



Woodwork Career Alliance Correlation Chart



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.

4. Shaping

Shaping Considerations

- Pre-Operation Checklist is a prerequisite for ANY operation.
- Tool/machine manufacturer's safety rules and guidelines are followed.
- Stock is supported and secured from movement.
- Hands remain firmly on router throughout entire cut.
- Router is moved in smooth, continuous motion.
- Appropriate stance and hand position are utilized for optimum balance and part control.
- Router bit pointed away from body after completion of a cut.
- Appropriate direction of feed is used to prevent loss of router control (no climb cutting unless explicitly specified).
- Entrance and exit are clean and straight.
- Clears machine and cleans work area after operation.
- Required OSHA-approved personal protective equipment is worn.
- Disconnect procedure is in place and followed by everyone.
- Process is completed in a timely manner.
- Stock is supported at outfeed.

- Push stick is used when required.
- Stock is fed in smooth, continuous motion past tooling with proper feed rate while controlling stock movement and waste removal.
- Proper stance and hand position are demonstrated.
- Material is fed against the cutter rotation when hand feeding.
- Grain direction is correctly identified and appropriately considered for feed to minimize tearout.
- Demonstrate appropriate feed rate to control stock movement and waste removal relative to the size and type of material being shaped.
- Stock is held securely against the fence, miter gauge, or fixture as appropriate.
- Material is pushed completely past the tooling before releasing it.

Overhead Pin Router

Pre-Operation Checklist				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1		Verifies cutter is properly installed and guarded with point of operation guard.	Chapter 26	
		Demonstrates knowledge and proper use of start switch, speed selector, and foot pedal.	Chapter 26	
		Verifies dust collector operating.	Chapter 26	
		Raises and lowers quill to enter and exit workpiece.	Chapter 26	
		Selects proper feed direction for internal and external cuts.	Chapter 26	
2		Selects and properly installs correct cutter.	Chapter 26	
		Selects and adjusts graduated quill depth stops.	Chapter 26	
		Selects and installs correct guide pin or fence.	Chapter 26	
		Loads blank correctly in pattern/template.	Chapter 26	
		Meets Level 1 performance standard.		
Operation—Pattern/Template Routing				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given a prepared pattern designed to follow a pin bearing on one jig surface, load a blank in the template, and machine a part with curved edges.	Dimension tolerance is ± 0.4 mm (1/64") [0.0156"] along the entire curved edge.	Chapter 26	
		The pattern does not come into contact with the cutter.	Chapter 26	
		Machined surface exhibits a uniform smoothness between 15–25 knife cuts per inch (KCPI).	Chapter 26	
		Cut part does not exhibit tearout or burning	Chapter 26	

2	Given a prepared pattern designed to follow a pin bearing on one jig surface, load a blank in the template, and machine a part with internal and external curved edges.	Secures templates appropriately to materials so as not to impede operation of tool.	Chapter 26	
		Meets Level 1 performance standard.	Chapter 26	

Portable Router

Pre-Operation Checklist				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1		Demonstrates knowledge of and proper use of all machine specific controls.	Chapter 26	
		Ensures operational path has no obstructions to material and operator.	Chapter 26	
		Verifies sole plate is installed correctly and tight.	Chapter 26	
		Verifies depth adjustment bolt is securely tightened.	Chapter 26	
		Verifies depth collar functions smoothly.	Chapter 26	
		Verifies jigs and/or fixtures are secure and operating effectively.	Chapter 26	
		Verifies switch is off before plugging in tool.	Chapter 26	
2		Verifies collar and collet seat are clean and in good condition.	Chapter 26	
		Assures cutting tool shank is straight and true.	Chapter 26	
		Installs cutting tool properly.	Chapter 26	
		Verifies cutting tools are secure and free of defects.	Chapter 26	
		Verifies live bearing is clean and properly lubricated.	Chapter 26	
		Installs and properly adjusts required jigs and fixtures.	Chapter 26	
		Verifies face plate is free from obstructions and calibrated to 90° with cutter.	Chapter 26	

		Meets Level 1 performance standard.		
Operation—Template Cutout				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material and machine set up and ready to operate, use a 13 mm (1/2") [0.5"] straight shank carbide bit and template collar, set template, and machine a predetermined cutout in board.	Falloff is properly supported prior to the operation.	Chapter 26	Section Project 4-7
		Dimension tolerance of ± 0.8 mm (1/32") [0.03125"] (minus the collar offset) is held for the entire perimeter of the cutout.	Chapter 26	Section Project 4-7
		Machined surfaces exhibit uniform cut marks with minimal burn or defects.	Chapter 26	Section Project 4-7
2	Given material, set up equipment with a 13 mm (1/2") [0.5"] straight shank carbide bit and template collar, set template, and machine a pre-determined cutout in board.	Installs correct cutter tool and collar securely.	Chapter 26	
		Secures templates appropriately to materials so as not to impede operation of tool.	Chapter 26	
		Meets Level 1 performance standard.		
Operation—Rabbit				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material and machine set up and ready to operate, use a 13 mm (1/2") [0.5"] straight shank carbide bit, machine a 13 mm (1/2" \times 1/2") rabbet in edge of a 610 mm (24") board.	Dimension tolerance of ± 0.4 mm (1/64") [0.0156"] is held for the entire length of the rabbet.	Chapter 26	
		Shaped surfaces exhibit minimal tearout.	Chapter 26	
		Machined surfaces exhibit a uniform smoothness with no burning or hesitation marks. Variations accepted for accommodation of difficult grain patterns and materials with defects	Chapter 26	
2	Given material, set up equipment with 13 mm (1/2") [0.5"] straight	Installs and adjusts edge guide properly	Chapter 26	

