Correlation of

***Modern Cabinetmaking,* Molzahn, Umstattd, Davis**

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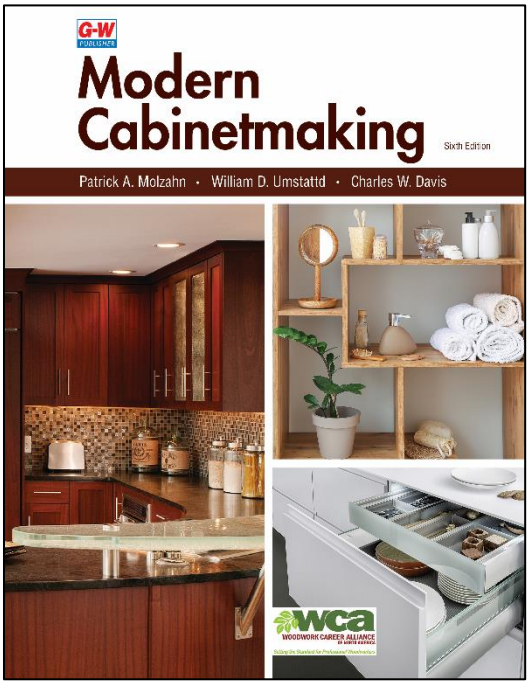
to

Woodwork Career Alliance: 5. CNC

The content of the text and Lab Workbook correlates to Woodwork Career Alliance (WCA) skill standards. The WCA establishes a benchmark to measure and recognize an individual's skills and knowledge. The WCA skill standards help ensure that students are prepared for rigorous industry standards, and provide a pathway for advancement for professional woodworkers.

The WCA skill standards define the minimum requirements for specific woodworking machine operations. Using the WCA skill standards in a wood training program can help you, your students, and your program obtain industry recognition. The Modern Cabinetmaking textbook and Lab Workbook are correlated to the performance standards, helping prepare your students for certification.



CNC Considerations

- Pre-Operation Checklist is a prerequisite for ANY operation.
- Tool/machine manufacturer's safety rules and guidelines are followed.
- Tool/machine/aggregate head manufacturer's safety rules and guidelines are followed.
- Tooling requirements are reviewed and appropriate tooling on the machine verified.
- Operator does not reach into the machine processing area while the machine is in operation.
- Stock is held securely.
- Operator clears machine and cleans work area after use.
- Required OSHA- approved personal protective equipment is worn.
- Lock-out/tag-out procedure is in place and followed by everyone.
- Process is completed in a timely manner.
- Panel support rails (if present) are used to assist with large panel movement and placement.

Beam Saw

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies machine is properly guarded and safety mechanisms are in place and operating.	Chapter 28	—
1	—	**Performance Standard 2.** Demonstrates knowledge of and proper use of all machine specific controls.	Chapter 28	—
1	—	**Performance Standard 3.** Verifies air-bearing surface is operating properly.	Chapter 28	—
1	—	**Performance Standard 4.** Inspects material positioning clamps for proper conditioning and operation.	Chapter 28	—
1	—	**Performance Standard 5.** Inspects material for nails, staples, or foreign materials before processing.	Chapter 28	—
1	—	**Performance Standard 6.** Demonstrates proper loading and unloading of materials.	Chapter 28	—
1	—	**Performance Standard 7.** Verifies scrap and off cuts are removed from the machine prior to processing material.	Chapter 28	—
2	—	**Performance Standard 1.** Selects machine operation functions and options.	Chapter 28	—
2	—	**Performance Standard 2.** Selects and installs tooling to meet machining specifications.	Chapter 28	—
2	—	**Performance Standard 3.** Inspects cutting beam and/or apparatus for proper function.	Chapter 28	—
2	—	Meets Level 1 performance standard.	—	—
Operation—Cut Panel Product				
—	Given panel material and machine set up and ready to cut, cut material to size using preset program.	**Performance Standard 1.** Dimension tolerance is ±0.4 mm (1/64”) [0.0156”] in length and width across entire part.	Chapter 28	Section Project 4-11

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
—	—	**Performance Standard 1.** Angle of crosscut is 90° to the edge.	Chapter 28	Section Project 4-11
—	—	**Performance Standard 2.** Angle of cut is 90° to the face.	Chapter 28	Section Project 4-11
—	—	**Performance Standard 3.** Cut surfaces exhibit uniform saw marks with minimal burn marks.	Chapter 28	Section Project 4-11
—	—	**Performance Standard 4.** Cut is free of tearout.	Chapter 28	Section Project 4-11
2	Given panel material, machine, and a target size, program saw to safely cut material to size.	Meets Level 1 performance standard.	—	—
Operation—Cut Multilayer Panel Product				
1	Given panel material and machine set up and ready to cut, cut multiple layers of material to size using a preset program.	**Performance Standard 1.** Dimension tolerance is ±0.4 mm (1/64″) [0.0156″] in length and width across all parts.	Chapter 28	—
1	Given panel material and machine set up and ready to cut, cut multiple layers of material to size using a preset program.	**Performance Standard 2.** Angle of crosscut is 90° to the edge.	Chapter 28	—
—	Given panel material and machine set up and ready to cut, cut multiple layers of material to size using a preset program.	**Performance Standard 3.** Angle of cut is 90° to the face.	Chapter 28	—
—	Given panel material and machine set up and ready to cut, cut multiple layers of material to size using a preset program.	**Performance Standard4.** Cut surfaces exhibit uniform saw marks with minimal burn marks.	Chapter 28	—
—	Given panel material and machine set up and ready to cut, cut multiple layers of material to size using a preset program.	**Performance Standard 5.** Cut is free of tearout.	Chapter 28	—

