

Welding Technology and Fabrication AAS

Associate of Applied Science Degree

Program Directors: Doug Zander and Todd Reser

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

AAS Program Application (http://www.gfcmsu.edu/webs/welding/documents/Welding_Application_AAS.pdf) (Fall 2025 Application available February 14th)

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 3

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. 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.
8. Demonstrate the ability to set up and operate to industry standards Oxy-fuel, Air Carbon Arc Cutting, and Plasma Cutting equipment.
9. Demonstrate the ability to perform pipe welds in multiple positions to industry standards and codes.
10. Demonstrate a basic understanding of weld repair and equipment maintenance related to the welding field.
11. Identify materials and apply the principles of metallurgy during the welding process to solve the practical welding problems.
12. Use Computer Aided Design software to: Draw and edit a 2D project, annotate a drawing plot and scale drawing.

Outcomes AAS

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 a basic understanding of weld repair and equipment maintenance related to the welding field.
12. Demonstrate the ability to interpret blueprints and welding symbols to accurately fabricate a product.
13. Identify materials and apply the principles of metallurgy during the welding process to solve practical welding problems.
14. Use Computer Aided Design software to: Draw and edit a 2D object, annotate a drawing, plot and scale drawings.

Estimated Cost

Estimated Resident Program Cost*

Tuition and Fees	\$8,056
Course Fees	\$1,315
Tools/Clothing	varies
Books/Supplies	\$652
Total	\$10,023

* Fall 2024 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.

Program Requirements

Many students need preliminary math and writing courses before enrolling in the program requirements. These courses may increase the total number

of program credits. Students should review their math and writing placement before planning out their full program schedules.

The Great Falls College Welding Program is a limited enrollment program, accepting a restricted number of students each year. Interested students are urged to contact the Welding Program Director or Advising and Career Center Advisors for student advising specific to admission requirements and criteria for program acceptance.

Program Course Requirements After Formal Acceptance

Course	Title	Credits	Grade/Sem
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Fall
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	_____

Credits 16

Spring

(Students who complete the first and second semesters of courses are eligible for the Welding Technology & Fabrication Certificate of Applied Science degree.)

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	_____

Credits 14

Second Year

Fall

First Semester - After Formal Acceptance into the AAS degree

(Students who complete the third semester of courses are eligible for the Welding and Fabrication Tier 3 Certificate of Technical Studies)

DDSN 114	Introduction to CAD *,+	3	_____
WLDG 212	Pipe Welding and Layout (integrated lab) *,+	4	_____
WLDG 260	Repair and Maintenance Welding *,+	3	_____
WLDG 280	Weld Testing Certification *,+	3	_____

Pick one of the following:

BGEN 105	Introduction to Business +	3	_____
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WLDG 298	Internship/Cooperative Education (Application Required) *,+	3	_____
Credits		16	
Spring			
WLDG 217	Advanced Blueprint *,+	2	_____
WLDG 237	Aluminum Welding Processes *,+	4	_____
WLDG 245	Metal Fabrication Design and Construction *,+	5	_____
WLDG 281	Weld Testing Certification Lab *,+	2	_____
WRIT 121	Introduction to Technical Writing **,+	3	_____
Credits		16	
Total Credits		62	

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

* Indicates prerequisites needed.

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