

## Shop Safety Rules and User Agreement

An important part of your experience in woodworking will be learning to follow practices and procedures that will prevent injuries to YOURSELF and OTHERS. Study the directions given in this manual for using tools and machines. As you learn to use them the correct way, you also learn to use them the safe way.

Develop a good attitude toward safety. This means that you have a strong feeling toward the importance of safety and are willing to give time and attention to learning the safest way to perform your work. It means that you will be certain to work carefully and follow the rules – even when no one is watching you. A safe attitude will protect you and others, not only in the shop, but also in activities outside of school.

Carefully study the safety rules which follow. Your instructor may also recommend some additional rules. If you follow the rules and directions carefully, many of them will soon become safety habits that you will perform almost automatically.

### General Safety Rules

**COMPLETE TRAINING.** Students must complete orientation and safety training before they will be allowed in the Wood Shop.

**SECURE APPROVAL.** Secure your instructor's approval for all work you plan to do in the shop. He or she is the one to decide if the work can and should be done, and will be able to suggest the best, easiest, and safest way to do it.

**CLOTHING.** Dress properly for your work. Remove coats and jackets, and roll up loose sleeves. It is advisable to wear a shop apron that is snugly tied.

**EYE PROTECTION.** Wear safety glasses or a face shield when doing any operation that may endanger your eyes. Be sure you have enough good light to see what you are doing without straining your eyes.

**CLEAN HANDS.** Keep your hands clean and free of oil or grease. You will do better and safer work, and the tools and your project will stay in good condition.

**CONSIDERATION OF OTHERS.** Be thoughtful and helpful toward other students in the class. Be sure that the work you are doing does not endanger someone else. Caution other students if they are violating a safety rule.

**TOOL SELECTION.** Select the proper size and type of tool for your work. An expert never uses a tool unless it is sharp and in good condition. Inform your instructor if tools are broken, have loose handles, or need adjustments.

**CARRYING TOOLS.** Keep sharp-edged and pointed tools turned down. Do not swing or raise your arms over your head while carrying tools. Carry only a few tools at one time, unless they are in a special holder. Do not carry sharp tools in the pocket of your clothes.

**CLAMPING STOCK.** Whenever possible, mount the work in a vise, clamp, or special holder. This is especially important when using chisels, gouges, or portable electric tools.

**USING TOOLS.** Hold a tool in the correct position while using it. Most edged tools should be held in both hands with the cutting motion away from yourself and other students. Be careful when using your hand or fingers as a guide to start a cut. Test the sharpness of a tool with a strip of paper or a scrap of wood. **DO NOT USE YOUR FINGERS.**

**WORKING SPEED.** Do not “rush and tear” through your work. The good craftworker knows that a steady, unhurried pace is safest and produces the best work.

**BENCH ORGANIZATION.** Keep your project materials carefully organized on your bench with tools located near the center. Do not pile tools on top of each other. Never allow edged or pointed tools to extend out over the edge of the bench. Close your vise when it is not in use and see that the handle is turned down. Keep drawers and cabinet doors closed.

**FLOOR SAFETY.** The floor should be clear of scrap blocks and excessive litter. Keep projects, sawhorses, and other equipment and materials you are using out of traffic lanes. Immediately wipe up any liquids spilled on the floor.

**MATERIAL AND PROJECT STORAGE.** Store and stack your project work carefully in assigned areas. If the storage is overhead, be sure the material will not fall off. Straighten the lumber rack when you remove a board. Do not leave narrow strips protruding from the end of the storage rack, especially at or near eye level.

**LIFTING.** Protect your back muscles when lifting heavy objects. Have someone help you. Lift with your arm and leg muscles. Secure help with long boards, even if they are not heavy.

**FIRE PROTECTION.** Many finishing materials, thinners, etc. are highly flammable. Others are toxic. Because of this, it is important that these materials be used only in approved areas. In addition, close cans of finishing materials and thinners immediately after use. Use flammable liquids in very small quantities. Be sure the container is labeled. Dispose of oily rags and other combustible materials immediately, or store them in an approved container. Secure the instructor’s approval before you bring any flammable liquids into the shop.

**INJURIES.** Report all injuries even though slight, to your instructor.

### **Power Equipment Safety Rules**

Modern power woodworking machines can save large amounts of time. Learning how to use them safely will be an important part of your experience in the shop. Whether or not you are permitted to use power equipment will depend on your maturity and ability, along with policies established by your instructor.

Although beginning students will usually do most work with hand tools, there are certain basic machine operations that save time and may be appropriate if performed under close supervision.

Before operating any power tool or machine you must become thoroughly familiar with the way it works and the correct procedures to follow in its use. As you learn to use a machine the correct way, you will also be learning to use it the safe way.

