WOODSHOP SAFETY & GUIDELINES

Department of Art & Art History /// University of Hawaii at Manoa v1.0

OVERVIEW

An important part of your experience in woodworking will be learning to follow practices and procedures that will prevent injuries to YOURSELF and OTHERS.

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.

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.

Please note that experience in a wood shop does not equal good safety awareness. Most accidents occur not to beginners but from experienced workers that feel more comfortable in the shop and therefore become more casual in their approach to safety guidelines.

Closed Toe and Closed Heel Shoes are Required

NO Loose Clothing /// Tie up Long Hair

No Headphones /// No food or drinks

Wear a face shield or approved eye protection while you work

NEVER be afraid to ask a supervisor for help.

NEVER use a new machine without first asking for assistance from a supervisor.

GENERAL SAFETY RULES

Work procedures and shop practices described are effective methods of performing given operations. Use special tools and equipment as recommended. Carefully follow all safety warnings and cautions. Note that these warnings are not exhaustive. Proceed with care and under proper supervision to minimize the risk of personal injury or injury to others.

Most power tool accidents can be avoided. Roughly 80% of accidents are caused by workers without the right safety attitude. These workers do not take safety seriously. Instead of being safe, they put everyone in danger.

FIRST AID

There is a First Aid Kit located on the side of the cabinet closest to the roll up door used for minor cuts and scrapes. More serious injuries should be handled by the UH Health Center (Open M-F 8 - 4:00pm) or by calling 911.

FIRE EXTINGUISHERS

Fire Extinquishers can be found underneath the First Aid Kit next to the roll up door and next to the exit door on the far side of the shop.

SUBSTANCE POLICY

We must enforce a ZERO-tolerance drug and alcohol policy in the interest of the safety of all shop users. If caught indulging in drug use while in the shop, you may lose access for the duration of your time at the University of Hawaii at Manoa.

SAFETY HAZARDS

Report any broken or malfuntioning equipment to the Shop Manager immediately. The Shop Manager will take the tool out of circulation until it can be brought back into service.

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.

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.

CLEANLINESS

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. Keep the machine clean. Remove all tools, lumber, and unnecessary materials. Objects left on the machine can vibrate into revolving cutters. They can then be thrown from the machine with great force. Never clean a machine while it is running.

CONFIDENCE

As you learn to operate a machine, you will gain confidence. Do not become too confident. Overconfidence leads to carelessness, and carelessness causes accidents. This does not mean you should be afraid of machinery; however a safe attitude is one of respect for what machines can do.

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.

ELECTRICITY

Before you plug in a machine, make sure the switch is in the "off" position. You do not want the machine to start unexpectedly.

If you use an extension cord, use the correct wire size. This is determined by the length of cord and size of motor. Using a wire size that is too small will cause the tool to overheat.

Keep all power cords away from blades and cutters while you work. Make sure the power tool is grounded. One with a double-insulated case need not be grounded. If you are unsure about this, check with your instructor.

If anything unusual happens, turn off the machine immediately. If the machine does not sound right, turn it off immediately. As soon as it stops completely, check with your instructor.

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. Always keep your eyes on the cutting action. Concentrate on what you are doing at all times.

FIRE PROTECTION

Secure the instructor's approval before you bring any flammable liquids into the shop.

Re-familiarize yourself with the location of all fire alarms and fire extinguishers.

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.

Make sure you are in a project space that allows such materials to be used.

Close cans of finishing materials and thinners immediately after use. Use flammable liquids in very small quantities. Be sure the container is labeled.

Consult workers near you to determine whether any potential crossover hazards might be present.

Dispose of oily rags and other combustible materials immediately, or store them in an approved container.

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.

HAIR & 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. Long hair should be tied back away from face and not allowed to "fall" into your work.

INJURIES
Report all injuries, regardless of severity, to your instructor.

ODORS
Be alert for any odors that might indicate overheating of the machine or stock.

SAFETY GUARDS
Make sure all safety guards are in place. Never remove a safety guard without your instructor's permission. Have your instructor check each setup before you begin working.

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.

STANCE
Stand in a comfortable, balanced position when working with power tools. Both feet should be firmly on the floor. if you are unsure about your comfort with the equipment, consult a supervisor.

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 or wood - DO NOT USE YOUR FINGERS. Always keep your hands a safe distance from cutters and blades.

VISITORS
The shop is not an appropriate place for visitors. People that do not have any official reason to be in the shop should stay out unless specifically invited by the supervisor.

WATER & FOOD
Never work in or around water with power tools. Water increases the chances of severe electrical shock. Do not bring food into the shop or throw away food wrappers or drink containers in the shop.

