

## Basic Welding - Certificate

(Manufacturing Technology – Associate Degree path)

This certificate program is intended to introduce students to the skills and techniques involved in welding. The program sets the foundational skills for this area by incorporating instruction and hands-on application of basic gas metal arc welding (MIG), shielded metal arc welding (SMAW, also known as stick welding), gas tungsten arc welding (TIG), and basic metallurgy.

This certificate is designed to prepare students for success in careers in advanced manufacturing across many industries, including automotive die/mold, medical, aerospace, defense, renewable energy, “green” technologies, and consumer products. This program is ideal for those who enjoy working with their hands. Graduates of this certificate program are well-rounded in welding principles and fundamental welding techniques.

A certificate will be awarded to students who successfully complete the following courses:

### Career Preparation and Related Courses

Course ID	Course Title	SUGGESTED SEQUENCE				CREDIT HOURS	CONTACT HOURS
		1	2	3	4		
ATDD 1900	Machine Tool Blueprint Reading	■	□	□	□	2	32
ATAM 1000	Mathematics for the Trades	■	□	□	□	4	64
ATTR 1600	Industrial Safety – Skilled Trades	■	□	□	□	2	32
ATWD 1110	Fundamentals of Gas & Arc Welding	■	□	□	□	2	32
ATMT 1300	Metallurgy – Characteristics of Ferrous Materials	■	□	□	□	2	32
ATWD 1100	Welding Metallurgy	□	■	□	□	2	32
ATWD 1130	Shielded Metal Arc Welding (SMAW)	□	■	□	□	2	32
ATWD 1140	Gas Metal Arc Welding (MIG)	□	■	□	□	2	32
ATWD 1150	Gas Tungsten Arc Welding (TIG)	□	■	□	□	3	64
ATMT 1310	Metallurgy – Characteristics of Non-Ferrous Materials	□	■	□	□	2	32
<b>Total</b>						<b>23</b>	<b>384</b>

In cases where prior training or education is documented, specific courses may be substituted for one or more of the above courses as conditions warrant with consent of the apprentice coordinator. Suggested alternate courses, which may also be used as electives toward an associate degree, are listed below for consideration.