	shank carbide bit, machine a 13 mm (1/2" × 1/2") rabbet in edge of a 610 mm (24") board using an edge guide.	Meets Level 1 performance standard		
Operation—Dado/Plough/Groove				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material and machine set up and ready to operate, use a 13 mm (1/2") [0.5"] straight shank carbide bit, machine a 13 mm (1/2" × 1/2") dado inset 1" [25.4 mm] from edge of a 610 mm (24") board.	Dimension tolerances of ±0.4 mm (1/64") [0.0156"] is held for the entire length of the dado/plough/groove.	Chapter 26	
		Shaped surfaces exhibit minimal tearout.	Chapter 26	
		Machined surfaces exhibit a uniform smoothness with no burning or hesitation marks. Variations accepted for accommodation of difficult grain patterns and materials with defects.	Chapter 26	
2	Given material, set up equipment with 13 mm (1/2") [0.5"] straight shank carbide bit and straight edge guide, machine a 13 mm (1/2" × 1/2") dado inset 1" [25 mm] from edge of a 610 mm (24") board.	Installs and adjusts edge guide properly.	Chapter 26	
		Meets Level 1 performance standard.		
Operation—Mirrored Template Cutout				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material and equipment set up and ready to operate, use a 0.5" (1/2") [13 mm] carbide bit and template collar to route a mirrored set of parts.	Depth is accurate ±0.4 mm (1/64") [0.0156"].	Chapter 26	
		Mirrored pair does not vary more than ±0.8 mm (1/32") [0.0312"] at any given point.	Chapter 26	
		Machined surfaces exhibit uniform cut marks with minimal burn or defects.	Chapter 26	
2	Given material and equipment, set up	Correct cutter tool and collar installed securely.	Chapter 26	

	equipment with a 0.5" (1/2") [13 mm] carbide bit and template collar, set template and route a mirrored set of parts.	Face plates are free from obstructions, and calibrated to 90° with cutters.	Chapter 26	
		Templates secured appropriately to materials.	Chapter 26	
		Meets Level 1 performance standards.		

Spindle Shaper

Pre-Operation Checklist				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1		Verifies tool is properly guarded.	Chapter 26	
		Demonstrates knowledge of and proper use of all machine specific controls.	Chapter 26	
		Ensures paths of infeed and outfeed have no obstructions to material and operator.	Chapter 26	
		Verifies jigs and/or fixtures are secure and operating effectively.	Chapter 26	
		Verifies hold-downs are positioned correctly at infeed and outfeed for clearance to feed material.	Chapter 26	
		Verifies dust collection is positioned for effective chip removal.	Chapter 26	
2		Verifies cutting tools are secure and free of defects.	Chapter 26	
		Installs cutting tool properly and verifies cutter rotation.	Chapter 26	
		Sets spindle rotation correctly.	Chapter 26	
		Sets spindle speed correctly.	Chapter 26	
		Verifies feed table is free of defects and clean.	Chapter 26	
		Verifies spindle height and/or angle are set to specified dimension(s).	Chapter 26	
		Installs and properly adjusts required jigs and fixtures.	Chapter 26	

		Adjusts infeed and outfeed fences to yield correct profile with smooth entry into and exit from part.	Chapter 26	
		Sets infeed and outfeed fences with appropriate clearance to cutter head.	Chapter 26	
		Meets Level 1 performance standard.		
Operation—Rabbeting				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material and machine set up and ready to operate, shape a 13 × 13 mm (1/2" × 1/2") rabbet in edge of a 610 mm (24") board.	Loads material with appropriate edge and face toward cutter head and table surface.	Chapter 26	
		Dimension tolerance of ±0.4 mm (1/64") [0.0156"] is held for the entire length of the rabbet.	Chapter 26	
		Shaped surfaces exhibit a uniform smoothness, 15–25 knife cuts per inch (KCPI), with no burning or hesitation marks.	Chapter 26	
2	Given material, set up equipment with cutting tool, shape a 13 × 13 mm (1/2" × 1/2") rabbet in edge of a 610 mm (24") board.	Meets Level 1 performance standard.		
Operation—Edge Shape Profiles				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material, the machine set up and ready to cut, and a target edge profile, shape the edge of the material to the specified profile.	Loads material with appropriate edge and face toward cutter head and table surface.	Chapter 26	
		Shaped surfaces exhibit a uniform smoothness, 15–25 knife cuts per inch (KCPI), with no burning or hesitation marks.	Chapter 26	
		Dimension tolerance is ±0.4 mm (1/64") [0.0156"] along entire length of material.	Chapter 26	
		Shaped surfaces are free of snipe.	Chapter 26	

