

WELDING

Technical Diploma

About the Welding Program

Learn welding at your own pace, through hands-on learning, and with your instructor and success coach to guide you. The Welding program is designed to give students entry-level skills required in fabrication, construction, maintenance and other metal working industries. You'll also experience robotic welding, computerized cutting, safe overhead crane operation, and will learn blueprint reading, layout and fabrication techniques, and math and communication skills.

Requirements for welder certification will be explained, and simulated certification tests will be offered. Upon successfully completing the program, you'll have the skills needed to take a welding certification test or job-entry performance test.

PROGRAM OUTLINE

COURSE #	COURSE TITLE	CREDITS
1044210100	Weld Symbols Students will develop print interpretation skills needed in metal fabrication. Learners study prints containing section views, detail views, and weld symbols. Learners apply concepts in hands-on activities, print interpretation skills, calculating dimensions, identifying and interpreting weld symbols.	1.00
1044210300	Print Reading Students will develop print interpretation skills needed in metal fabrication. Learners study orthographic projection, dimensioning, and bill of materials. Learners apply concepts in hands-on activities, practicing basic layout skills and safe operation of saws, shears and drills.	3.00
1044212000	GTAW on Carbon Steel Develops skills in gas tungsten arc welding. Learners weld carbon steel sheet and plate in the flat, horizontal, and vertical positions. Prerequisite: 1044217200 Safety in Manufacturing (B or better) (concurrent enrollment allowed).	2.00
1044212300	GTAW on Stainless Steel Develops skills in gas tungsten arc welding. Learners weld stainless steel sheet and plate in the flat, horizontal, and vertical positions. Prerequisite: 1044217200 Safety in Manufacturing (B or better) (concurrent enrollment allowed).	1.00
1044212600	GTAW on Aluminum Develop skills in gas tungsten arc welding on aluminum. Learners use the "tig" process in flat, horizontal, and vertical positions on aluminum. Required welds include fillet and groove welds with gas tungsten arc welding. Weld quality is assessed per AWS standards. Prerequisite: 1044217200 Safety in Manufacturing (B or better) (concurrent enrollment allowed).	1.00
1044213000	Introduction to Machine Operations Introduces students to basic machine operations. The students will also work with basic machine tools used in manufacturing and maintenance to develop skills using the lathe, drill press, band saw, and grinders. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	2.00
1044215000	Gas Metal Arc Welding on Stainless Steel Builds on skills developed in Gas Metal Arc Welding on stainless steel. Learners use the "mig" process in the flat, horizontal and vertical positions on steel, stainless steel and aluminum. Required welds include fillet and groove welds with spray and pulsed spray transfer. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	1.00
1044215300	GMAW on Aluminum	1.00

COURSE #	COURSE TITLE	CREDITS
	Develop skills in gas metal arc pulse welding on aluminum. Learners use the "mig" process in flat, horizontal, and vertical positions on aluminum. Required welds include fillet and groove welds with pulsed spray transfer. Weld quality is assessed per AWS standards. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	
1044215600	Welding Metallurgy Designed to educate students on metallurgy fundamentals. Explores the production of both ferrous and nonferrous metals. Students will experience rockwell testing procedures, heat-treating applications, determining stresses or strengths, and many other procedures to determine material properties.	1.00
1044215700	Thermal Cutting Develops skill in thermal cutting and gouging processes. Learners practice manual and machine oxy-fuel cutting, plasma cutting and gouging and air carbon arc gouging. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	2.00
1044215800	Shielded Metal Arc Welding on Carbon Steel Develop skills in shielded metal arc welding. Learners use 6010 and 7018 "stick" electrodes to complete fillet and groove welds in all positions. Weld quality is assessed per AWS D1.1 Structural Steel Code. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	2.00
1044215900	Gas Metal Arc Welding on Carbon Steel Develop skills in gas metal arc welding. Learners use the "mig" process in all positions on carbon steel. Required welds include fillet and groove welds with short circuit, spray and pulsed spray transfer. Weld quality is assessed per AWS D1.1 Structural Steel Code. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	3.00
1044216300	Weld Inspection and Testing Emphasizes measurement of weld defects and assessment of weld quality conformance to common welding codes. Learners conduct etch tests, bend tests and break tests on welds. The process of procedure and welder qualification is explored through group activities.	1.00
1044216700	Intro to Fabrication Expands on skills developed in Weld Print Reading. Learners study groove and projection welding symbols, geometric tolerances, and international prints. Learners apply concepts through individual and group fabrication activities. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	1.00
1044216900	Flux Core Arc Welding on Carbon Steel Develops skill in flux cored arc welding. Learners make fillet and groove welds in all positions on steel. Weld quality is assessed per AWS D1.1 - Structural Steel Code. Required work also includes basic welds with the SAW process and backgouging with the air arc process. Prerequisite: 1044217200 Safety in Manufacturing (B or better).	3.00
1044217200	Safety in Manufacturing Prepares learners for safe operation of work site equipment. Procedures regarding welding machines, band saws, shears, drill presses, punches, grinders, oxy fuel equipment and an array of hand tools are practiced. Crane and forklift operation are introduced.	1.00
1089010200	Interpersonal Workplace Fundamentals	2.00

