



welding

Technical Diploma Program Code: 31-442-1 Total Credits: 32-33

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 and brazing, 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.

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
Attention CPL Coordinator
500 32nd Street North
Wisconsin Rapids, WI 54494
- Other: _____

mstc.edu
888.575.6782



MID-STATE
TECHNICAL COLLEGE

ADAMS CAMPUS
401 North Main
Adams, WI 53910

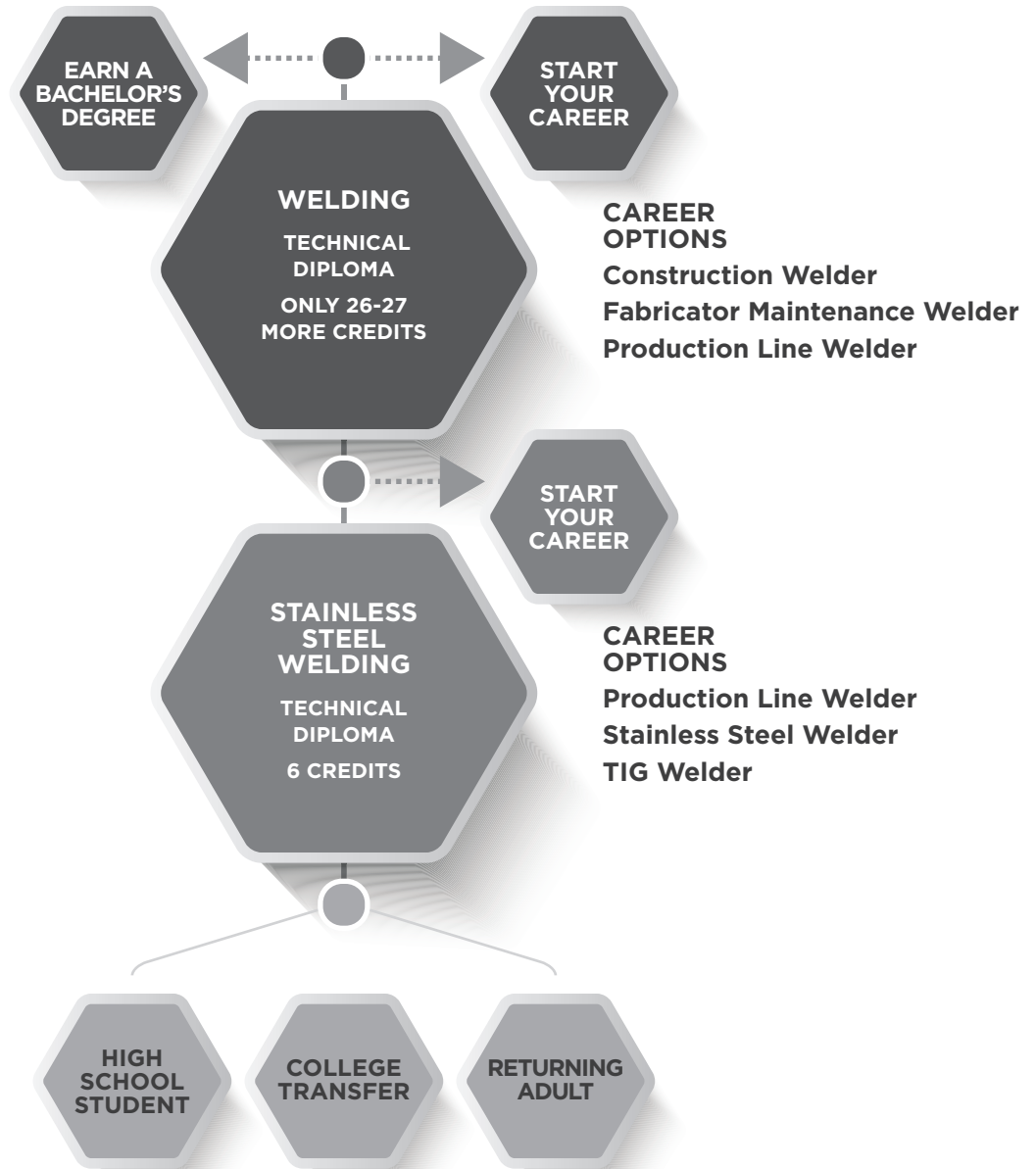
MARSHFIELD CAMPUS
2600 West 5th Street
Marshfield, WI 54449

STEVENS POINT CAMPUS
1001 Centerpoint Drive
Stevens Point, WI 54481

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

BACHELOR'S DEGREE OPTIONS

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



College Credit • Dual Credit • Military Experience • Work Experience
Learn about Credit for Prior Learning at mstc.edu/cpl.

