

Student Name \_\_\_\_\_ Instructor Name \_\_\_\_\_

High School or Vocational Center \_\_\_\_\_ Grade \_\_\_\_\_

**COMPETENCY CHECKLIST FOR ADVANCED TECHNICAL PLACEMENT  
Manufacturing Technologies**

**MT 102  
Intermediate Machining  
3 Credit Hours**

This course offers an in-depth examination of the machine tools commonly found in industry. The capabilities of drilling, turning, milling, and grinding machines will be explored as well as how these methods relate to advanced machining techniques and modern machine controls. A major focus of milling and turning will be experienced in the lab portion of this course. Each student will operate a CNC machine during the lab. The precision and quality that can be expected of these processes and their relationship to manufacturing will be stressed throughout the course.

To meet the standards for articulated credit, the student will demonstrate competency in the tasks listed below. Competency standards will be determined by the high school instructor.

Task	Satisfactory	Unsatisfactory
<b>GENERAL TASKS</b>		
Exhibit an understanding of safe operating procedures for each machine tool in the course		
Display a willingness to follow all safety procedures		
Use the proper terminology for each machine and tool used in the course		
Be able to calculate the correct speed for a given machine operation		
Be able to calculate the correct feed for a given machine operation		
Read and follow a process sheet		
Have a completed portfolio showing mastery of past courses		
<b>HAND TOOLS</b>		
Identify common hand tools		
Display the proper maintenance of hand tools		
Use hand tools properly		
Measure using a fractional ruler to 1/64 <sup>th</sup> of an inch		
<b>MEASURING</b>		
Measure using a decimal ruler to 1/50 <sup>th</sup> of an inch		
Measure outside dimensions using a three way dial caliper to .001 inches		

Task	Satisfactory	Unsatisfactory
Measure inside dimensions using a three way dial caliper to .001 inches		
Measure a depth using three way calipers to .002 inches		
Read an outside micrometer to .0001 inches		
Measure using the Vernier height gauge to .001 inches		
Measure an angle using a bevel protractor to 1 degree		
Display the ability to use a square to inspect for squareness		
Using the combination square to set find the center of a piece of round stock		
Use the surface plate for inspection		
<b>LAYOUT</b>		
Display the proper use of layout bluing		
Scribe a line square to an edge		
Scribe a line parallel to an edge		
Scribe a line at a given angle		
Select a proper punch for marking a center		
<b>PEDESTAL GRINDER</b>		
Dress a grinding wheel		
Grind a single point cutting tool by hand		
Regrinding a drill point by hand		
<b>DRILL PRESS</b>		
Identify common drill types		
Display a knowledge of the four major drill sizing methods		
Set the machine to the proper speed		
Set the machine to the proper feed		
Drill a hole		
Tap a hole		
Spot face a hole		
Counterbore a hole		
Chamfer a hole		
Ream a hole		
Counter sink a hole		
<b>LATHE</b>		
Display a knowledge of the various types of cutting tools used on the lathe		

<b>Task</b>	<b>Satisfactory</b>	<b>Unsatisfactory</b>
Understand the various materials commonly used to make lathe tooling		
Choose the proper tool holder for the work to be done		
Set the proper spindle speed		
Set the proper feed rate		
Prepare all of the lathe tooling required for the following operations		
• Perform straight turning on the O.D. of a part		
• Perform taper turning on the O.D. of a part		
• Face as part		
• Thread a part using a single point cutting tool		
• Drill a hole using the tailstock		
• Turn a part between centers		
• Cut a groove		
<b>MILLING MACHINE</b>		
Set the proper feed rate		
Identify cutters common to the milling machine		
Perform a fly cutting operation		
Perform side milling		
Perform face milling		
Perform peripheral milling		
Perform slotting		
<b>SURFACE GRINDER</b>		
Use the magnetic chuck		
Dress the wheel		
Grind a surface flat		
Grind a surface parallel to a reference surface		
<b>MATERIALS</b>		
Identify common non-ferrous materials		
Identify common ferrous alloys		
Display a knowledge of the ferrous alloy numbering system		
<b>CNC</b>		
Demonstrate the basic operation of the CNC Turning Center		
Demonstrate the basic operation of the CNC Machining Center		

<b>Task</b>	<b>Satisfactory</b>	<b>Unsatisfactory</b>
Demonstrate the ability to use a CNC Control Panel		
Demonstrate the ability to enter and change the X,Y, and Z offsets		
Demonstrate zero point and identify offset adjustments		

Instructor's Signature \_\_\_\_\_ Date \_\_\_\_\_