COURSE #	COURSE TITLE	CREDITS
	<p>Interpersonal workplace fundamentals, also known as soft skills, are the skills which help foster relationships with other people and directly link to your approach on work and life. The Interpersonal Workplace Fundamentals class will cover essential abilities such as attitude, integrity, reliability, teamwork, personality, positivity, critical thinking, dependability, punctuality, and communication. These skill areas, when mastered, will greatly increase workplace efficiency. The goal of the Interpersonal Workplace Fundamentals class will be to create awareness, understanding, and mastery of these soft skills, especially as they relate to the workplace.</p> <p>Competencies</p>	
	<p>10890102C01 Workplace Interpersonal and Comm Skills</p> <p>Students develop skills to manage interpersonal relationships in the workplace and improve workplace communication.</p>	1.00
	<p>10890102C02 Employability Skills and Career Awareness</p> <p>This competency will cover essential abilities such as attitude, integrity, reliability, positivity, critical thinking, dependability, punctuality, and career planning.</p>	1.00
3180430200	<p>Applied Technical Mathematics</p> <p>Develops skills in using mathematics principles, essential to the technical service and production workplace, through applied learning contexts. Content includes whole numbers, fractions, percent, graphs, fundamentals of algebra, geometry and trigonometry, and tools and techniques for precision measurement. Prerequisite: Accuplacer Arithmetic score ≥ 61 or TABE Math Composite score ≥ 10 or ACT Mathematics score ≥ 17.</p> <p>Competencies</p>	2.00
	<p>1080410700 College Mathematics</p> <p>Designed to review and develop fundamental concepts of mathematics pertinent to the areas of arithmetic and algebra, geometry and trigonometry, 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 measurement within and between U.S. and metric systems, applying the Pythagorean Theorem, solving right and oblique triangles, calculating probabilities, organizing data and interpreting charts, calculating central and spread measures, and summarizing and analyzing data. Recommended: pre-algebra or appropriate placement scores. Prerequisite: Accuplacer Algebra score ≥ 35 or ACT Mathematics score ≥ 18.</p>	3.00
	<p>31804302C01 Geometry Skills</p> <p>Develops skills in using mathematics principles, essential to the technical service and production workplace, through applied learning contexts. Content includes geometry and trigonometry, and tools and techniques for precision measurement. Corequisite: 10442112C02 Print Reading and Sketching.</p>	1.00
	<p>31804302C02 Math Skills</p> <p>Develops skills in using mathematics principles, essential to the technical service and production workplace, through applied learning contexts. Content includes whole numbers, fractions, percent, graphs, and fundamentals of algebra. Corequisite: 10442112C02 Print Reading and Sketching.</p>	1.00
Total Credits:		30.00

Talk with an Academic Advisor about the program outline. Together, you will determine if credits you've already earned satisfy any requirements, discuss possible alternative courses, and choose the best classes if you're thinking of transferring.

AT A GLANCE

How You'll Learn



ON CAMPUS ONLINE CLASSES MULTIPLE START DATES FLEXIBLE PACE

2022 Start Dates

January 5	May 2	September 6
February 7	June 6	October 3
March 1	July 11	November 7

2023 Start Dates

January 9	May 8
February 6	June 5
March 6	July 3

[VIEW FULL ACADEMIC CALENDAR](#)

What is Competency-Based Education?

Competency-Based Education (CBE) is learning at your own pace by mastering competencies through demonstration. Once all competencies for a program have been assessed and mastered, students will earn a certificate, diploma, or degree.

[LEARN MORE ABOUT CBE](#)

Approximate Cost

\$5,713*

Financial Aid Eligible

*Based on 10-level courses—materials, books, and fees may be additional

Student Equipment

Students are required to purchase welding kits through the college bookstore or obtain the minimum tools and equipment listed to be able to successfully complete coursework and performance assessments in the welding lab.

- Safety glasses

- Welders gloves MIG and TIG
- Chipping hammer
- Welding beanie
- 8-way welder pliers
- Soapstone holder
- Triple flint spark lighter
- Tape measure
- Weld fillet gauge
- Mag tool
- Material handling gloves
- Backhand pad
- Tool bag
- Welder pencils
- Auto darkening helmet
- Lens cover
- Welding jacket

What You'll Learn

- Demonstrate industry-recognized safety practices
- Interpret welding drawings
- Produce Gas Metal Arc Welds (GMAW)
- Produce shielded metal arc welds (SMAW)
- Produce flux core welds
- Produce gas tungsten arc welds (GTAW)
- Perform cutting operations

Your Potential Careers

- Production Welder
- Maintenance Welder
- Job Shop Layout Welder
- Welding Sales and Service
- Self-employment

Median Annual Salary

\$39,106	\$42,134	\$40,889
Local	State	National

EMSI 2020.1

Get Started

Your application can be submitted online, it takes just a few minutes to complete.

APPLY NOW