

Precision Machining 3 & 4
Dual enrollment: Pima MAC 100
Scope & Sequence: Year 2

Semester 1		Semester 2	
Quarter 1	Quarter 2	Quarter 3	Quarter 4
<p>Standards: 2.0 Professional Standards: 4.0, 8.0 A, C, D, E</p> <p><u>Unit 1</u> Shop Safety and Shop Etiquette</p> <ul style="list-style-type: none"> Identify and practice use of appropriate Personal Protective Equipment (PPE) for the machine shop environment. Explain Purpose of Occupational Safety and Health Administration (OSHA). Interpret Material Safety Data Sheet information (MSDS). <p>Standards: 3.0, 4.2, 10.0 Professional Standards: 3.0, 4.0</p> <p><u>Unit 2</u> Introduction to Machining Languages</p> <ul style="list-style-type: none"> Introduction to G and M codes. Identify importance of programming syntax. Identify materials and methods. Solve basic algebra equations. Identify standards of material classification. <p>Standards: 5.1, 5.2 Professional Standards: 3.0, 4.0</p> <p><u>Unit 3</u></p>	<p>Standards: 3.1, 3.2, 4.4, 5.4, 8.0, 12.0 Professional Standards: 3.0, 4.0</p> <p><u>Unit 4</u> Introduction to CNC Milling Operations</p> <ul style="list-style-type: none"> Identify parts of CNC milling machines. Describe the X-, Y-, and Z-axes used for milling. Apply milling programming codes. Apply CNC-specific milling operations and canned cycles. Perform basic set-up procedures (e.g., workholding, partholding, offsets, toolholders). Demonstrate program prove-out procedures. <p>Standards: 5.1, 5.2 Professional Standards: 3.0, 4.0</p> <p><u>Unit 5</u> Intermediate Solidworks Modeling: Milling</p> <ul style="list-style-type: none"> Create models and drawings of part(s) for machining operations. Using Geometric Dimensioning and Tolerances (GD&T) to define tolerances of part. Create and follow a process plan. 	<p>Standards: 3.1, 3.2, 4.4, 5.4, 7.0, 11.0 Professional Standards: 3.0, 4.0</p> <p><u>Unit 6</u> Introduction to CNC Turning Operations</p> <ul style="list-style-type: none"> Identify parts of CNC turning machines. Describe the X- and Z-axes used for turning. Apply turning programming codes. Apply CNC-specific turning operations and canned cycles. Perform basic set-up procedures (e.g., workholding, partholding, offsets, toolholders). Demonstrate program prove-out procedures. <p>Standards: 5.1, 5.2 Professional Standards: 3.0 4.0</p> <p><u>Unit 7</u> Intermediate Solidworks Modeling: Turning</p> <ul style="list-style-type: none"> Using Geometric dimensioning and tolerances in drawings. Create layouts on parts. Create and follow a process plan. 	<p>Standards: 3.0, 5.0, 7.0 8.0, 11.0, 12.0 Professional Standards: 3.0, 4.0</p> <p><u>Unit 8</u> Second Year Capstone Project</p> <ul style="list-style-type: none"> Creation of 3d model, drawing, process plan, setup sheet and inspection sheets for parts. Incorporate Lathe and Mill operations into a part. Quality control of machined parts. Perform precision grinding of final parts to specified tolerances. <p>*NIMS Certification Testing</p> <ul style="list-style-type: none"> Job planning, bench work, and layout. Safety, Measurement and Materials.



Semester 1		Semester 2	
Quarter 1	Quarter 2	Quarter 3	Quarter 4
<p>Intermediate Solidworks Drawings</p> <ul style="list-style-type: none"> Using Geometric Dimensioning and Tolerances in drawings. Create layouts on parts. Create and follow a process plan. 			