

INTEGRATED METALS: WELDING TECHNOLOGY - CERTIFICATE

Overview

See Department website and program contacts here (<https://www.mhcc.edu/education-options/degrees-certificates/integrated-metals/welding-technology-certificate/index/>)

The **Integrated Metals: Welding Technology certificate** is designed for students seeking foundational skills in welding, fabrication, and metalworking. The curriculum provides hands-on technical training for students with little or no previous welding experience and prepares them for entry into welding and manufacturing industries.

Coursework includes topics such as **shielded metal arc welding, gas metal arc welding, flux cored arc welding, gas tungsten arc welding, blueprint reading, metallurgy, and CNC plasma cutting**. Students develop practical technical skills used in fabrication, manufacturing, and industrial welding environments.

The Integrated Metals: Welding Technology certificate is workforce-focused and prepares students for entry-level employment in welding and related skilled trades industries. Students completing the certificate also complete nearly half of the requirements for the Integrated Metals (AAS) degree.

The program may be started in the **fall or winter term**. Students wishing to complete the program within one school year should begin in the fall term and attend full time during the day. Part-time evening enrollment options are also available.

Students are encouraged to work with an advisor (<https://www.mhcc.edu/student-resources/academic-advising/>) to ensure appropriate course selection and program planning based on their educational background and career goals.

Refer to the tabs above for additional information about:

- **Education Plan** – provides a sample term-by-term sequence of courses
- **Career Info** – includes information on potential occupations, employment trends, and earnings

Program Learning Objectives

At the completion of this program, students should be able to:

- Demonstrate safety procedures and safety inspections for welding processes and related equipment
- Identify manual welding, manual and CNC cutting equipment and accessories and explain power source principles of operation
- Read, interpret and apply blueprint specifications and weld symbols for the production and inspection of manufactured work pieces
- List and perform set-up, adjustments and operations of manual welding, and manual CNC plasma and oxyfuel cutting equipment in preparation and completion of welding practice plates and automated cutting examples
- Describe and perform welding and cutting processes as they relate to ferrous and non-ferrous metals

- Identify various electrodes, filler wires, shielding gasses and current types, and their relationship to base-metal varieties
- Describe and apply the variables and techniques used to weld carbon steel, stainless steel and aluminum to print specifications with regard to joint types, weld types and positions of welding
- Describe and apply principles of metallurgy including heat treating, hardness testing and observe-and-report inspection methodology
- Formulate and write a unique welding procedure specification based on data collected from local welding and fabrication industry employers
- Visually examine welds for discontinuities, defects, correct weld size and placement, providing solutions for welding procedure errors
- Produce acceptable test plate weldments according to American Welding Society (AWS) code specifications

Education Plan

This sample Education Plan illustrates one possible course sequence. Students should consult an advisor (<https://www.mhcc.edu/student-resources/academic-advising/>) to create a personalized plan.

Students are required to maintain a minimum grade of “C” in all IMTL courses.

General education courses (such as math, writing, health, etc.) can be taken during any term, or before starting the program.

First Quarter

Fall		Credits
IMTL120	SMAW (Shielded Metal Arc Welding/Stick) Theory	2
IMTL121	SMAW (Shielded Metal Arc Welding/Stick) Lab	3
IMTL124	Blueprint Reading for Welding Applications	3
IMTL155	Industrial Safety	3
IMTL171	Welding Certificate Program Lab I	1
WR101 or WR121Z	Workplace Communications I or Composition I	3-4
	Credits	15-16

Second Quarter

Winter		
IMTL134	Metallurgy Theory	3
IMTL135	Metallurgy Lab	1
IMTL140	GMAW/FCAW (Gas Metal and Flux Cored Arc Welding/Wire Feed) Theory	2
IMTL141	GMAW/FCAW (Gas Metal and Flux Cored Arc Welding/Wire Feed) Lab	3
IMTL172	Welding Certificate Program Lab II	1
IMTL143 (Winter) or IMTL163 (Spring)		3-4
Human Relations requirement (https://catalog.mhcc.edu/degree-certificate-requirements/aas/#human)		3-4
	Credits	16-18

Third Quarter

Spring		
IMTL128	GTAW (Gas Tungsten Arc Welding/ TIG) Theory	2
IMTL129	GTAW (Gas Tungsten Arc Welding/ TIG) Lab	3

IMTL152	Welding Processes and Procedures	2
IMTL160	Fabrication Practices Theory	2
IMTL161	Fabrication Practices Lab	3
IMTL173	Welding Certificate Program Lab III	1
MTH065 or MTH058	Beginning Algebra II (or higher) or Quantitative Reasoning I	4-6
Credits		17-19
Total Credits		48-53

Career Information

Explore potential careers related to this program, including typical job roles, employment trends, and projected growth. This information can help you better understand how your education may align with future career opportunities.