

TOOLING, ASSOCIATE IN SCIENCE DEGREE

Banner Code: 1_AS_MTTL
Financial Aid Eligible

Earning the Tooling certificate upgrades the skills of the machinist to the point required for profitable employment as an entry-level tool maker, a die maker, or a mold maker. As well as other subjects that must be learned by the beginning tool maker, the Tooling certificate program includes courses in metallurgy, tool and cutter grinding, and welding tooling.

Complete the Tooling Certificate of Achievement and the Associate in Science graduation requirements as outlined in the Graduation Requirements section of the catalog.

Program Outcome

Manufacture precision tooling for Dies, Molds, and Prototype tooling.

Review Graduation Requirements (<https://catalog.cccd.edu/orange-coast/graduation-requirements/associate-degree/>) and General Education (<https://catalog.cccd.edu/orange-coast/general-education-patterns/>).

Course	Title	Units
Required Courses		
MACH A100	Introduction to Machine Shop	3
MACH A105	Lathe	5
MACH A110	Milling Machine	5
MACH A115	Production Machining Techniques	2
MACH A120	Measurement and Blueprint Reading	3
MACH A121	Computations for Machinists	3
MACH A125	CNC Machine Operation 1	3
MACH A130	Introduction to CNC and Manual Programming	3
MACH A175	Dimensioning and Tolerancing	3
MACH A190	Elementary Metallurgy	2
MACH A200	Tooling	2.5
WELD A100	Arc & Oxy-acetylene Welding	3
Total Units		37.5
Requirement		
Requirement		Units
Program Major Units		37.5
AS General Education Option 1, 2, or 3		Varies
Transferable electives to satisfy unit requirement		Varies
Total Minimum Degree Units		60

Program Sequence

These sequences at Orange Coast College are general course curriculum maps for students to finish all major and general education requirements for two-year completion of degrees, and/or fulfillment of transfer requirements. The course sequence may include course prerequisites and other placement requirements. **Students are advised to meet with an Orange Coast College Counselor to review course selections**

and sequences to ensure that completion of this program will meet a student's transfer and career goals.

Some courses in this program may be offered once per academic year.

Course	Title	Units
Year 1		
Semester 1		
MACH A100	Introduction to Machine Shop	3
MACH A105	Lathe	5
MACH A120	Measurement and Blueprint Reading	3
MACH A121	Computations for Machinists	3
Units		14
Semester 2		
MACH A110	Milling Machine	5
MACH A130	Introduction to CNC and Manual Programming	3
OCC AS GE AREA A1 - CHOOSE ONE		3
OCC AS GE AREA C1 - CHOOSE ONE		3
Units		14
Summer		
MACH A200	Tooling	2.5
Units		2.5
Year 2		
Semester 1		
MACH A115	Production Machining Techniques	2
MACH A125	CNC Machine Operation 1	3
MACH A190	Elementary Metallurgy	2
OCC AS GE AREA C2 - CHOOSE ONE		3
Select one of the following or satisfy Math competency (completion of High School Algebra 2 with a "C" or better):		3-4
MATH A030 or MATH A045	Intermediate Algebra ¹ or Combined Elementary and Intermediate Algebra	
Units		13-14
Semester 2		
MACH A175	Dimensioning and Tolerancing	3
WELD A100	Arc & Oxy-acetylene Welding	3
OCC AS GE AREA A2 - CHOOSE ONE ²		3-4
OCC AS GE AREA B - CHOOSE ONE		3-4
OCC AS GE AREA D - CHOOSE ONE		3
ELECTIVE (DEGREE APPLICABLE) ³		1.5
Units		16.5-18.5
Total Units		60-63

¹ Math A030 or higher OR take 3-4 degree applicable elective units if math competency was met through completion of High School Algebra 2 with a "C" or better; *100-level Math courses satisfy AS Math Requirement and OCC AS GE AREA A2

² OCC AS GE AREA A2 - Required if 100-level MATH will not be taken to meet Math competency. If MATH A100 or higher will be taken, then needs to take 3-4 degree applicable elective units

³ VARIES TO REACH MINIMUM 60 DEGREE APPLICABLE UNITS