Correlation of

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

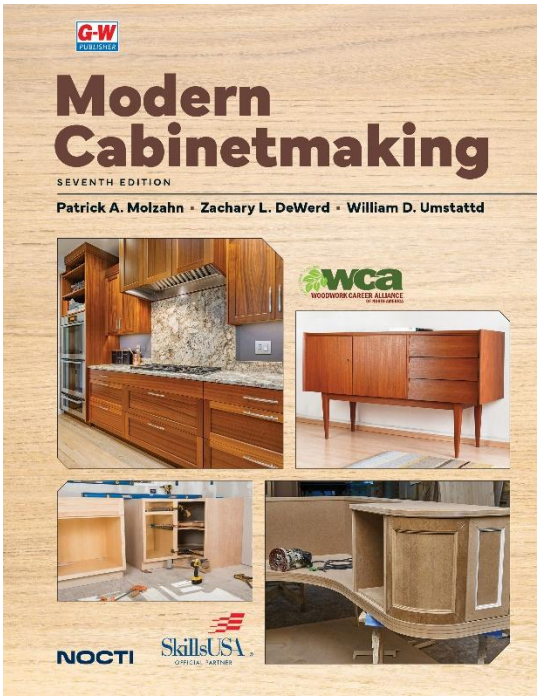
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to

Woodwork Career Alliance: 10. Joinery

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.



Joinery Considerations

- Pre-Operation Checklist is a prerequisite for ANY operation.
- Clamps, biscuits, and glue are prepared for quick assembly.
- Disengage from power source until everything is ready to begin cutting operation.
- Operator cleans tool and work area after use.
- 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.
- Process is completed in a timely manner.
- There are numerous types of machines and portable tools for creating pocket hole joinery. This standard is concerned with the execution and assembly of this joinery. Setup and adjustments will differ by manufacturer.

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Biscuit Joiner

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies stock is properly clamped (if required).	Chapter 37	—
1	—	**Performance Standard 2.** Demonstrates proper holding of machine to prevent vertical or horizontal movement when engaging cutter head.	Chapter 37	—
1	—	**Performance Standard 3.** Verifies dust collection operable/operating (if equipped).	Chapter 37	—
2	—	**Performance Standard 1.** Verifies stock is properly clamped (if required).	Chapter 37	—
2	—	**Performance Standard 2.** Demonstrates proper holding of machine to prevent vertical or horizontal movement when engaging cutter head.	Chapter 37	—
2	—	**Performance Standard 3.** Verifies dust collection operable/operating (if equipped).	Chapter 37	—
Operation—Machine 90° Butt Jointed Corner				
1	Given material properly prepared for machining, with joint location specified, execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 1.** Demonstrates ability to place cutter head ±0.4 mm (1/64”) [0.0156”] of location mark.	Chapter 37	Section Project 4-5

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	Given material properly prepared for machining, with joint location specified, execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 2.** Uses layout rod or company standard to mark biscuit locations.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, with joint location specified, execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 3.** Makes a joint face which is flush ±0.005”.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, with joint location specified, execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 4.** Joins opposing parts within ±0.4 mm (1/64”) [0.0156”] of intended lateral position.	Chapter 37	Section Project 4-5
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 1.** Marks layout of the joint square to edge and within ±0.4 mm (1/64”) [0.0156”] of intended position.	Chapter 37	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 2.** Marks center points for the biscuits on shelf and vertical within ±0.4 mm (1/64″) [0.0156″] of intended position.	Chapter 37	—
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 3.** Adjusts machine fence and guides to 90° setting.	Chapter 37	—
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical end or divider to receive biscuits keeping the shelf flush with the front edge.	Meets Level 1 performance standard.	—	—

Biscuit Joiner

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies stock is properly clamped (if required).	Chapter 37	—
1	—	**Performance Standard 2.** Demonstrates proper holding of machine to prevent vertical or horizontal movement when engaging cutter head.	Chapter 37	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	—	**Performance Standard 3.** Verifies dust collection operable/operating (if equipped).	Chapter 37	—
2	—	**Performance Standard 1.** Checks cutter for cleanness and replaces if needed.	Chapter 37	—
2	—	**Performance Standard 2.** Tests equipment for movement of cutter head (plunge and retraction into housing).	Chapter 37	—
2	—	**Performance Standard 3.** Installs or adjusts fence.	Chapter 37	—
2	—	**Performance Standard 4.** Adjusts machine for depth of cut appropriate to the biscuit size being used.	Chapter 37	—
2	—	Meets Level 1 performance standard.	—	—
Operation—Intermediate 90° Joint				
1	Given material properly prepared for machining, with panel location laid out, execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 1.** Demonstrates ability to place cutter head ±0.4 mm (1/64″) [0.0156″] of location mark.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, with panel location laid out, execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 2.** Uses layout rod or company standard to mark biscuit locations.	Chapter 37	Section Project 4-5