		Shaped surfaces exhibit minimal tearout.	Chapter 26	
		Shaped surface meets target profile.	Chapter 26	
		Profile is consistent along entire shaped surface, with no visible variation.	Chapter 26	
2	Given material, set up the machine to cut a target edge profile, shape the edge of the material to the specified profile.	Meets Level 1 performance standard.		
Operation—End Shape				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material, the appropriate jig, the machine set up ready to cut, and a target end profile, shape the end of the material to the specified profile.	Loads material with appropriate edge and face toward cutter head and table surface.	Chapter 26	
		Feeds material in the proper direction for cutter head rotation.	Chapter 26	
		Shaped surface exhibits a uniform smoothness, 15–25 knife cuts per inch (KCPI), with no burning or hesitation marks.	Chapter 26	
		Shaped surface is free of snipe and tearout.	Chapter 26	
		Profile is consistent along entire shaped surface, with no visible variation.	Chapter 26	
2	Given material, the appropriate jig, set up the machine to cut a target end profile, shape the end of the material to the specified profile.	Meets Level 1 performance standard.		
Operation—Edge Shape Using an Automatic Stock Feeder (Power Feed)				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material, the machine set up ready to cut, and a target edge	Loads material with appropriate edge and face toward cutter head and table surface.	Chapter 26	

	profile, shape the edge of the material to the specified profile.	Shaped surfaces exhibit a uniform smoothness, 15–25 knife cuts per inch (KCPI), with no burning or hesitation marks.	Chapter 26	
		Shaped surfaces exhibit minimal snipe at the entry and exit points.	Chapter 26	
		Dimension tolerance of ± 0.4 mm ($1/64$ ") [0.0156"] is held for the entire length of the detail.	Chapter 26	
2	Given material and a target edge profile, set up both the shaper and the feeder to shape the edge of the material to the specified profile.	Adjusts stock feeder position and speed settings for control of part.	Chapter 26	
		Meets Level 1 performance standard.		
Operation—Edge Shape Using an Automatic Stock Feeder (Power Feed) and an Outboard Fence				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material, the machine set up ready to cut, and a target edge profile, shape the edge of the material to the specified profile.	Loads material with appropriate edge and face toward cutter head and table surface.	Chapter 26	
		Shaped surfaces exhibit a uniform smoothness, 15–25 knife cuts per inch (KCPI), with no burning or hesitation marks.	Chapter 26	
		Shaped surfaces exhibit minimal snipe at the entry and exit points.	Chapter 26	
		Dimension tolerance of ± 0.4 mm ($1/64$ ") [0.0156"] is held for the entire length of the detail.	Chapter 26	
2	Given material and a target edge profile, set up both the shaper and the feeder to shape the edge of the material to the specified profile using an outboard fence to ensure uniform widths.	Installs outboard fence.	Chapter 26	
		Adjusts stock feeder position and speed settings for control of part.	Chapter 26	
		Meets Level 1 performance standard.		

Operation—Edge Shape Curved Parts				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material, jig and machine set up and ready to cut, shape the edge of curved material to a specified profile.	Loads material with appropriate edge and face toward cutter head and table surface.	Chapter 26	
		Shaped surfaces exhibit a uniform smoothness, 15–25 knife cuts per inch (KCPI), with no burning or hesitation marks.	Chapter 26	
		Dimension tolerance is ± 0.4 mm (1/64") [0.0156"] along entire length of material.	Chapter 26	
		Shaped surfaces are free of snipe.	Chapter 26	
		Shaped surfaces exhibit minimal tearout.	Chapter 26	
		Shaped surface meets target profile.	Chapter 26	
		Profile is consistent along entire shaped surface, with no visible variation.	Chapter 26	
2	Given material and jig, set up and ready to cut, set up machine and shape the edge of curved material to a specified profile.	Securely fastens part to jig.	Chapter 26	
		Meets Level 1 performance standard.		
Operation—Fence and Tilted Spindle				
Level	Objective	Performance Standard	Textbook Chapter	Lab Workbook Material
1	Given material, the machine set up and ready to cut, and a target edge profile, shape the edge of the material to the specified profile.	Loads material with appropriate edge and face toward cutter head and table surface.	Chapter 26	
		Dimension tolerance of ± 0.4 mm (1/64") [0.0156"] is held for the entire length of the material.	Chapter 26	
		Shaped surfaces exhibit a uniform smoothness, 15–25 knife cuts per inch (KCPI), with no burning or hesitation marks.	Chapter 26	

		Shaped surfaces are free of snipe.	Chapter 26	
		Shaped surfaces exhibit minimal tearout.	Chapter 26	
		Shaped surface meets target profile.	Chapter 26	
		Profile is consistent along entire shaped surface, with no visible variation.	Chapter 26	
2	Given material and a specification, set up the machine to cut a target edge profile, shape the edge of the material to the specified profile.	Meets Level 1 performance standard.		