

## *Advanced Welding - Certificate*

(Manufacturing Technology – Associate Degree path)

This certificate program builds on the Basic Welding Certificate and is designed to increase a student's skills in welding techniques. The program deepens knowledge by exploring gas metal arc welding (MIG), shielded metal arc welding (SMAW), gas tungsten arc welding (TIG), pipe welding, and testing in both the classroom and the laboratory.

This certificate program prepares students for 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 common welding techniques. It is recommended that the Basic Welding Certificate be completed prior to beginning this program.

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

### Career Preparation and Related Courses

		SUGGESTED SEQUENCE				CREDIT HOURS	CONTACT HOURS
ATWD 2400	Maintenance Welding	■	□	□	□	3	64
ATWD 2420	Tool & Die Welding	■	□	□	□	3	64
ATWD 1160	Advanced Welding & Welder Certification (SMAW)	■	□	□	□	3	64
ATWD 1161	Advanced Welding & Welder Certification (GMAW)	□	■	□	□	3	64
ATWD 1162	Advanced Welding & Welder Certification (GTAW)	□	■	□	□	3	64
ATWD 1163	Advanced Welding & Welder Certification (Pipewelding)	□	■	□	□	3	64
ATWD 1164	Advanced Welding & Welder Certification (Special Testing)	□	■	□	□	3	64
<b>Total</b>						<b>21</b>	<b>448</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. Suggested alternate courses, which may also be used as electives toward an associate degree, are listed below for consideration. Contact the Applied Technology and Apprenticeship department for details.

### Suggested Alternate / Elective Courses:

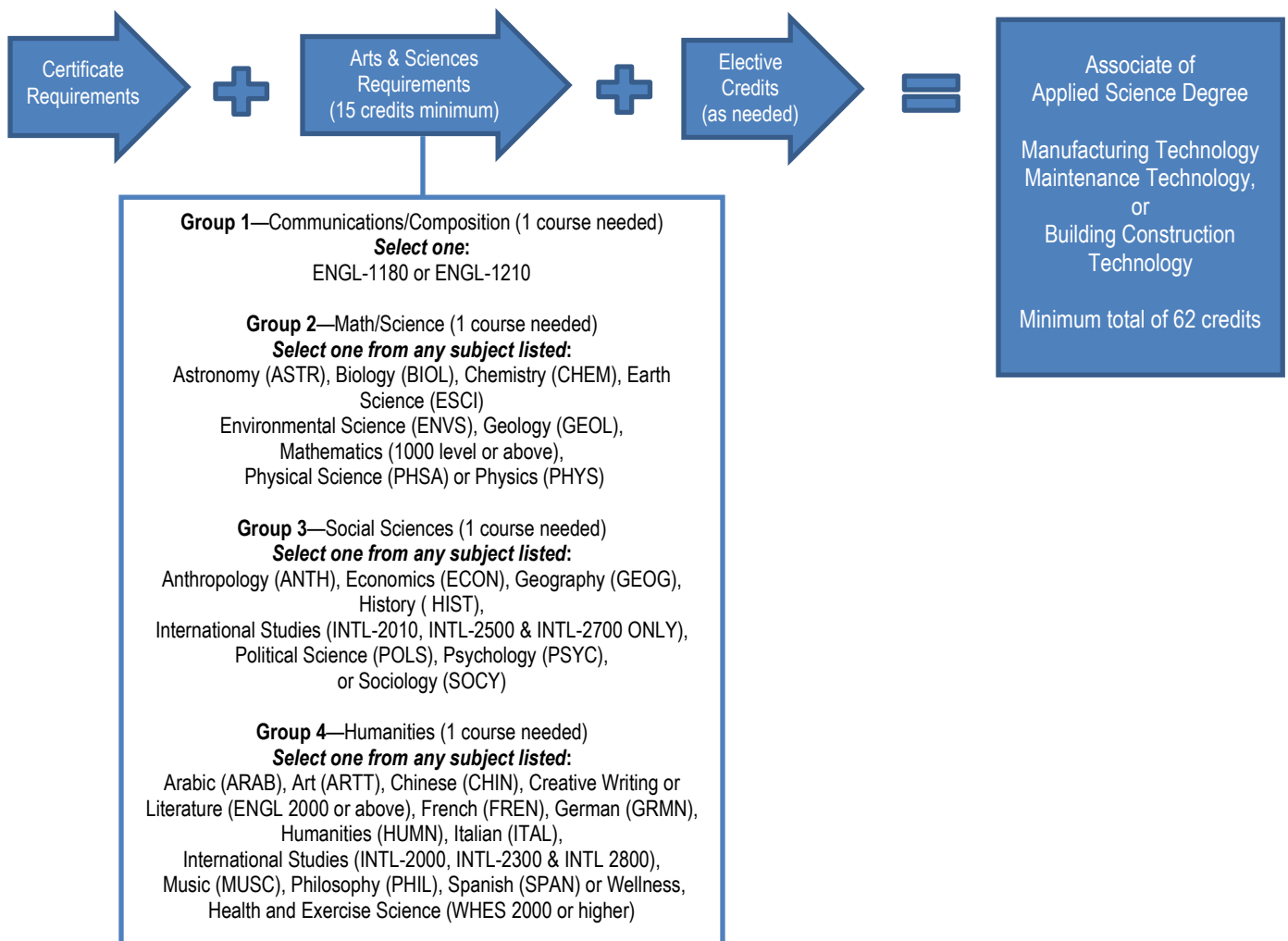
ATWD 2390	Welding Codes & Certification	ELEC 1111	Electrical Fundamentals for Non-Electrical Tradesmen
ATAP 2010	Drafting – 2D CAD with Master CAM	ATMT 2350	Metallurgy – Heat Treatment of Ferrous Alloys
ATAP 2030	2D Master CAM – Mill Programming & Machining	ATAP 1050	CNC Essentials
ATBC 1100	Blueprint and Math - Residential	ELEC 1300	Electrical Equipment and Introduction to Machine Circuits
ATBC 1150	Blueprint and Math – Commercial	ATMT 1150	Machine Theory – Machine Tool Laboratory 1
ATAM 1160	Algebra	ATTR 1150	Technical Report Writing
ATAP 2380	Rapid Prototyping & Reverse Engineering	ATPP 1130	Plumbing - Code
ATPP 1100	Plumbing Fundamentals	ATQT 1030	Applied Statistical Process Control
ATQT 1000	Quality Inspection Fundamentals	ATQT 1050	Quality Standards and Core Tools

**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 General Certificate Program. Other College requirements apply, including the completion of the arts and sciences (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 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 Advanced Welding Certificate Program at Macomb, contact the Applied Technology and Apprenticeship Department at 586.445.7438 or [apprenticeship@macomb.edu](mailto:apprenticeship@macomb.edu) .

Gainful Employment Disclosure: For information about program cost, on-time completion rates, typical student debt, and other important information, visit: Advanced Welding, Certificate: <http://www.macomb.edu/ge/STWELDADVCT/>