Study the procedures outlined in the following sections carefully. Know and understand the following general safety rules that apply to power machine operation. You must also learn the specific safety rules that apply to each machine.

1. Always be sure you have the instructor's approval to operate a machine. Your instructor knows you and the machine and can best decide whether you have "what it takes" to operate the machine safely.
2. Wear appropriate clothing. Remove coats or jackets and roll up loose sleeves.
3. You must be wide awake and alert. Never operate a machine when you are tired or ill.
4. Think through the operation before performing it. Know what you are going to do, and what the machine will do.
5. Make all the necessary adjustments before turning on the machine. Some adjustments on certain machines will require the instructor's approval.
6. Never remove or adjust a safety guard without the instructor's permission.
7. Use approved push sticks, push blocks, feather boards, and other safety devices. Some operations may require the use of a special jig or fixture.
8. Keep the machine tables and working surfaces clear of tools, stock, and project materials. Also keep the floor free of scraps and excessive litter.
9. Allow the machine to reach its full operating speed before starting to feed the work.
10. Feed the work carefully and only as fast as the machine will easily cut.
11. Maintain the MARGIN OF SAFETY specified for the machine. This is the minimum distance your hands should ever come to the cutting tool while in operation.
12. If a machine is dull, out of adjustment, or not working properly, shut off the power immediately and inform the instructor.
13. When you are operating the machine, you are the only one to control it. Start and stop the machine yourself. If someone is helping you, be sure they understand that they are expected to know what to do and how to do it.
14. Do not allow your attention to be distracted while operating a machine. Also, be certain that you do not distract the attention of other machine operators.
15. Stay clear of machines being operated by other students. See that other students are "out of the way" when you are operating a machine.
16. When you have completed an operation on a machine, shut off the power. Wait until it stops before leaving the machine or setting up another cut. Never leave a machine running while unattended.
17. Machines should not be used for trivial operations, especially on small pieces of stock. Do not play with machines.

18. Do not “crowd around” or wait in line to use a machine. Ask the present operator to inform you at your work station when finished. Common standards of courtesy may slow you down, but they will make the shop a safer and more pleasant place to work.

### **Safety Rules for Table Saws**

1. Be certain the blade is sharp and the right one for your work.
2. The saw is equipped with a guard and a splitter. Be sure to use them.
3. Set the blade so it extends about ¼ in. above the stock to be cut.
4. Stand to one side of the operating blade and do not reach across it.
5. Maintain a 4 in. margin of safety. E.g. clamp a small piece of stock to a larger piece to cut safely.
6. Stock should be surfaced, with at least one edge jointed before being cut on the saw.
7. The position of the stock must be controlled either by the fence or the miter gauge. **NEVER CUT STOCK FREE HAND.**
8. Use only new stock that is free of knots, splits, and warp.
9. Stop the saw before making adjustments to the fence or blade.
10. Do not let small scrap cuttings accumulate around the saw blade. Use a push stick to move them away.
11. Re-sawing and other special setups must be inspected by the instructor before power is turned on.
12. The dado or any special blades should be removed from the saw after use.
13. Students helping to “tail-off” the saw should not push or pull on the stock but only support it. The operator must control the feed and direction of the cut.
14. As you complete your work, turn off the machine and remain until the blade has stopped. Clear the saw table and place waste cuttings in the scrap box.

### **Safety Rules for Band Saws**

1. Wheel guard doors must be closed, and the blade properly adjusted, before turning on the machine.
2. Adjust the upper guide assembly so it is ¼ in. above the work.
3. Allow the saw to reach full speed before feeding the work.
4. The stock must be held flat on the table.
5. Feed the saw only as fast as the teeth can easily remove the wood.
6. Maintain a 2 in. margin of safety.
7. Plan saw cuts to avoid backing out of curves whenever possible.
8. Make turns carefully and do not cut radii so small that the blade is twisted.
9. Stop the machine before backing out of a long, curved cut.
10. Round stock should not be cut unless mounted securely in a jig or hand screw.
11. If you hear a clicking noise, turn off the machine at once. This indicates a crack in the blade. If the blade breaks, shut off the power and move away from the machine until both wheels stop.
12. Turn off the machine as soon as you have finished your work. If the machine has a brake, apply it smoothly. Do not leave the machine until it has stopped running.

### **Safety Rules for Saber Saws**

1. Make certain the saw is properly grounded through the electrical cord.
2. Select the correct blade for your work and be sure it is properly mounted.
3. Disconnect the saw to change blades or make adjustments.
4. Place the base of the saw firmly on the stock before starting the cut.
5. Turn on the motor before the blade contacts the work.
6. Do not attempt to cut curves so sharp that the blade will be twisted. Follow procedures described for band saw operation.
7. Make certain the work is well supported. Do not cut into sawhorses or other supports.