**BEGIN AT ANY POINT
IN THE PATHWAY**

OTHER OPTIONS

RELATED PROGRAMS

- Industrial Mechanical Technician
- Machine Tool Technician

APPRENTICESHIP OPPORTUNITIES

- Ironworker Apprenticeship

SAMPLE FULL-TIME CURRICULUM OPTION

Term		16-17 credits
10442100	Intro to Welding	1
10442101	Basic GTAW (TIG)	2
10442110	Gas Metal Arc Welding (GMAW)	3
10442112	Welding Print Reading	2
10442130	Shielded Metal Arc Welding (SMAW)	2
10442132	Metal Cutting Welding	2
10462107	Industrial Safety	2
10804107	College Mathematics	3
	-or-	
32420320	Math for Manufacturing	2

Term		16 credits
10442102	Intermediate GTAW (TIG)	2
10442103	Advanced GTAW (TIG) -or-	
10442115	Welding Fabrication Techniques	2
10442111	Intermediate GMAW/FCAW	3
10442119	Fabrication Fundamentals 1	1
10442120	Fabrication Fundamentals 2	1
10442159	Welding Metallurgy	2
10442163	Weld Inspections and Testing	1
10462132	Machine Shop Fundamentals	3
10623106	Intro to AutoCAD	1

Total credits 32-33

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/classfinder.

SAMPLE PART-TIME CURRICULUM OPTION

Term		8 credits
10442100	Intro to Welding	1
10442101	Basic GTAW (TIG)	2
10442110	Gas Metal Arc Welding (GMAW)	3
10462107	Industrial Safety	2

Term		9 credits
10442111	Intermediate GMAW/FCAW	3
10442112	Welding Print Reading	2
10442130	Shielded Metal Arc Welding (SMAW)	2
10442132	Metal Cutting Welding	2

Term		7-8 credits
10442102	Intermediate GTAW (TIG)	2
10442159	Welding Metallurgy	2
10442163	Weld Inspections and Testing	1
10804107	College Mathematics	3
	-or-	
32420320	Math for Manufacturing	2

Term		8 credits
10442103	Advanced GTAW (TIG) -or-	
10442115	Welding Fabrication Techniques	2
10442119	Fabrication Fundamentals 1	1
10442120	Fabrication Fundamentals 2	1
10462132	Machine Shop Fundamentals	3
10623106	Intro to AutoCAD	1

Total credits 32-33

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

Basic GTAW (TIG)

104421012 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.

College Mathematics

108041073 credits

Designed to review and develop fundamental concepts of mathematics pertinent to the areas of: 1) arithmetic and algebra; 2) geometry and trigonometry; and 3) probability and statistics. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators. Topics include performing arithmetic operations and simplifying algebraic expressions, solving linear equations and inequalities in one variable, solving proportions and incorporating percent applications, manipulating formulas, solving and graphing systems of linear equations and inequalities in two variables, finding areas and volumes of geometric figures, applying similar and congruent triangles, converting measurements within and between US and metric systems, applying Pythagorean Theorem, solving right and oblique triangles, calculating probabilities, organizing data and interpreting charts, calculating central and spread measures, and summarizing and analyzing data.

Prerequisite: High School GPA of 3.0 or Accuplacer Arithmetic of 250 and QAS 234 or ACT of 17 or Pre-Algebra 834109 with a grade of "C" or better or equivalent. Students are encouraged to bring transcripts for further evaluation if they do not meet these requirements.

Fabrication Fundamentals 1

104421191 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.

Corequisite: Welding Fundamentals 1 10442117 or Intro to Welding 10442100

Fabrication Fundamentals 2

104421201 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.

Gas Metal Arc Welding (GMAW)

104421103 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.

Industrial Safety

104621072 credits

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.

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 (GMAW) 10442110

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: Basic GTAW (TIG) 10442101

Intro to AutoCAD

106231061 credit

This introductory course in computer-aided drafting (CAD) using AutoCAD software provides foundation skills in using CAD software to create and print two-dimensional technical drawings. This course is available to students in any program. Computer skills and prior knowledge of drawing/drafting techniques is recommended.

Intro to Welding

104421002 credits

Builds knowledge of general welding shop procedures and safety, arc welding principles and equipment setup, and metal fabrication equipment use. Students work with a lab instructor to begin developing skills with the gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW) welding processes by completing simple welding and fabricating tasks in preparation for further exploration in welding and fabricating.

Machine Shop Fundamentals

10462132.....3 credits

Students participating in this class will be introduced to common machine tools and their functions. Classroom activities and hands-on lab exercises will be used to introduce participants to some of the most common applications in machining. Lab activities will introduce students to shop safety and identification of machine tools. Students will also gain understanding of the basic processes performed with different machine tools and basic machine set up and operations.

Math for Manufacturing

324203202 credits

Studies machine tool problems involving calculations with fractions, decimals, and percentage. Includes work with the metric system, measurement conversion, geometry, trigonometry of right triangles, and use of a scientific calculator. Formulas with application to the trades are also studied.

Prerequisite: Admission into Machine Tool Technician program 324201, Welding program 314421, Gas Metal Arc Welding (Stainless Steel) program 304427, or consent of instructor

Metal Cutting Welding

10442132.....2 credits

Covers oxy-fuel cutting, plasma arc cutting, air-carbon arc cutting, mechanical cutting, and nontraditional cutting. Individual parts are produced using automatic and manual equipment. Both shop and field applications are practiced. The parts may be joined, by welding, to complete an assembly. Students may work in a team environment to complete assignments. This course is available to Welding program students only.

Shielded Metal Arc Welding (SMAW)

104421302 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

10442163.....1 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.

Prerequisite: Intro to Welding 10442100

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.

Prerequisites: Admission to Welding program 314421 and Intermediate GTAW (TIG) 10442102

Welding Metallurgy

10442159.....2 credits

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.

Welding Print Reading

104421122 credits

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.