

WELDING

Technical Diploma Program Code: 31-442-1 Total Credits: 28-29

The Welding program at Mid-State prepares graduates for a wide variety of welding jobs in production, maintenance, construction, manufacturing, and servicing industries. You will receive hands-on instruction and practice in a number of welding processes, including shielded metal arc, gas tungsten arc, gas metal arc, submerged arc, oxyacetylene cutting, plasma arc, and arc-air cutting. You will also become familiar with various types of metals, fabrication of metals, and welding under industry codes. Successful completion of this program prepares you to take welding certification tests.

Mid-State's Welding program courses prepare students for numerous state and national certifications. None is required to complete the program; there are additional costs for testing/certification. The College does not guarantee its curriculum matches the requirements for preparation, examinations, or licensure for other states.

Estimated tuition and fees: mstc.edu/programcosts

ACADEMIC ADVISOR

To schedule an appointment with an academic advisor, call 715.422.5300. Academic advisors will travel to other campuses as necessary to accommodate student needs. For more information about advising, visit mstc.edu/advising.

CHECKLIST:

This section will be completed when meeting with your academic advisor.

- FAFSA (www.fafsa.gov)
- Financial Aid Form(s)
Form(s): _____
- Follow-Up Appointment:
Where: _____
When: _____
With: _____
- Official Transcripts
Mid-State Technical College
Student Services Assistant
1001 Centerpoint Drive
Stevens Point, WI 54481
- Other: _____



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ADAMS CAMPUS
401 North Main
Adams, WI 53910

MARSHFIELD CAMPUS
2600 West 5th Street
Marshfield, WI 54449

STEVENS POINT CAMPUS
1001 Centerpoint Drive
Stevens Point, WI 54481

WISCONSIN RAPIDS CAMPUS
500 32nd Street North
Wisconsin Rapids, WI 54494

CAREER PATHWAY • BEGIN AT ANY POINT

HIGH SCHOOL STUDENT

COLLEGE TRANSFER

RETURNING ADULT

CREDIT FOR PRIOR LEARNING AND EXPERIENCE

CREDIT FOR PRIOR LEARNING AND EXPERIENCE

- Certifications and Licenses
- High School Credit
- Military Experience
- National/Standardized Exams
- Transfer Credit
- Work and Life Experience

Learn about Credit for Prior Learning at mstc.edu/cpl.

CERTIFICATE

GAS METAL ARC WELDING (GMAW)

Certificate • 6 Credits

For more information and additional opportunities, visit mstc.edu/career-accelerator.

TECHNICAL DIPLOMA

WELDING

Technical Diploma • 28-29 Credits

Start Your Career

- Construction Welder
- Fabricator Maintenance Welder
- Production Line Welder
- Apprenticeship

BACHELOR'S DEGREE

BACHELOR'S DEGREE OPTIONS

For more information and additional opportunities, visit mstc.edu/transfer.

OTHER OPTIONS



RELATED PROGRAMS

- Advanced Manufacturing Technology
- Industrial Mechanical Technician
- Manufacturing Operations Management
- Metal Fabrication
- Precision Machining Technician
- Stainless Steel Welding

APPRENTICESHIP OPPORTUNITIES


- Ironworker Apprenticeship

SAMPLE FULL-TIME CURRICULUM OPTION

Term		14-15 credits
10442111	Intermediate GMAW/FCAW	3
10457119	Fabrication Fundamentals 1	1
31442311	Weld Testing for GMAW & FCAW	1
31442313	Gas Metal Arc Welding: Introduction	3
31442315	Inspections and Testing in Welding	1
31442317	Print Reading for Welding	1
31442320	Welding Foundations 1	1
31462318	Safety for Industrial Trades 	1
32420320	Math for Manufacturing	2
-or-		
10804107	College Mathematics 	3

Term		14 credits
10442102	Intermediate GTAW (TIG) -or-	
30442105	Intermediate TIG (Stainless)	2
10442103	Advanced GTAW (TIG)	
-or-		
30442106	Advanced TIG (Stainless)	
-or-		
10442115	Welding Fabrication Techniques	2
10457120	Fabrication Fundamentals 2	1
31442314	Gas Tungsten Arc Welding: Introduction -or-	
30442104	Basic TIG (Stainless)	2
31442316	Metallurgy for Welding	1
31442319	Shielded Metal Arc Welding: Introduction	2
31442321	Welding Foundations 2	1
31442322	Robotic Welding	2
31442412	Weld Testing for SMAW & GTAW	1


Total credits 28-29

 This course has options available to receive credit for prior learning (CPL) or work experience. Visit the website at mstc.edu/cpl or contact your advisor for details.


Please Note:

- This curriculum sequence is only for student planning. Actual student schedules will vary depending on course availability.
- Program completion time may vary based on student scheduling and course availability. For details, go to mstc.edu/schedule.