### **Safety Rules for Jig Saws**

1. Be certain the blade is properly installed. It should be in a vertical position with the teeth pointing down.
2. Roll the machine over by hand to see if there is clearance for the blade, and if the tension sleeve has been properly set.
3. Check the belt guard to see that it is closed and tight.
4. Keep the hold-down adjusted so the work will not be raised off the table.
5. When the saw is running, do not permit your fingers to get directly in line with the blade. The work can usually be held on either side of the cutting line.

### **Safety Rules for Portable Circular Saws**

1. Stock must be supported in such a way that the kerf will not close and bind the blade during the cut or at the end of the cut.
2. Thin materials should be supported on benches. Small pieces should be clamped in a vise or onto a bench top or sawhorse.
3. Be careful not to cut into the bench, sawhorse, or other supporting devices.
4. Adjust the depth of cut to the thickness of the stock, and add about 1/8 in.
5. Check the base and angle adjustment to be sure they are tight. Plug in the cord to a grounded outlet and be sure it will not become fouled in the work.
6. Always place the saw base on the stock, with the blade clear, before turning on the switch.
7. During the cut, stand to one side of the cutting line.
8. Large saws will have two handles. Keep both hands on them during the cutting operation. Small saws should also be guided with both hands when possible.
9. Always unplug the machine to change blades or make major adjustments.
10. Always use a sharp blade with plenty of set.

### **Safety Rules for Portable Electric Drills**

1. Select the correct drill or bit. Mount it securely to the full depth of the chuck.
2. Either clamp a scrap piece under work to prevent splintering the underside, or drill from both sides.
3. Stock to be drilled must be held in a stationary position so it cannot be moved during the operation.
4. Connect the drill to a properly grounded outlet.

5. Turn on the switch for a moment to see if the bit is properly centered and running true.
6. With the switch off, place the point of the bit in the punched layout hole.
7. Hold the drill firmly in one or both hands and at the correct drilling angle.
8. Turn on the switch and feed the drill into the work. The pressure required will vary with the size of the drill and the kind of wood.
9. During the operation, keep the drill aligned with the direction of the hole.
10. When drilling deep holes, especially with a twist drill, withdraw the drill several times to clear the shavings.
11. Follow the same precautions and procedures as when drilling holes with the drill press.

### **Safety Rules for Drill Presses**

1. Check the speed setting to see that it is correct for your work. Holes over ½ in. should be bored at the lowest speed.
2. Use only an approved type of bit. Bits with feed screws or those with excessive length should not be used.
3. Mount the bit securely to the full depth of the chuck and in the center. Remove the key immediately.
4. Position the table and adjust the feed stroke so there is no chance of the bit hitting the table.
5. The work should be placed on a wood pad when the holes are drilled all the way through.
6. Work that will be held by hand should be center punched.
7. Small or irregular shaped pieces must be clamped to the table or held in some special fixture.
8. Feed the bit smoothly into the work. When the hold is deep, withdraw it frequently to clear the shavings and cool the bit.
9. When using special clamping setups, or a hold saw or fly cutter, have your instructor inspect it before turning it on.
10. Always have your instructor check setups for routing and shaping.

### **Safety Rules for Sanding Machines**

1. Be certain the belt or disc is correctly mounted. The belt must track in the center of the drums and platen. Do not operate the disc sander if the abrasive paper is loose.
2. Check the guards and table adjustments to see that they are in the correct position and locked securely in place.
3. Use the table, fence, and other guides to control the position of the work, whenever possible.
4. Small or irregular-shaped pieces should be held in a hand clamp, or a special jig or fixture.
5. When sanding the end grain of narrow pieces on the belt sander, always support the work against the table.
6. Sand only on the side of the disc sander that is moving toward the table. Move work along this surface so it will not burn.
7. Always use a pad or push block when sanding thin pieces on the belt sander.
8. Do not use power sanders to form and shape parts when the operations could be better performed on other machines.

9. Sand only clean new wood. Do not sand work that has excess glue or finish on the surface. These materials will load and foul the abrasive.

### **Safety Rules for Lathes**

1. Before starting the machine, be sure that spindle work has the cup center properly imbedded, tailstock and tool rest securely clamped, and proper clearance for the rotating stock.
2. Before starting the machine for faceplate work, check to see that the faceplate is tight against the spindle shoulder and the tool support has proper clearance.
3. Wear goggles or a face shield to protect your eyes, especially when roughing out work. The lathe should have a guard.
4. Select turning speed carefully. Large diameters must be turned at the lowest speed. Always use the lowest speed to rough out work.
5. Wood with knots and splits should not be turned. Glued-up stock should cure the proper amount of time – at least 24 hours.
6. Keep the tool rest close to the work.
7. Remove the tool rest for sanding and polishing operations.
8. Use a scraping cut for all faceplate work.
9. Remove both the spur and cup centers when they are not in use.
10. When you stop the lathe to check your work, also check and lubricate the cup center.
11. Keep the lathe tools sharp, hold them firmly and in the proper position.