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
2	Given panel material, machine, and a target size, program saw to safely cut multiple layers of material to size.	Meets Level 1 performance standard.	—	—

CNC Machining Centers

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies machine is properly guarded and safety mechanisms are in place and operating.	Chapter 28	—
1	—	**Performance Standard 2.** Demonstrates knowledge of and proper use of all machine specific controls.	Chapter 28	—
1	—	**Performance Standard 3.** Verifies vacuum pod gaskets or table surface gaskets are free of cuts, tears, and defects.	Chapter 28	—
1	—	**Performance Standard 4.** Inspects material for nails, staples, or foreign materials before processing.	Chapter 28	—
1	—	**Performance Standard 5.** Verifies scrap and offal is removed from the machine prior to processing material.	Chapter 28	—
1	—	**Performance Standard 6.** Inspects spoil board.	Chapter 28	—
1	—	**Performance Standard 7.** Activates vacuum system and assures stock is properly secured.	Chapter 28	—
2	—	**Performance Standard 1.** Selects machine operation functions and options.	Chapter 28	—
2	—	**Performance Standard 2.** Selects and installs tooling to meet machining specifications.	Chapter 28	—

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
2	—	**Performance Standard 3.** Enters tool values into the tool database.	Chapter 28	—
2	—	**Performance Standard 4.** Inspects tooling apparatus for proper function.	Chapter 28	—
2	—	**Performance Standard 5.** Inspects and positions vacuum apparatus and support beams.	Chapter 28	—
2	—	**Performance Standard 6.** Replaces/resurfaces spoil board when necessary.	Chapter 28	—
2	—	Meets Level 1 performance standard.	—	—
Operation—3-Axis Vacuum Pod CNC Machining Centers Routing, Grooving, and Boring				
1	Given a CNC nested base machine that is properly set up and adjusted, calibrated with the correct CNC tooling, and stock present, machine part(s).	**Performance Standard 1.** Dimension tolerance is within ±0.1 mm [0.004”].	Chapter 28	Section Project 4-11
2	Given the CNC nested base machine, set up the machine and tooling, and machine part(s) to specifications.	Meets Level 1 performance standard.	—	—
Operation—Nested Based CNC Machining Centers Routing, Grooving, and Boring				
1	Given a CNC nested base machine that is properly set up and adjusted, calibrated with the correct CNC tooling, and stock present, machine part(s).	**Performance Standard 1.** Dimension tolerance is within ±0.1 mm [0.004”].	Chapter 28	Section Project 4-11
2	Given the CNC nested base machine, set up the machine and tooling, and machine part(s) to specifications.	Meets Level 1 performance standard.	—	—

CNC Aggregate Head

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Activates vacuum system and assures stock is properly secured.	Chapter 28	—
1	—	**Performance Standard 2.** Verifies machine is properly guarded and safety mechanisms are in place and operating.	Chapter 28	—
1	—	**Performance Standard 3.** Demonstrates knowledge of and proper use of all machine specific controls.	Chapter 28	—
1	—	**Performance Standard 4.** Verifies vacuum pod gaskets or table surface gaskets are free of cuts, tears, and defects.	Chapter 28	—
1	—	**Performance Standard 5.** Inspects material for nails, staples, or foreign materials before processing.	Chapter 28	—
1	—	**Performance Standard 6.** Verifies scrap and offal is removed from the machine prior to processing material.	Chapter 28	—
2	—	**Performance Standard 1.** Selects machine operation functions and options.	Chapter 28	—
2	—	**Performance Standard 2.** Selects and installs tooling to meet machining specifications.	Chapter 28	—
2	—	**Performance Standard 3.** Installs and adjusts vacuum pods, gaskets, or fixtures as required.	Chapter 28	—
2	—	**Performance Standard 4.** Enters tool and aggregate values into the tool database.	Chapter 28	—
2	—	**Performance Standard 5.** Inspects aggregate head for proper tooling installation and function.	Chapter 28	—
2	—	**Performance Standard 6.** Check aggregate head for proper fit in C-axis and adjust arrester bolt as required.	Chapter 28	—

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
2	—	**Performance Standard 7.** Inspects and positions vacuum apparatus and support beams.	Chapter 28	—
2	—	**Performance Standard 8.** Checks lubrication system for proper levels and function.	Chapter 28	—
2	—	Meets Level 1 performance standard.	—	—
Operation—Routing, Grooving, and Boring				
1	Given a machine equipped with a CNC Aggregate Head that is properly set up and adjusted, calibrated with the correct CNC tooling, and stock present, machine part(s).	**Performance Standard 1.** Dimension tolerance is within ±0.1 mm [0.004”].	Chapter 28	Section Project 4-11
2	Given a machine equipped with a CNC Aggregate Head, set up the machine and tooling, and machine part(s) to specifications.	Meets Level 1 performance standard.	—	—