SAMPLE PART-TIME CURRICULUM OPTION

Term		6 credits
10457119	Fabrication Fundamentals 1	1
31442313	Gas Metal Arc Welding: Introduction	3
31442320	Welding Foundations 1	1
31462318	Safety for Industrial Trades 	1

Term		7 credits
10442102	Intermediate GTAW (TIG) -or-	
30442105	Intermediate TIG (Stainless)	2
10457120	Fabrication Fundamentals 2	1
31442314	Gas Tungsten Arc Welding: Introduction -or-	
30442104	Basic TIG (Stainless)	2
31442316	Metallurgy for Welding	1
31442321	Welding Foundations 2	1

Term		8-9 credits
10442111	Intermediate GMAW/FCAW	3
31442311	Weld Testing for GMAW & FCAW	1
31442315	Inspections and Testing in Welding	1
31442317	Print Reading for Welding	1
32420320	Math for Manufacturing	2
-or-		
10804107	College Mathematics 	3

Term		7 credits
10442103	Advanced GTAW (TIG)	
-or-		
30442106	Advanced TIG (Stainless)	
-or-		
10442115	Welding Fabrication Techniques	2
31442319	Shielded Metal Arc Welding: Introduction	2
31442322	Robotic Welding	2
31442412	Weld Testing for SMAW & GTAW	1

Total credits 28-29

MULTIPLE MEASURES

Multiple Measures Writing (MMW): High school GPA of 2.6 and successful completion of 2.0 credits of high school writing courses with a "C" or better

Multiple Measures Reading (MMR): High school GPA of 2.6 and successful completion of 2.0 credits of high school literature courses with a "C" or better

Multiple Measures Math 1 (MMM_1): High school GPA of 2.6 and successful completion of 1.0 credits of high school math (Algebra 1 or equivalent) with a "C" or better

Multiple Measures Math 2 (MMM_2): High school GPA of 2.6 and successful completion of 2.0 credits of high school math including Algebra 1 and Algebra 2 with a "C" or better

Multiple Measures Science 1 (MMS_1): High school GPA of 2.6 and successful completion of 1.0 credits of high school lab science course with a "C" or better

Multiple Measures Science 2 (MMS_2): High school GPA of 2.6 and successful completion of 1.0 credits of high school chemistry with a "C" or better

Past high school and college transcripts are used in making course placement decisions.

COURSE DESCRIPTIONS

Advanced GTAW (TIG)

104421032 credits

Students learn complete penetration stainless steel pipe welds in the 5G and 6G positions.

Corequisite: Intermediate GTAW (TIG) 10442102

Advanced TIG (Stainless)

304421062 credits

Students learn advanced GTAW processes through the completion of stainless steel pipe weldments in the 5G and 6G positions.

Corequisite: Intermediate TIG (Stainless) 30442105

Basic TIG (Stainless)

304421042 credits

An introduction to the gas tungsten arc welding (GTAW) process commonly known as TIG. Topics include study and application of necessary safety and care of equipment and supplies. The student develops skills with the common production welding joints and materials all completed on stainless steel.

College Mathematics

108041073 credits

This course is designed to review and develop fundamental concepts of mathematics in the areas of algebra, geometry, trigonometry, measurement and data. Algebra topics emphasize simplifying algebraic expressions, solving linear equations and inequalities with one variable, solving proportions and percent applications. Geometry and trigonometry topics include; finding areas and volumes of geometric figures, applying similar and congruent triangles, applying Pythagorean Theorem, and solving right triangles using trigonometric ratios. Measurement topics emphasize the application of measurement concepts and conversion techniques within and between U.S. customary and metric system to solve problems. Data topics emphasize data organization and summarization skills, including: frequency distributions, central tendency, relative position and measures of dispersion. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators.

Prerequisite: High School GPA of 2.6 and MMM_1 or Accuplacer Arithmetic of 250 and QAS 234 or ACT Math score of 17 or Pre-Algebra 10834109 with a "C" or better

Gas Metal Arc Welding: Introduction

314423133 credits

In this course, you develop skills of welding on steel sheet metals and plates using the GMAW process. Emphasis is placed on axial spray, pulse spray, and short circuit mode of transfer. Upon completion of this course, the student is able to weld in several positions, read basic weld symbols, and have an understanding of written welding procedures.

Gas Tungsten Welding: Introduction

314423142 credits

An introduction to the gas tungsten arc welding (GTAW) process commonly known as TIG, including the necessary safety and care of equipment and supplies. The student develops skills with the common production welding joints and materials.

Fabrication Fundamentals 1

10457119.....1 credit

An introduction to structural shapes and sheet metal fabrication. Presents fabrication techniques, metal selection, and layout, cutting, bending, drilling, threading, and joining using manual equipment and techniques. Information is presented to the student and followed up with lab activities to provide a hands-on experience. Emphasizes developing an understanding of the tools, techniques, safe work habits, and application of sheet metal fabrication skills.

Fabrication Fundamentals 2

10457120.....1 credit

An introduction to plate steel and heavy fabrication. Presents fabrication techniques using heavy fabrication equipment. CNC Cutting, Plate and Tube bending, Sawing and Shearing equipment will be presented and followed up with lab activities to provide a hands-on experience. Emphasizes developing an understanding of the equipment, techniques, safe work habits, and application of heavy metal fabrication skills.

