

**Competency Task List – Secondary Component
Machine Tool Technology/Machinist CIP 48.0501
High School Graduation Years 2022, 2023, 2024**

100 Orientation/Safety

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
101	Follow Occupational Safety and Health Administration (OSHA) regulations.		
102	RESERVED		
103	Apply general shop safety procedures.		
104	RESERVED		
105	RESERVED		
106	Follow Safety Data Sheets (SDS).		
107	RESERVED		
L108	Identify and explain location of SDS		
L109	Identify and explain potential hazardous trade materials.		

200 Performing Layout Work

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
201	Perform layout work.		
202	RESERVED		
203	RESERVED		

300 Part Inspection

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
301	Use precision measuring instruments.		
302	Calibrate precision measuring instruments.		
303	Create quality control procedures.		

400 Bench Work

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
401	Apply bench work safety procedures.		
402	Cut material with a hand hacksaw.		
403	File work to specifications.		
404	Cut threads with hand taps and dies.		
405	RESERVED		
406	Select and use hand tools.		
407	Use a hand arbor and hydraulic press.		

500 Drill Presses

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
501	Apply drill press safety procedures.		
502	Operate drill press work holding devices.		
503	RESERVED		
504	RESERVED		
505	Select correct drill sizes for drill press application.		
506	RESERVED		
507	Demonstrate counterboring, spotfacing, reaming, and countersinking.		

508	RESERVED		
509	RESERVED		
510	RESERVED		
511	RESERVED		

600 Grinding Machines

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
601	Apply pedestal and surface grinding safety procedures.		
602	Identify parts of pedestal grinder.		
603	Test, mount, and dress grinding wheels.		
604	Grind and sharpen tools.		
605	RESERVED		
606	RESERVED		
607	RESERVED		
608	Identify parts of surface grinder.		
609	Grind surfaces flat and parallel using a magnetic chuck.		
610	Grind work surfaces square with a vise or angle plate.		
611	Grind precision angles using a sine plate or sine bar.		

700 Lathes

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
701	Apply lathe safety procedures.		
702	Indicate work piece in a 4-jaw chuck.		
703	Align centers.		

704	Face workpiece.		
705	RESERVED		
706	Turn inside and outside diameters to shoulders.		
707	Turn tapers.		
708	Demonstrate knurling.		
709	Part off and groove workpiece.		
710	Cut internal and external threads.		
711	RESERVED		
712	File and polish workpiece.		
713	RESERVED		
714	Perform boring operations.		
715	Install and remove tool holders.		
716	Select and apply work holding devices.		
717	RESERVED		
718	RESERVED		
719	Select gears for lathe operations.		
720	Perform drilling operations.		

800 Milling Machines

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
801	Apply milling machine safety procedures.		
802	Tram a mill head.		
803	Mount and indicate vise.		
804	Mill angles.		
805	Mill keyways.		
806	RESERVED		
807	RESERVED		
808	RESERVED		
809	Use an edge finder.		

810	Differentiate between climb milling and conventional milling.		
811	Use an adjustable boring head.		
812	RESERVED		
813	Install and remove cutting tool holders.		
814	Select cutting tool for milling operations.		
815	Square part.		
816	Select cutting tool for drilling operations.		

900 Power Saw

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
901	Apply power saw safety procedures.		
902	RESERVED		
903	RESERVED		
904	Follow the 3 tooth rule.		
905	Saw work piece.		
906	RESERVED		

1000 Machines and Tools

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
1001	Lubricate and maintain machinery.		
1002	Clean and store equipment.		
1003	Inspect machine guards.		
1004	RESERVED		
1005	RESERVED		

1100 Metallurgy

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
1101	Identify metals classifications.		
1102	Identify metal property applications.		
1103	Identify heat-treating and annealing processes.		

1200 Charts and References

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
1201	Use the decimal equivalent chart.		
1202	Calculate speeds and feeds.		
1203	Use tap and drill charts.		
1204	Use Machinery handbook and/or shop references to locate information.		

1300 Blueprint Reading

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
1301	Identify orthographic views and projections.		
1302	RESERVED		
1303	Identify the alphabet of lines and symbols.		
1304	RESERVED		
1305	Calculate material sizes.		
1306	Differentiate angle projections.		
1307	RESERVED		
1308	Interpret title block information.		
L1309	Identify and explain lines, dimensions, tolerances and fits.		

1400 CNC Programming/Operations

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
1401	Apply CNC safety procedures.		
1402	Interpret G and M codes.		
1403	RESERVED		
1404	Use Cartesian coordinate systems.		
1405	RESERVED		
1406	Prove a CNC program.		
1407	RESERVED		
1408	RESERVED		
1409	Set part zero and tool offsets.		
1410	Transfer data files to and from a CNC machine.		
1411	Use CNC control functions.		
1412	RESERVED		
1413	Select and use workholding devices.		
L1413	Optimize 3D model to allow for best use by 3D printer.		
L1414	Create part geometry using MasterCam.		
L1415	Create tool path using Mastercam.		
L1416	Generate G&M Code using CAD-CAM software.		
L1417	Use Solid Works to create 3D model.		
L1418	Use DFX Converter to create G&M Code from Auto-CAD file.		

L1500 Shop Math

Item	Task	(X) Indicates Proficiency ¹	Secondary Course Crosswalk
L1501	Perform mathematical operations with fractions.		
L1502	Formulate metric conversions.		
L1503	Calculate speeds and feeds.		
L1504	Calculate angles and dimensions using right angle trigonometry.		
L1505	Calculate indexing patterns.		
L1506	Apply fundamentals of geometry.		
L1507	Calculate tapers using degrees, TPI, & TPF.		
L1508	Plot points using a coordinate system.		

¹ Student Demonstrated Entry-Level Industry Proficiency as Indicated by (X)

Secondary CTE Instructor Signature _____ Date _____

Student Signature _____ Date _____