### Suggested Alternate / Elective Courses:

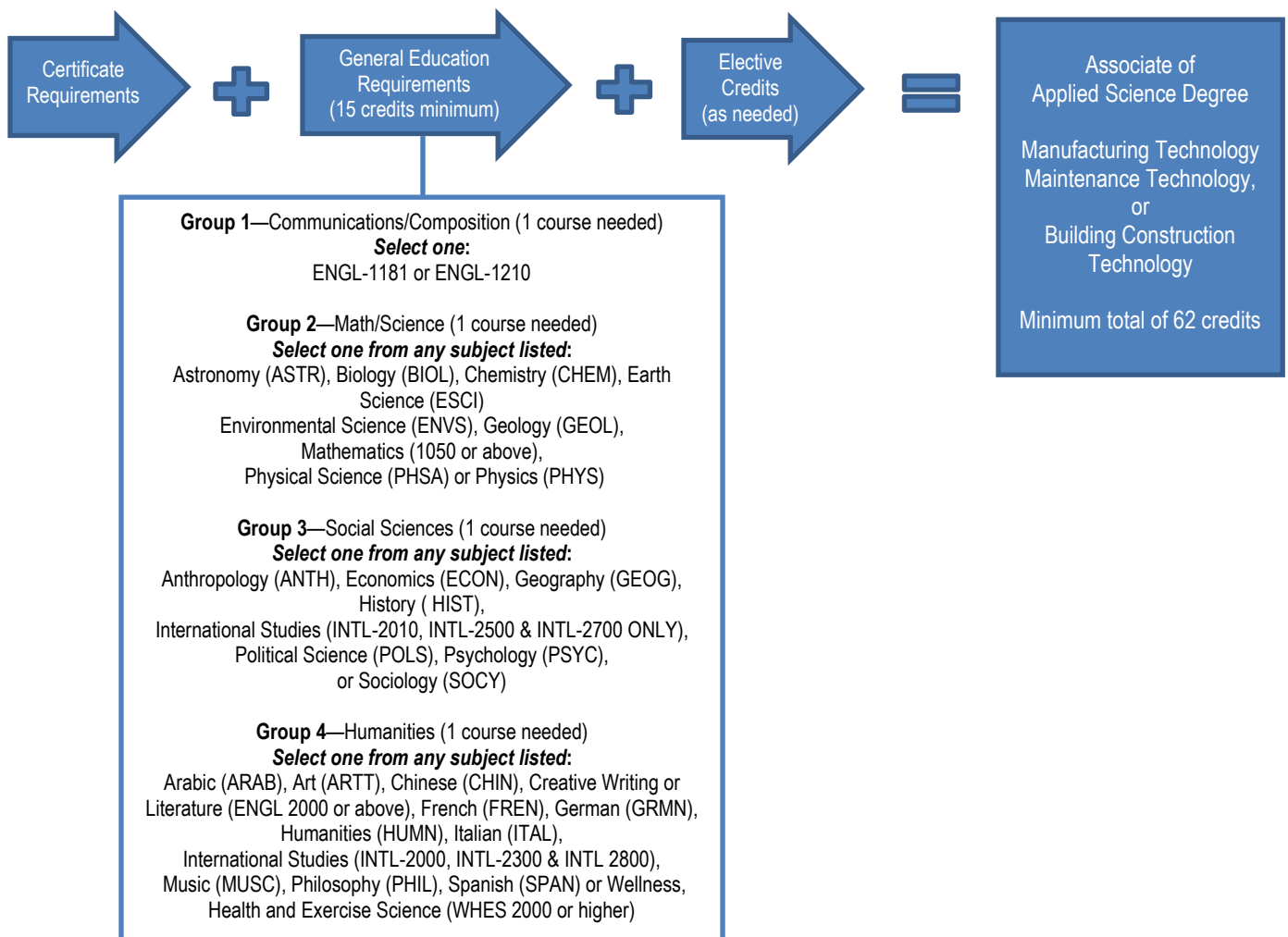
ATMT 1650	Millwright Theory-Millwright Theory 1	ATEE 1200	Residential Wiring & Renovations
ATAP 2010	Drafting – 2D CAD with Master CAM	ATMT 2350	Metallurgy – Heat Treatment of Ferrous Alloys
ATAP 2030	2D Master CAM – Mill Programming & Machining	ATAP 1050	CNC Essentials
CNST 1126	Residential Builder’s Pre-License	ATEE 1000	Introduction to Electrical
ATQT 1050	Quality Standards and Core Tools	ATMT 1150	Machine Theory – Machine Tool Laboratory 1
ATAM 2000	Mathematics for the Trades II	ATTR 1150	Technical Report Writing
ATMT 1660	Millwright Theory-Millwright Theory 2	ATPP 1130	Plumbing - Code
ATPP 1200	Introduction to Plumbing	ATQT 1030	Applied Statistical Process Control
ATQT 1000	Quality Inspection Fundamentals		

**SEE SECOND PAGE/REVERSE SIDE FOR ASSOCIATE DEGREE REQUIREMENTS**

## Associate of Applied Science Degree Requirements (Minimum 62 credit hours)

An Associate of Applied Science Degree is offered for those enrolled in or completing an Apprenticeship, Employee-In-Training, or Applied Technology General Certificate Program. Other College requirements apply, including the completion of the general education requirements, as well as attaining a minimum overall total of 62 credit hours. See Apprentice Coordinator or Advisor for details.

Students may graduate with an Associate of Applied Science Degree in Manufacturing Technology, Maintenance Technology or Building Construction Technology, depending on the Apprenticeship, Employee-In-Training or Applied Technology General Certificate Program area of specialty.



\*\*Information is subject to change. Please visit [www.macomb.edu](http://www.macomb.edu) for the most current information.\*\*

For more information on the Basic Welding Certificate Program at Macomb, contact the Applied Technology and Apprenticeship Department at 586.445.7414 or [apprenticeship@macomb.edu](mailto:apprenticeship@macomb.edu) .