Intermediate GMAW/FCAW

104421113 credits

Builds skills with the GMAW process and performing welds on stainless steel and aluminum sheet metal and plate. Students are able to differentiate and select proper electrodes and shielding gases, and properly adjust parameters. Emphasizes axial spray, pulse spray, and short circuit mode of transfer depending on base metal. Students learn about and practice the FCAW process, including types of electrodes, fluxes, and shielding gases used in these processes. Students are able to weld in several positions, read some basic weld symbols, and have a basic understanding of written welding procedures.

Prerequisite: Gas Metal Arc Welding: Introduction 31442313

Intermediate GTAW (TIG)

104421022 credits

In this course students weld in the horizontal and vertical positions on stainless steel and aluminum. Pulsed current is applied to stainless steel weldments. Complete penetration groove welds in stainless steel are practiced and evaluated.

Corequisite: Gas Tungsten Arc Welding: Introduction 31442314

Intermediate TIG (Stainless)

30442105.....2 credits

Intermediate GTAW weldments created in the horizontal and vertical positions on stainless steel. Pulsed current is applied to stainless steel weldments. Complete penetration groove welds in stainless steel are practiced and evaluated.

Corequisite: Basic TIG (Stainless) 30442104.

COURSE DESCRIPTIONS

Math for Manufacturing

324203202 credits

Studies Welding and Fabrication problems involving calculations with fractions, decimals, percentages, measurements and conversions. Includes work with the metric system, measurement conversion, shapes, formulas for circumference area and volume and use of a scientific calculator. Formulas with application to bending metal are also studied.

Prerequisite: Admission into Precision Machining Technician program 314209, Welding program 314421, Gas Tungsten Arc Welding (Stainless Steel) program 304427, or consent of instructor

Metallurgy for Welding

314423161 credit

Investigates the effects of welding on the mechanical properties of metals. Learners explore hardness, strength, and weldability of various metals. Concepts are applied in various activities including heat treating, hardness testing, and tensile testing.

Print Reading for Welding

314423171 credit

Students study print format, line types, orthographic views, dimensioning, welding symbols, and bill of materials. Students apply concepts by creating and fabricating from prints in individual and group activities.

Robotic Welding

314423222 credits

An introduction into the operation, setup and uses for robots in the welding industry. Students will learn simple teach pendant techniques, perform CNC basics for making programs and utilizing welding knowledge for proper setup of the robots. Students will perform multiple functions to produce quality weldments performed by the robot.

Safety for Industrial Trades

314623181 credit

Provides an overview of safety, health, and environmental issues as they relate to industry. Various types of hazards and the controls and equipment used to reduce risks from hazards are discussed. Focuses on understanding the Occupational Safety and Health Administration (OSHA) and its function as well as other regulatory and enforcement agencies associated with industrial safety, health, and the environment.

Shielded Metal Arc Welding: Introduction

314423152 credits

Begins to build the knowledge and skills of the SMAW process commonly known as stick welding. Students are able to weld in several positions, read some basic weld symbols, and have a basic understanding of written welding procedures.

Weld Inspections and Testing

104421631 credit

Emphasizes measurement of weld defects and assessment of weld quality conformance to common welding codes. Students conduct etch tests, bend tests, and break tests on welds. Visual inspection, dye penetrant testing, and magnetic particle testing are practiced.

Weld Testing for GMAW & FCAW

314423111 credit

Learners will execute weldments, in multiple positions, leading to bend tests for the GMAW and FCAW processes. Weldments will be certified and conducted to AWS (American Welding Society) standards, meeting requirements for Wisconsin Department of Safety and Professional Services certification. Upon successful completion of bend tests, learners will choose one process to submit for certification.

Weld Testing for SMAW & GTAW

314424121 credit

Learners will execute weldments, in multiple positions, leading to bend tests for the SMAW and GTAW processes. Weldments will be certified and conducted to AWS (American Welding Society) standards, meeting requirements for Wisconsin Department of Safety and Professional Services certification. Upon successful completion of bend tests, learners will choose one process to submit for certification.

Welding Fabrication Techniques

104421152 credits

Students fabricate parts from prints and weld assemblies with a specified welding process. Cutting and forming may be required prior to assembly. Depending on the size and complexity of the project, students may be asked to work in a team to complete an assignment.

Welding Foundations 1

314423201 credit

An introduction to fundamental welding techniques with an emphasis on safe work habits that covers the processes of FCAW, GMAW, and OXY-Fuel cutting. Classroom instruction paired with lab activities are designed to provide fundamental skills in each of the welding processes covered in the class.

Welding Foundations 2

314423211 credit

An introduction to fundamental welding techniques with an emphasis on safe work habits that covers the processes of GTAW, SMAW and Plasma cutting. Classroom instruction paired with lab activities are designed to provide fundamental skills in each of the welding processes covered in the class.