



Welding and Fabrication Technology



This comprehensive program will give students a solid foundation and background in basic and advanced principles, theory, practices, and application of welding. The course will enable students to develop the manipulative skills necessary to become entry-level combination welders, fitters, general fabricators, job shop, and steel construction workers. In addition, the advanced training portion of the program will provide students with the information, knowledge, and skills needed to achieve certifications through a number of recognized professional organizations. Supplementing the technology and skill development needed for successful welding will be the study of practical mathematics problems for welders, blueprint reading for welders including the interpretation of welding symbols required to interpret working sketches, drawings, and blueprints common to the welding and metal-working fields.

<u>Course</u>	<u>Course Title</u>	<u>Clock Hours</u>	<u>Weeks</u>	<u>Quarter Credit Hours</u>
MWT-101	Welding Introduction and History	150	6	9.00
MWT-102	Electric Arc Cutting & Basic SMAW Processes	150	6	8.00
MWT-103	Welding Mathematics I	150	6	8.50
MWT-104	Basic SMAW Fundamentals & Practice Plate	150	6	8.00
MWT-105	Welding Mathematics II & Blueprint Reading I	150	6	9.00
MWT-106	Blueprint Reading II, Symbols & Abbreviations, & SMAW Advanced	150	6	8.50
MWT-107	SMAW II Advanced Plate & Pipe	150	6	8.00
MWT-108	GTAW, GMAW, & FCAW Principles & Practices	<u>150</u>	<u>6</u>	<u>9.00</u>
		1200	48	68

MWT-101 Welding Introduction & History

Students will be introduced to the industry by learning about the history, the AWS Standards, the occupational opportunities, and general safety requirements of welding. An introduction to the different welding categories, major manual processes, types, parts, joints, size, strength, position, and defects will be presented. The course provides a comprehensive understanding of Oxy-Fuel Welding, which includes soldering and brazing, gases, cylinder handling, welding equipment and supplies, and operating procedures.

MWT-102 Electric Arc Cutting & Basic SMAW Processes

Students will explore Plasma Arc and Air Carbon Arc Cutting; the equipment and supplies required; and safety practices. This course covers the basic SMAW welding operating principles, power sources and machines, safety equipment and supplies, and the different types of current.

MWT-103 Welding Mathematics I

Students will begin a comprehensive study of welding mathematic principles, such as addition, subtraction, multiplication, division, fractions, and decimals. This course covers basic principles of averaging; calculating percentages, the metric system, and the measuring of perimeters, areas, circumferences, and volumes. Students will continue skill development during lab sessions to gain experience on processes previously introduced.

MWT-104 Basic SMAW Fundamentals & Practice Plate

Students will train in starting and adjusting the arc welding power source. This course covers the theory and practice of different bead, joint, and fillet methods, such as welding a lap joint horizontal single pass fillet, a t-joint flat position single-pass fillet, weaved beading, and the stringer technique with weave overlay.

MWT-105 Welding Mathematics II & Blueprint Reading I

Students will continue learning welding mathematic principles for the purpose of being able to read blueprints. This course covers the basic principles of angle development and measurement, such as the bends and stretch outs of angular shapes. The students will develop an understanding for the purpose of basic lines, basic sketching techniques, and bill of material.



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MWT-106 Blueprint Reading II, Symbols & Abbreviations, & SMAW Advanced

Students will be introduced to welding symbols and abbreviations for the purpose of blueprint reading. This course provides a more comprehensive study of blueprint reading such as detail, assembly and subassembly prints. The students will also explore more advanced theory and practical SMAW welding techniques.

MWT-107 SMAW II Advanced Plate & Pipe

This course affords students a more advanced comprehensive study of the theory and practice of different bead, joint, and fillet methods, such as welding a single-v butt joint; stringer beading and weave beading on a flat plate, and a single-v butt joint backing bar in an overhead position. The students will learn pipe and tube welding; they will develop an understanding of codes and standards; and will put their practical knowledge to work. This course prepares the students the opportunity to take the welding certification tests.

MWT-108 GTAW, GMAW, & FCAW Principles & Practices

This course covers the principles and practices of GTAW, GMAW, and FCAW welding equipment and techniques. The students will learn to weld various types of metals, including plate and pipe, in numerous welding positions.

Courses applicable to both Diploma or Associate of Applied Science Degree Programs