, metal properties, and the effects of heat on materials, including distortion control.	43 hours
Introduction to Drawing, Symbols, and the Welding Process (W-130)	This course develops students' ability to read and interpret welding blueprints and technical drawings. Students learn to identify lines, views, and welding symbols while applying math skills to determine dimensions. Hands-on practice with real blueprints prepares students for industry expectations in accurate weld planning.	64 hours
Oxy-Fuel Welding (Theory) (W-140)	This course provides an overview of oxy-fuel welding, with a focus on oxy-acetylene processes. Students learn equipment setup, safety procedures, and welding and cutting techniques. Topics include oxy-acetylene cutting, brazing, plasma arc cutting, and carbon arc gouging, with an emphasis on safety devices and proper settings.	43 hours
Oxy-Fuel Welding (Lab) (W-150)	This hands-on course teaches students to safely set up and shut down oxy-acetylene equipment. Practical skills include achieving the correct flame, manipulating the weld puddle, and performing oxy-acetylene welding on various joints using filler rods. Students also develop precision in straight-line and shape cutting.	100 hours

Shielded Metal Arc Welding (SMAW) Theory (W-160)	This course covers the principles and safety practices of shielded metal arc welding (SMAW). Students learn about power sources, electrode selection, and proper manipulation techniques to achieve strong welds. The course also addresses common welding mistakes and how to prevent them.	43 hours
Shielded Metal Arc Welding (SMAW) Lab (W-170)	This practical course develops SMAW welding skills in flat, horizontal, vertical, and overhead positions. Students learn techniques for each position while focusing on avoiding defects such as porosity and undercutting. Hands-on training builds confidence in producing structurally sound welds.	100 hours
Gas Metal Arc Welding (GMAW) Theory (W-180)	This course provides an introduction to gas metal arc welding (GMAW), including safety practices, power sources, and equipment troubleshooting. Students learn about shielding gases, metal transfer modes, and electrode selection, with an emphasis on weld quality and contamination prevention.	64 hours
Gas Metal Arc Welding (GMAW) Lab (W-190)	This hands-on course teaches students to perform GMAW welding in flat, horizontal, vertical, and overhead positions. Training focuses on adapting techniques for each position, recognizing weld faults, and applying best practices to ensure high-quality welds in different settings.	100 hours
Flux Core Arc Welding (FCAW) and Metal Core Arc Welding	This course introduces wire-fed welding techniques, focusing on FCAW and MCAW processes. Students learn electrode selection, process advantages, and	42 hours



(MCAW) Theory (W-200)	industrial applications. Safety considerations and operational differences between FCAW and MCAW are also covered.	
Flux Core Arc Welding (FCAW) Lab (W-210)	This practical course develops students' FCAW welding skills in flat, horizontal, vertical, and overhead positions. The course also covers MCAW techniques for flat and horizontal positions, emphasizing proper welding methods, quality control, and common fault prevention.	100 hours
Industrial Welding Capstone (W-220)	This capstone course prepares students for Canadian Welding Bureau (CWB) certification testing. Students refine their SMAW, GMAW, and MCAW welding skills, working toward earning up to eight CWB tickets. Hands-on training ensures readiness for professional certification and career advancement.	100 hours