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	Given material properly prepared for machining, with panel location laid out, execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 3.** Makes a joint face which is flush ±0.005”.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, with panel location laid out, execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 4.** Joins opposing parts within ±0.4 mm (1/64”) [0.0156”] of intended lateral position.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, with panel location laid out, execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 5.** Angle of joint of any two opposing parts is within 0.5° of intended position.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, with panel location laid out, execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge. Minimum of two biscuits per joint.	**Performance Standard 6.** Maximum gap caused by biscuit machining is 0.001” in joint between opposing parts after assembly.	Chapter 37	Section Project 4-5

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 1.** Marks layout of the joint square to edge and within ±0.4 mm (1/64″) [0.0156″] of intended position.	Chapter 37	—
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 2.** Marks center points for the biscuits on shelf and vertical within ±0.4 mm (1/64″) [0.0156″] of intended position.	Chapter 37	—
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 3.** Adjusts machine fence and guides to 90° setting.	Chapter 37	—
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	Meets Level 1 performance standard.	—	—

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Biscuit Joiner

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Verifies stock is properly clamped (if required).	Chapter 37	—
1	—	**Performance Standard 2.** Demonstrates proper holding of machine to prevent vertical or horizontal movement when engaging cutter head.	Chapter 37	—
1	—	**Performance Standard 3.** Verifies dust collection operable/operating (if equipped).	Chapter 37	—
2	—	**Performance Standard 1.** Checks cutter for cleanness and replaces if needed.	Chapter 37	—
2	—	**Performance Standard 2.** Tests equipment for movement of cutter head (plunge and retraction into housing).	Chapter 37	—
2	—	**Performance Standard 3.** Installs or adjusts fence.	Chapter 37	—
2	—	**Performance Standard 4.** Adjusts machine for depth of cut appropriate to the biscuit size being used.	Chapter 37	—
2	—	Meets Level 1 performance standard.	—	—
Operation—Machine Edge Miter Joint				
1	Given material properly prepared for machining, execute the joint between two mitered lengths to receive biscuits.	**Performance Standard 1.** Demonstrates ability to place cutter head ±0.4 mm (1/64″) [0.0156″] of location mark.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, execute the joint between two mitered lengths to receive biscuits.	**Performance Standard 2.** Uses layout rod or company standard to mark biscuit locations.	Chapter 37	Section Project 4-5

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	Given material properly prepared for machining, execute the joint between two mitered lengths to receive biscuits.	**Performance Standard 3.** Makes a joint face which is flush ±0.005".	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, execute the joint between two mitered lengths to receive biscuits.	**Performance Standard 4.** Joins opposing parts within ±0.4 mm (1/64") [0.0156"] of intended lateral position.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, execute the joint between two mitered lengths to receive biscuits.	**Performance Standard 5.** Angle of joint of any two opposing parts is within 0.5° of intended position.	Chapter 37	Section Project 4-5
1	Given material properly prepared for machining, execute the joint between two mitered lengths to receive biscuits.	**Performance Standard 6.** Maximum gap caused by biscuit machining is 0.001" in joint between opposing parts after assembly.	Chapter 37	Section Project 4-5
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 1.** Marks layout of the joint square to edge and within ±0.4 mm (1/64") [0.0156"] of intended position.	Chapter 37	—
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 2.** Marks center points for the biscuits on shelf and vertical within ±0.4 mm (1/64") [0.0156"] of intended position.	Chapter 37	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	**Performance Standard 3.** Adjusts machine fence and guides to proper angle setting if required.	Chapter 37	—
2	Given material properly prepared for machining, lay out material for joints, set up machine, and execute the joint between a shelf and vertical face or divider to receive biscuits keeping the shelf flush with the front edge.	Meets Level 1 performance standard.	—	—

Pneumatic Nailers

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Operation—Fasten 19 mm Solid Wood–90°				
1	—	**Performance Standard 1.** No head repercussion marks are apparent.	Chapter 20	—
2	Given material and clamps, clamp parts and drive a series (not less than three) of fasteners through solid wood to create a 90 joint.	**Performance Standard 1.** Aligns material and applies clamps with proper pressure to hold material in place without compressing faces.	Chapters 20 and 37	—
2	Given material and clamps, clamp parts and drive a series (not less than three) of fasteners through solid wood to create a 90 joint.	Meets Level 1 performance standard.	—	—

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Pneumatic Nailers

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Operation—Fasten 19 mm Particle Board–90°				
1	—	**Performance Standard 1.** No head repercussion marks are apparent.	Chapter 20	—

