

Welding & Metal Fabrication

What is metal fabrication?

The metal fabrication industry offers workers immediate tangible rewards for their efforts. Few professions allow the opportunity for creativity that are found in the fabrication shop. The fabrication industry represents one of the largest employment segments in our local economy. One instructor holds NCCER certification.

Topics/Skills covered in the various options

- Read, interpret and draw blueprints
- Layout, shear, cut, form and assemble weldments
 - ◊ Shielded Metal Arc Welding (SMAW)
 - ◊ Oxyacetylene process
 - ◊ Gas metal arc welding (GMAW)
 - ◊ Gas Tungsten Arc Welding (GTAW)
- Semiautomatic and automatic cutting processes
- Weld in all positions with a variety of welding processes current with welding and energy industry
- Weld ferrous and non-ferrous metals
- Understand and apply welding metallurgy to weldments
- Understand and apply CNC processes to fabrication and welding
- Introduces metal fabrication design and safe operation of fabrication equipment including shears, pressbrakes, ironworkers, punches, drill presses, etc...
- Safety and accuracy are reinforced throughout the training

Type of college degrees

- Associate of Applied Science
- Certificate of Applied Science (two options)
 - Metal Fabrication/Welding
 - Welding for Energy Technology*

Industry Certifications

Upon successful completion of the program, students will have the skills to take industry certification tests to gain employment. Graduates may also qualify for placement in the Ironworkers, Pipefitters or Boilemakers unions.

Career information

Graduates find work in structural steel fabrication shops, with heavy equipment rebuilders and manufacturers, mining, refineries, and other energy related enterprises in the region.

Job Outlook and Pay

Median Wage (MT)*	\$38,300 yearly \$18.41 per hour
Median Wage (US)*	\$40,240 yearly \$19.35 per hour

City College entry-level wages of graduates:
\$34,942 (2014-2017)

*Bureau of Labor Statistics, Office of Employment Projections; MT Dept. of Labor and Industry, Research and Analysis Bureau (projections through MT 2022 and US 2026)

**For more information visit <http://www.careerinfonet.org/Occupations>.

*students must have completed the 1st year of METL courses or have adequate skills approved by program instructor to take courses for this advanced certificate

Welding and Metal Fabrication Technology

(Associate of Applied Science)*

Required Courses	Credits
CAPP 120 Introduction to Computers	3
COMX 106 Communicating in a Dynamic Workplace	3
M 114 Extended Technical Mathematics	3
WLDG 117 Blueprint Reading and Welding Symbols	3
WLDG 124 Welding Theory Technology and Safety	3
WLDG 125 Cutting and Shielded Metal Arc Welding Lab	5
WLDG 126 Shield Metal Arc Welding Lab.....	4
WLDG 153 Metal Fabrication Basics.....	3
WLDG 154 Metal Fabrication Basics Lab	3
WLDG 156 Semi-Automatic Welding	2
WLDG 157 Semi-Automatic and SMAW Lab	5
WLDG 205 Applied Metallurgy.....	2
WLDG 212 Pipe Welding and Layout.....	3
WLDG 213 Pipe Welding I Lab.....	5
WLDG 215 Gas Tungsten Arc Welding	5
WLDG 250 Metals Production	2
WLDG 251 Special Welding Processes	5
WLDG 280 Testing and Certification	2
WLDG 281 Testing and Certification Lab	3
WRIT 122 Introduction to Business Writing.....	3
Total minimum credits required for degree	67

Suggested Elective-	
WLDG 298 Cooperative Education/Internship.....	3-9

In order to take the first semester of WLDG courses, students must prove their skills in Reading Comprehension and Writing. For more information, please contact the advising office

**The core welding courses start in the fall.*

Suggested Plan of Study

**Welding and Metal
Fabrication Technology,
Associate of Applied
Science Degree**

First Semester	Credits
WRIT 122.....	3
WLDG 117.....	3
WLDG 124.....	3
WLDG 125.....	5
WLDG 126.....	4
Total.....	18

Second Semester	Credits
M 114	3
WLDG 153.....	3
WLDG 154.....	3
WLDG 156.....	2
WLDG 157.....	5
Total.....	16

