INTEGRATED METALS: ADVANCED WELDING TECHNOLOGY - CERTIFICATE

Overview

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

The **Integrated Metals: Advanced Welding Technology certificate** is designed for students seeking advanced skills in welding, fabrication, and industrial metalwork. The curriculum builds on foundational welding knowledge and prepares students for more advanced technical work in welding and manufacturing industries.

Coursework includes advanced instruction in **welding processes, welding procedures, pipe welding, fabrication techniques, material preparation, fitting, and welding in multiple positions**. Students develop hands-on technical skills used to prepare, fit, and weld a wide variety of materials and joint types commonly encountered in industry settings.

The Integrated Metals: Advanced Welding Technology program is workforce-focused and prepares students for employment in high-demand welding and fabrication industries, including positions involving advanced pipe welding and industrial fabrication work.

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

- Demonstrate safety procedures and safety inspections for advanced welding processes and related equipment
- Operate various welding equipment and accessories for advanced power use and sustainability
- Read, interpret and apply blueprint specifications for the production and inspection of manufactured work pieces
- Describe and perform advanced welding processes
- Describe and apply the variables and techniques used to weld carbon steel to blueprint specifications with regard to joint types, weld types and positions of welding
- Be familiar with advanced welding codes and the applicable weld acceptance criteria
- Ability to prepare, fit and weld following complicated welding procedure specification for qualification
- Maintain good housekeeping practices for a clean and safe work environment
- Able to set up welding equipment for the advanced operations of FCAW, GMAW, GTAW, SMAW
- Ability to set up and safely operate OFC and CAC equipment for advanced cutting and gouging
- Ability to identify and describe advanced weldable metals such as mild steel, stainless steel and aluminum

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.

The Integrated Metals: Advanced Welding Technology Program is designed to build on the knowledge and technical skills developed by students who have completed the first-year basic welding technology classes. The advanced courses introduce more detail about the welding processes, procedures, and materials the students are exposed to in the industry. The addition of advanced pipe welding classes exposes the students to another side of the industry that is in high demand. By the end of the advanced welding program, students will have learned the skills necessary to prepare, fit, and weld a wide range of materials, weld joints, and in all positions.

First Quarter		
Fall		**Credits**
IMTL208	Pre-Pipe Welding	2
IMTL209	Pre-Pipe Welding Lab	3
IMTL224	Blueprint Reading for Welding Applications II	3
MEC110	Introduction to Manual Machine Tools	3
IMTL240	GMAW/FCAW (Gas Metal and Flux Cored Arc Welding/Wire Feed) Theory	2
IMTL241	Advanced GMAW/FCAW (Gas Metal and Flux Cored Arc Welding/Wire Feed) Lab	2
	Credits	**15**
Second Quarter		
Winter		
IMTL210	Pipe Welding	2
IMTL211	Pipe Welding Lab	3
IMTL228	GTAW (Gas Tungsten Arc Welding/ TIG) Theory II	2
IMTL229	Advanced GTAW (Gas Tungsten Arc Welding/TIG) Lab	2
IMTL260	Advanced Fabrication Practices Theory	2
IMTL261	Advanced Fabrication Practices Lab	2
	Credits	**13**
Third Quarter		
Spring		
IMTL220	SMAW (Shielded Metal Arc Welding/Stick)	2
IMTL221	SMAW (Shielded Metal Arc Welding/Stick) Lab II	2
IMTL173	Welding Certificate Program Lab III	1
MFG254	Manufacturing Economics and Job Prep	3
IMTL262	Fabrication Practices Theory III	2
IMTL263	Fabrication Practices Lab III	2
	Credits	**12**
	Total Credits	**40**

Awarding Requirements

The following requirement(s) must be fulfilled to be awarded the AAS in Integrate Metals (Welding and Machine Tool Technologies degree:

- All core program courses (IMTL, MEC) must be completed with a grade of "C" or higher.
- All core program courses (IMTL, MEC) must be completed within five (5) years of starting the program.

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.