### **Finishing Safety Rules**

1. Wear safety glasses when applying finishing materials.
2. Wear rubber gloves, goggles, and rubber apron when applying bleaches and acids. (Do you do this?)
3. Thinners and reducers such as naphtha, benzene, lacquer thinner, and enamel reducer should be applied in a well-ventilated room. Fumes have a toxic effect. (Do you do this?)
4. Store all chemicals and soiled rags in proper safe containers. Many chemicals and rags are highly flammable.
5. Wear an approved respirator for finishing operations that involve the use of toxic chemicals such as lacquer thinner and enamel reducer. (Do you do this?)
6. Spraying should be performed in a well ventilated booth or outside to reduce toxic fumes.
7. Do not smoke while sanding or applying a finish. Not only does dust or vapor mixed with smoke create a hazard to your health, but it may start a fire.
8. Wash your hands well after applying a finish in order to remove any toxic materials that you have handled.
9. Know where the sink, shower, or eye wash station is located in the event you are burned by a finishing material.
10. Provide an approved fire extinguisher in the finishing area.

### **Safety Rules for Planers**

1. Be sure you have the instructor's permission to operate the machine.
2. Adjust the machine to the correct thickness of cut before turning on the power.

3. Stock should be at least 12 in. long, or several inches longer than the distance between the centers of the feed rolls.
4. Surface only new lumber that is free of loose knots and serious defects.
5. Plane with the grain, or at a slight angle with the grain. Never attempt to plane cross grain.
6. Stand to one side of the work being fed through the machine.
7. Do not look into the throat of the planer while it is running.
8. Do not feed stock of different thicknesses side by side through the machine, unless it is equipped with a sectional infeed roll.
9. Handle and hold the stock only in an area beyond the ends of the table.
10. If the machine is not working properly, shut off the power at once and inform the instructor.

### **Safety Rules for Jointer**

The jointer is one of the MOST DANGEROUS machines in the woodshop. Follow these safety rules carefully in addition to the general safety rules.

1. Be sure you have the instructor's approval to operate the machine.
2. Before turning on the machine, make adjustments for depth of cut and position of fence.
3. Do not adjust outfeed tables or remove guard without the instructor's approval.
4. The maximum cut for jointing an edge is 1/8 in.; for a flat surface, 1/16 in.
5. Stock must be at least 3/8 in. thick, unless a special feather board is used.
6. Feed the work so the knives will cut "with the grain." Use only new stock that is free of knots, splits, and checks.
7. Keep your hands away from the cutterhead even though the guard is in position. Maintain at least a 4 in. margin of safety!
8. Use a push block when planing a flat surface. Do not plane end grain unless the board is at least 12 in. wide.
9. The jointer knives must be sharp. Dull knives will vibrate the stock and may cause a kickback.

### **Safety Rules for Radial Arm Saws**

1. Stock must be held firmly on the table and against the fence for all crosscutting operations. The ends of long boards must be supported level with the table.
2. Before turning on the motor be certain that all clamps and locking devices are tight and the depth of cut is correct.
3. Keep the guard and anti-kickback device in position. Do not remove them without your instructor's permission.
4. Always return the saw to the rear of the table after completing a crosscut or miter cut. Never remove stock from the table until the saw has been returned.
5. Maintain a 6 in. margin of safety.
6. Shut off the motor and wait for the blade to stop before making any adjustments.
7. Be sure the blade is stopped before you leave the machine.
8. Keep the table clean and free of wood scraps and excessive amounts of sawdust.
9. Secure approval from your instructor before making ripping cuts or other special setups. When ripping stock, it must be flat and have one straight edge to move along the fence.



10. When ripping, always feed stock into the blade so that the bottom teeth are turning toward you. This will be the side opposite the anti-kickback fingers.

**School Wood Shop Student User Agreement**

I understand that use of the Trinity College Engineering Department Wood Shop is a privilege, not a right.

I understand that the Engineering Department grants student access to its Wood Shop solely at its discretion.

If allowed access to the Wood Shop, I promise to obey the Wood Shop Rules at all times. I understand that if I violate Wood Shop Rules or behave in an unacceptable manner, the school may revoke my access to the Wood Shop.

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Student Name (please print legibly)

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Student Signature

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Date