Summer (Optional)	
WLDG 298.....	3-9
Total.....	3-9

Third Semester	Credits
CAPP 120.....	3
WLDG 205.....	2
WLDG 212.....	3
WLDG 213.....	5
WLDG 215.....	5
Total.....	18

Fourth Semester	Credits
COMX 106.....	3
WLDG 250.....	2
WLDG 251.....	5
WLDG 280.....	2
WLDG 281.....	3
Total.....	15

Welding and Metal Fabrication

(Certificate of Applied Science)

Required Courses	Credits
CAPP 120 Introduction to Computers	3
COMX 106 Communicating in a Dynamic Workplace	3
M 111 Technical Mathematics	3
WLDG 117 Blueprint Reading and Welding Symbols	3
WLDG 124 Welding Theory Tech/Safety	3
WLDG 125 Cutting and Shielded Metal Arc Lab.....	5
WLDG 126 Shield Metal Arc Welding Lab	4
WLDG 153 Metal Fabrication Basics	3
WLDG 154 Metal Fabrication Basics Lab.....	3
WLDG 156 Semi-Automatic Welding.....	2
WLDG 157 Semi-Automatic and SMAW Lab	5
WRIT 104 Workplace Communication	3
Total minimum credits required for certificate	40

Welding for Energy Technology

(Certificate of Applied Science)

Entrance requirement for the Welding for Energy Technology Certificate of Applied Science is successful completion of the Welding and Metal Fabrication Certificate of Applied Science, equivalent professional industry certifications, and/or evaluation by qualified City College faculty of applicable work experience.

Required Courses	Credits
CAPP 120 Introduction to Computers	3
COMX 106 Communicating in a Dynamic Workplace	3
M 111 Technical Mathematics	3
WLDG 205 Applied Metallurgy	2
WLDG 212 Pipe Welding and Layout.....	3
WLDG 213 Pipe Welding I Lab	5
WLDG 215 Gas Tungsten Arc Welding.....	5
WLDG 250 Metals Production	2
WLDG 251 Special Welding Processes.....	5
WLDG 280 Weld Testing Certification	2
WLDG 281 Weld Testing Certification Lab.....	3
WRIT 104 Workplace Communication	3
Total minimum credits required for certificate	39

Students should check the course descriptions for required prerequisites.

For more information on this City College gainful employment program, such as cost, financial assistance, and placement rates, please go to:

http://www.msubillings.edu/citycollege/programs/gedt2018/weld_metal_fab/48.0506-Gedt.html or
http://www.msubillings.edu/citycollege/programs/gedt2018/weld_energy_tech/48.0508-Gedt.html

Suggested Plan of Study

Welding and Metal Fabrication Technology, Certificate of Applied Science

First Semester	Credits
WRIT 104.....	3
COMX 106.....	3
WLDG 117.....	3
WLDG 124.....	3
WLDG 125.....	5
WLDG 126.....	4
Total	21

Second Semester	Credits
M 111	3
CAPP 120.....	3
WLDG 153.....	3
WLDG 154.....	3
WLDG 156.....	2
WLDG 157.....	5
Total	19

Welding for Energy Technology, Certificate of Applied Science

First Semester	Credits
WRIT 104.....	3
COMX 106.....	3
WLDG 205.....	2
WLDG 212.....	3
WLDG 213.....	5
WLDG 215.....	5
Total	21

Second Semester	Credits
CAPP 120.....	3
M 111	3
WLDG 250.....	2
WLDG 251.....	5
WLDG 280.....	2
WLDG 281.....	3
Total	18

Welding and Metal Fabrication Technology

(Certificate of Technical Study)*

Required Courses	Credits
WLDG 117 Blueprint Reading and Welding Symbols.....	3
WLDG 124 Welding Theory, Technology and Safety	3
WLDG 125 Cutting and Shielded Metal Arc Welding Lab.....	5
WLDG 126 Shielded Metal Arc Welding Lab.....	4
WRIT 104 Workplace Communications.....	3
Total minimum credits required.....	18

Students should check the course descriptions for required prerequisites.

**The core welding courses start in the fall.*

Suggested Plan of Study

**Welding and Fabrication 1
CTS Degree**

First Semester	Credits
WLDG 117.....	3
WLDG 124.....	3
WLDG 125.....	5
WLDG 126.....	4
WRIT 104	3
Total.....	18