Correlation of

***Modern Cabinetmaking,* Molzahn, DeWerd, Umstattd**

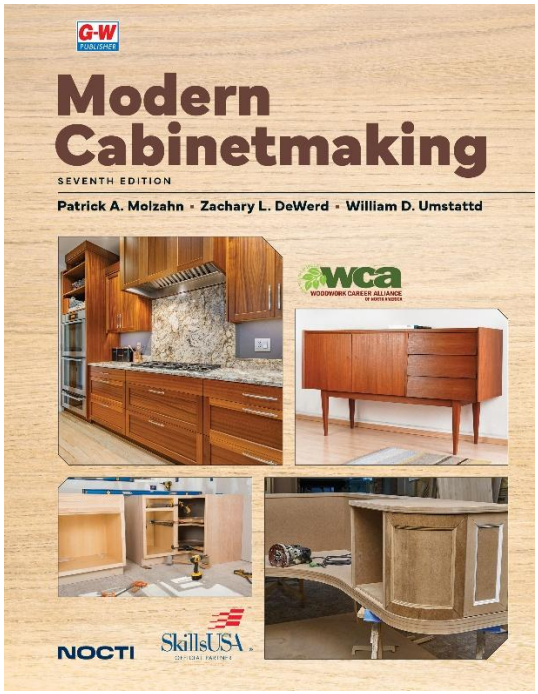
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to

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.

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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.	—	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
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 4-10
—	—	**Performance Standard 1.** Angle of crosscut is 90° to the edge.	Chapter 28	Section Project 4-10
—	—	**Performance Standard 2.** Angle of cut is 90° to the face.	Chapter 28	Section Project 4-10
—	—	**Performance Standard 3.** Cut surfaces exhibit uniform saw marks with minimal burn marks.	Chapter 28	Section Project 4-10
—	—	**Performance Standard 4.** Cut is free of tearout.	Chapter 28	Section Project 4-10
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	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
—	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	—
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	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
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.** 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 4-10
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 4-10

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
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	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
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	—
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 4-10
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.	—	—

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