Screw Pocket Machine

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Clears area around machine for unobstructed access.	Chapter 37	—
1	—	**Performance Standard 2.** Positions foot switch for ease of use.	Chapter 37	—
1	—	**Performance Standard 3.** Tests safety mechanism for proper operation.	Chapter 37	—
1	—	**Performance Standard 4.** Demonstrates proper holding of stock to prevent vertical or horizontal movement when engaging cutter/drill.	Chapter 37	—
1	—	**Performance Standard 5.** Verifies dust collection operable/operating (if equipped).	Chapter 37	—
1	—	**Performance Standard 6.** Clears excess dust buildup from machine if dust collection not present.	Chapter 37	—
2	—	**Performance Standard 1.** Inspects hold-down for damage and proper operation.	Chapter 37	—
2	—	**Performance Standard 2.** Inspects for free unobstructed movement of cutting apparatus before power is applied.	Chapter 37	—
2	—	**Performance Standard 3.** Checks tooling and replaces/cleans if needed.	Chapter 37	—
2	—	**Performance Standard 4.** Adjusts machine settings appropriate to the material thickness.	Chapter 37	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
2	—	Meets Level 1 performance standard.	—	—
Operation—90° Pocket Screw Joint				
1	Given material and a machine set up, cut pockets and assemble a 90° joint.	**Performance Standard 1.** Makes a joint face which is flush ±0.005".	Chapter 37	—
1	Given material and a machine set up, cut pockets and assemble a 90° joint.	**Performance Standard 2.** Maximum gap of 0.001" in joint between opposing parts after assembly caused by screw pocket machining.	Chapter 37	—
1	Given material and a machine set up, cut pockets and assemble a 90° joint.	**Performance Standard 3.** Holes are more than 3 mm (1/8") [0.125"] away from any edge of stock being machined.	Chapter 37	—
1	Given material and a machine set up, cut pockets and assemble a 90° joint.	**Performance Standard 4.** Joint is located within ±0.4 mm (1/64") [0.0156"] of desired location.	Chapter 37	—
2	Given material, set up machine to cut pockets and assemble a 90° joint.	**Performance Standard 1.** Adjusts screw pocket position relative to edge (web distance) for length of screw being used.	Chapter 37	—
2	Given material, set up machine to cut pockets and assemble a 90° joint.	**Performance Standard 2.** Adjusts pocket cutting feed rate for optimal cutting relative to material type and tool sharpness.	Chapter 37	—
2	Given material, set up machine to cut pockets and assemble a 90° joint.	Meets Level 1 performance standard.	—	—

Screw Pocket Machine

Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
Pre-Operation Checklist				
1	—	**Performance Standard 1.** Clears area around machine for unobstructed access.	Chapter 37	—
1	—	**Performance Standard 2.** Positions foot switch for ease of use.	Chapter 37	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	—	**Performance Standard 3.** Tests safety mechanism for proper operation.	Chapter 37	—
1	—	**Performance Standard 4.** Demonstrates proper holding of stock to prevent vertical or horizontal movement when engaging cutter/drill.	Chapter 37	—
1	—	**Performance Standard 5.** Verifies dust collection operable/operating (if equipped).	Chapter 37	—
1	—	**Performance Standard 6.** Clears excess dust buildup from machine if dust collection not present.	Chapter 37	—
2	—	**Performance Standard 1.** Inspects hold-down for damage and proper operation.	Chapter 37	—
2	—	**Performance Standard 2.** Inspects for free unobstructed movement of cutting apparatus before power is applied.	Chapter 37	—
2	—	**Performance Standard 3.** Checks tooling and replaces/cleans if needed.	Chapter 37	—
2	—	**Performance Standard 4.** Adjusts machine settings appropriate to the material thickness.	Chapter 37	—
2	—	Meets Level 1 performance standard.	—	—
Operation—Angled Edge Joint				
1	Given materials prepared and machine or jig set up, execute pocket joints and assemble product.	**Performance Standard 1.** Makes a joint face which is flush ±0.005”.	Chapter 37	—
1	Given materials prepared and machine or jig set up, execute pocket joints and assemble product.	**Performance Standard 2.** Maximum gap of 0.001” in joint between opposing parts after assembly caused by screw pocket machining.	Chapter 37	—

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Level	Objective	Performance Standards	Textbook Chapter(s)	Lab Workbook Material
1	Given materials prepared and machine or jig set up, execute pocket joints and assemble product.	**Performance Standard 3.** Holes are more than 3 mm (1/8″) [0.125″] away from any edge of stock being machined.	Chapter 37	—
1	Given materials prepared and machine or jig set up, execute pocket joints and assemble product.	**Performance Standard 4.** Joint is located within ±0.4 mm (1/64″) [0.0156″] of desired location.	Chapter 37	—
2	Given material and clamps, clamp parts and drive a series (not less than three) of fasteners through particle board to create a 90° joint.	**Performance Standard 1.** Adjusts machine and tooling for proper depth of cut.	Chapter 37	—
2	Given material and clamps, clamp parts and drive a series (not less than three) of fasteners through particle board to create a 90° joint.	**Performance Standard 2.** Adjusts screw pocket position relative to edge (web distance) for length of screw being used.	Chapter 37	—
2	Given material and clamps, clamp parts and drive a series (not less than three) of fasteners through particle board to create a 90° joint.	**Performance Standard 3.** Adjusts pocket cutting feed rate for optimal cutting relative to material type and tool sharpness.	Chapter 37	—
2	Given material and clamps, clamp parts and drive a series (not less than three) of fasteners through particle board to create a 90° joint.	Meets Level 1 performance standard.	—	—

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