

## *Tool and Die Certificate*

(Manufacturing Technology – Associate Degree path)

This certificate program is designed to equip students with the foundational skills and knowledge necessary to enter the tool and die field. Through a blend of classroom lecture and hands-on experience, students will learn metalworking processes, how to use a variety of welding and cutting tools, and the function and operation of fundamental machines, including CNC machines. Foundational areas, including applied mathematics, blueprint reading, and drafting, will also be covered.

This program is designed to prepare students for success in the tool and die profession. As manufacturing and related industries continue to expand and evolve, qualified tool and die makers will be in demand to set up, operate, and disassemble conventional, manual, and CNC machine tools. This program is a good fit for individuals who enjoy being active and working with their hands, with an emphasis on mechanical reasoning and problem solving. Those who graduate with this certificate will have a foundational knowledge of a variety of mechanically-controlled and computer-controlled machine tools used to produce precision metal parts and tools.

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

### Career Preparation and Related Courses

		SUGGESTED SEQUENCE	CREDIT HOURS	CONTACT HOURS
ATAM 1150	Shop Arithmetic	■ □ □ □	2	32
ATDD 1900	Machine Tool Blueprint Reading	■ □ □ □	2	32
ATMT 1210	Benchwork, Drill Presses & Lathes	■ □ □ □	2	32
ATMT 1260	Die Theory 1	■ □ □ □	2	32
ATAP 1050	CNC Essentials	■ □ □ □	3	64
ATAM 1160	Algebra	□ ■ □ □	2	32
ATDD 1950	Drafting Essentials	□ ■ □ □	2	32
ATMT 1250	Shapers, Planers, Mills & Grinders	□ ■ □ □	2	32
ATWD 1300	Metallurgy—Characteristics of Ferrous Metals	□ ■ □ □	2	32
ATMT 1270	Die Theory 2	□ ■ □ □	2	32
ATAM 1170	Geometry	□ □ ■ □	2	32
ATDD 1960	Conventions & Symbols	□ □ ■ □	2	32
ATMT 1150	Machine Tool Laboratory 1	□ □ ■ □	3	48
ATQT 1000	Quality Inspection Fundamentals	□ □ ■ □	2	32
ATTR 1600	Industrial Safety—Skilled Trades	□ □ ■ □	2	32
ATAM 2150	Trigonometry	□ □ □ ■	2	32
ATDD 1920	Geometric Dimensioning & Tolerancing Fundamentals	□ □ □ ■	2	32
ATMT 1160	Machine Tool Laboratory 2	□ □ □ ■	3	48
ATAP 2010	2D CAD with MasterCAM	□ □ □ ■	2	32
ATWD 1110	Fundamentals of Gas & Arc Welding	□ □ □ ■	2	32
<b>Total</b>			<b>43</b>	<b>704</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 Alternative/Elective Courses:

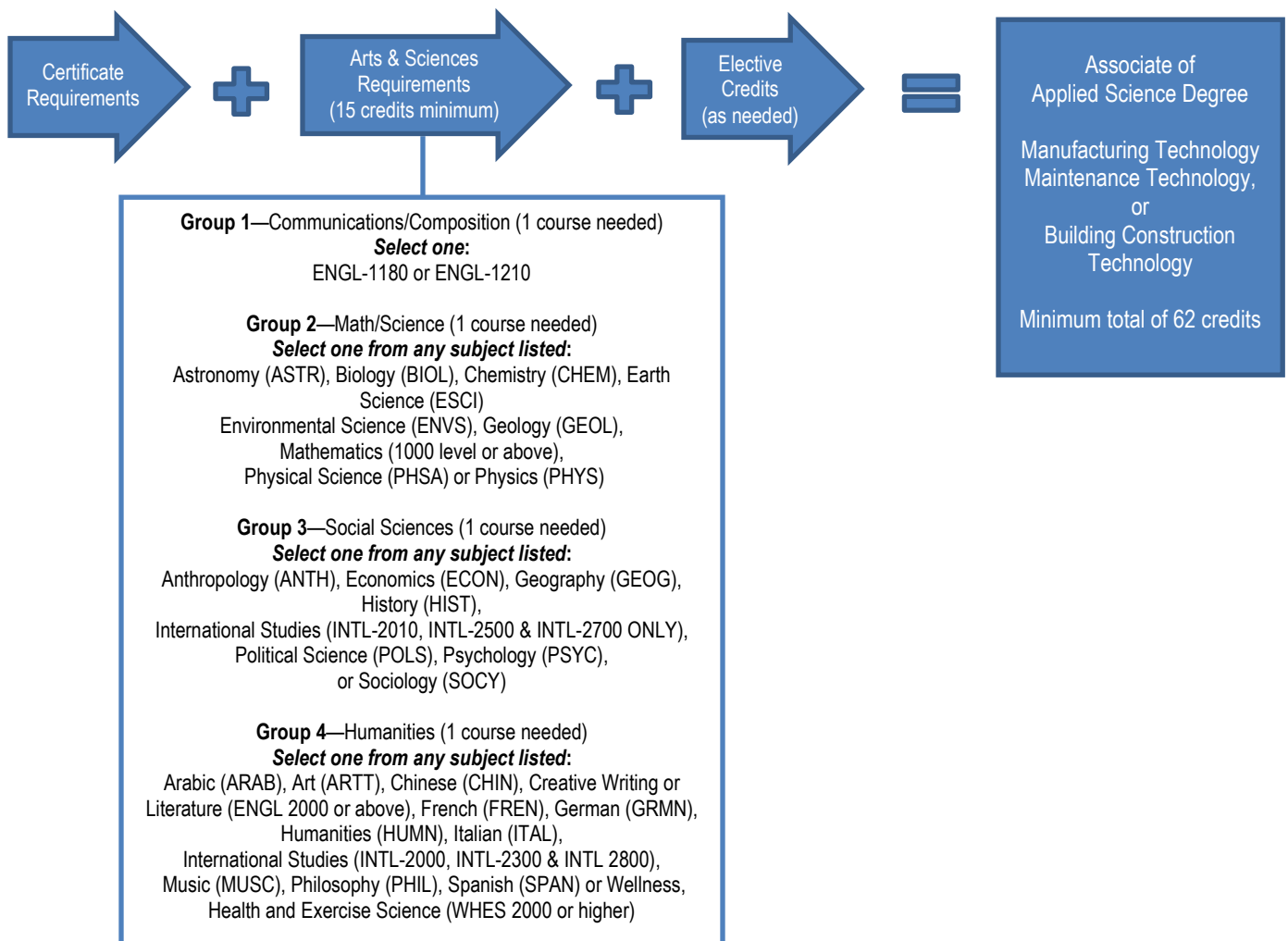
ATTR 1600	Industrial Safety—Skilled Trades	ATAP 2340	EDM WIRE—G&M Programming & Machining
ATAP 2350	3D MasterCAM—Die/Mold CNC Machining	ATAP 2310	CNC Mill G&M Programming & CNC Machining
ATAP 2330	EDM RAM—G&M Programming & Machining	ATAP 2320	CNC Lathe G&M Programming & CNC Machining
ATQT 1060	Coordinate Measuring Machine (CMM) Introduction	ATAP 2030	2D MasterCAM-Mill Programming & Machining

**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 Tool and Die Certificate Program at Macomb, contact the Applied Technology and Apprenticeship Department at 586.445.7438 or [apprenticeship@macomb.edu](mailto:apprenticeship@macomb.edu).