

# Welding Technology & Fabrication CAS

## Certificate of Applied Science Degree

Program Directors: Doug Zander and Todd Reser

Program Website (<http://www.gfcmsu.edu/webs/Welding/>)

CAS Program Application ([http://www.gfcmsu.edu/webs/welding/documents/Welding\\_Application.pdf](http://www.gfcmsu.edu/webs/welding/documents/Welding_Application.pdf)) (Fall 2024 Application available February 15th)

**Note:** The Welding program is a limited enrollment program. Interested students must apply for entry into the program. An application packet is available here on the GFC MSU catalog website, the Welding program website or Admissions.

## Outcomes Tier 1

### Graduates are prepared to:

1. Demonstrate measuring methods and apply mathematical concepts to solve problems related to welding.
2. Demonstrate the ability to follow industry safety practices.
3. Demonstrate industry work ethic and professionalism.
4. Troubleshoot and critically think through problems with welding systems and processes.
5. Demonstrate the ability to produce welds that meet visual inspection criteria based on AWS codes and industry standards in all positions on the five basic joint configurations with carbon steel, stainless steel, and aluminum, using Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW).
6. Plan, design, and fabricate a weldment to industry standards by combining skills related to the various processes taught in the program. This will include cutting, preparing, welding, and assembling projects to specified tolerances.
7. Demonstrate the ability to set up and operate to industry standards Oxy-fuel, Air Carbon Arc Cutting, and Plasma Cutting equipment.
8. Demonstrate the ability interpret blueprints and welding symbols to accurately fabricate a product.
9. Identify materials and apply the principles of metallurgy during the welding process to solve the practical welding problems.

## Outcomes CAS

### Graduates are prepared to:

1. Demonstrate effective oral and written communication skills appropriate to the welding industry.
2. Demonstrate measuring methods and apply mathematical concepts to solve problems related to welding.
3. Demonstrate the ability to follow industry safety practices.
4. Demonstrate industry work ethic and professionalism.
5. Demonstrate basic knowledge about AWS (American Welding Society) D1.1, API (American Petroleum Institute) 1104, and ASME (American Society of Mechanical Engineers) Section IX welding codes with the ability to pass a welder qualification test in multiple processes according to these codes.

6. Troubleshoot and critically think through problems with welding systems and processes.
7. Demonstrate the ability to produce welds that meet visual inspection criteria based on AWS codes and industry standards in all positions on the five basic joint configurations with carbon steel, stainless steel, and aluminum, using Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW).
8. Plan, design, and fabricate a weldment to industry standards by combining skills related to the various processes taught in the program. This will include cutting, preparing, welding, and assembling projects to specified tolerances.
9. Demonstrate the ability to set up and operate to industry standards Oxy-fuel, Air Carbon Arc Cutting, and Plasma Cutting equipment.
10. Demonstrate the ability to perform pipe welds in multiple positions to industry standards and codes.
11. Demonstrate the ability to interpret blueprints and welding symbols to accurately fabricate a product.
12. Identify materials and apply the principles of metallurgy during the welding process to solve practical welding problems.

## Estimated Cost

### Estimated Resident Program Cost\*

#### Welding Technology & Fabrication Certificate of Applied Science

Tuition and Fees	\$3,532
Tools/Clothing	varies
Course Fees	\$1,200
Books/Supplies	\$900
Total	\$5,662

\*

**Fall 2023 MUS Student Health Insurance Premiums may be changing. Please check the Health Insurance website (<http://students.gfcmsu.edu/insurance.html>) and/or Student Central for confirmed premium rates. Students will be charged an additional fee of \$21 per credit for online/hybrid courses for only Summer 2023.**

## Program Requirements

Course	Title	Credits	Grade/Sem
<b>Fall</b>			
First Semester - After Formal Acceptance for the CAS degree			
(Students who complete the first semester of courses are eligible for the Welding & Fabrication Tier 1 Certificate of Technical Studies degree)			
M 111	Technical Mathematics +	3	_____
WLDG 100	Intro to Welding Fundamentals +	3	_____
WLDG 110	Welding Theory I +	2	_____
WLDG 111	Welding Theory I Practical +	4	_____
WLDG 117	Blueprint Reading and Welding Symbols +	2	_____
WLDG 145	Fabrication Basics *+	2	_____
<b>Credits</b>		<b>16</b>	

<b>Spring</b>			
COMX 102	Interpersonal Skills in the Workplace +	1	_____
WLDG 120	Welding Theory II *+	2	_____
WLDG 121	Welding Theory II Practical *+	3	_____
WLDG 130	Introduction to Structural Welding *+	2	_____
WLDG 185	Welding Qualification Test Preparation *+	1	_____
WLDG 205	Applied Metallurgy *+	1	_____
WLDG 209	Basic Pipe Welding *+	2	_____
WRIT 104	Workplace Communications +	2	_____
<b>Credits</b>		<b>14</b>	
<b>Total Credits</b>		<b>30</b>	

## Suggested Electives

This course is highly recommended in addition to standard welding curriculum.

Course	Title	Credits	Grade/Sem
WLDG 191	Special Topics: Welding Skills	1-3	_____

+  
A grade of C- or above is required for graduation.

\*  
Indicates prerequisites needed.

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Placement in course(s) is determined by placement assessment.