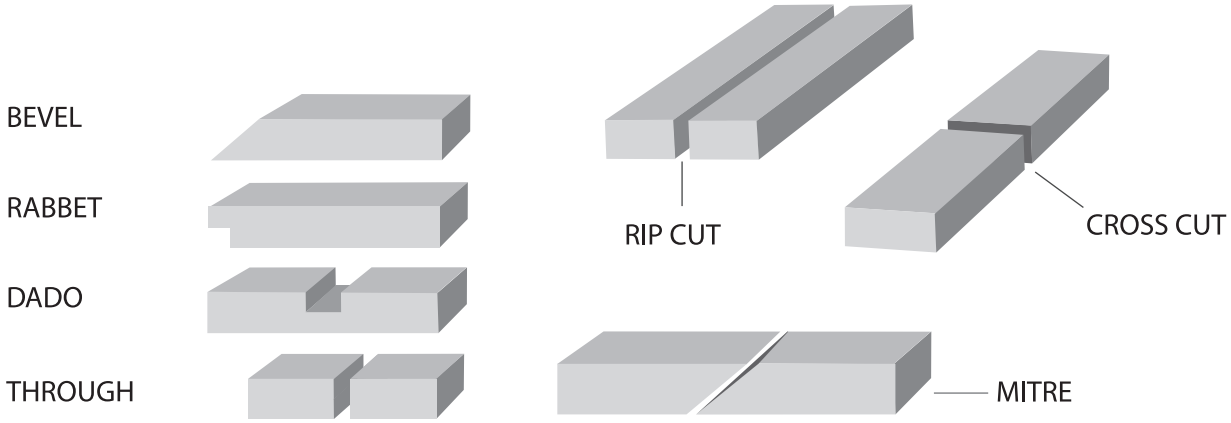
WOOD
Defects in the wood can be dangerous. Check the stock carefully for knots, splits, and other defects. Do not run any wood through the equipment that does not sit flat on the machine.

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

TABLE SAW

The **Table Saw** is used to make straight line cuts with the aid of either a fence, sled or miter gauge. The table saw is used primarily for making rip cuts and cross cuts. A rip cut is a cut made lengthwise through the stock. A cross cut is a cut made widthwise across the stock. Additionally the table saw is used to make bevel cuts, rabbet cuts, and dado cuts.

TYPES OF CUTS



CAUTION: KICKBACK

Friction is created in any cutting process and is a necessary and inherent condition. Cutting tools are designed to function properly within an acceptable range of normal operating friction.

If friction between a material and the cutting tool becomes too intense, binding will occur. Typically when binding occurs, the material will be thrown with great force in the direction that the blade is turning—this is called **Kickback**.

Serious injury can result from kickback. Whenever possible, keep your face and body out of line with potential kickback, including when starting or stopping the machine.

CAUSES OF KICKBACK

- Turning the material during the cutting process.
- Confining the cutoff piece.
- Not completing the cut or not pushing the work piece all the way past the saw blade.
- Cutting warped or damaged material.
- Dull blades.
- Inappropriate material.

MAKING A RIP CUT

A rip cut is a type of cut that severs or divides a piece of wood parallel to the grain. The table saw is the only tool in the shop that makes this type of cut.

STEP BY STEP:

1. Set the blade height to 1/2" above your stock and lock the fence into position. Place push sticks where you can reach them.

2. Turn the dust collector and saw on and place materials at the edge of the table away from the blade. Maintain position on the infeed side of the machine during all operations. You should stand close to the saw and next to the material - NOT BEHIND IT.

3. It is best to position yourself facing the blade side of the fence, so that you are pressing the material against the fence and into the table with your guide hand. Use a push stick if your hand will get closer than 4" while feeding the material throu

4. Maintain steady pressure on your work. Press it down toward the table and against the fence as you feed your material through the blade at a steady rate.

5. The hand that is used to support the material should not move. As your cut ends, feed the material completely past the blade with your feed hand. Release the cut-off piece as it leaves your guide hand.

6. Do not reach over the moving blade to retrieve materials or try to remove scrap materials while the blade is moving—even when using a push stick!

7. Turn off the saw before you walk away.

8. The blade must come to a complete stop before removing material.

Always place the longer side of the wood against a fence to ensure stability for a safe and even cut.

MAKING A CROSS CUT

A cross cut is a type of cut that severs or divides a piece of wood across the grain. In order to make this cut on a table saw you need to use a sled or a miter gauge.

STEP BY STEP:

1. Set the sled on the saw table with the runners in the grooves. Adjust blade height to 1/2" above stock.

2. Remove any debris on the sled and align your piece to the blade. Have the off cut on the right hand side to avoid it falling in the gap.

3. Turn the dust collector and the saw on.

4. Hold your stock in one hand and hold the back of the sled with the other. Push the sled forward until your cut is complete.

5. Turn the saw off and wait until it stops spinning to remove your stock and off cuts.

STATIONARY SANDERS

Stationary Sanders use abrasive components to quickly remove small amounts of material from exterior surfaces, and to smooth edges.

A **Disk Sander** is used to sand end surfaces quickly. It removes wood by turning an abrasive disc past a support table. Material is supported by the table and pressed against the abrasive disc.

A **Belt Sander** is generally used to sand straight and convex surfaces.
The belt sander removes wood by turning an abrasive belt past a support table. Material is supported by the table and pressed against the abrasive belt.

An **Oscillating Spindle Sander** is used to sand interior curves. It removes wood by moving an oscillating abrasive spindle past a support table. Material is supported by the table and pressed against the abrasive spindle.

STEP BY STEP:

1. Inspect the sander to make sure the abrasive component is in good condition.

2. Set and lock the support table at the desired angle.

3. Turn on the dust collector

4. Turn on the machine and wait for the motor to come up to speed.

5. Hold your work securely and flat to the table with your hands at least 4" away from the sander. If using a disk sander - hold your work on the side that is spinning down into the table.

6. Turn the sander off and wait for it to come to a complete stop before making adjustments or walking away.

Horizontal Belt Sander / 12" disk sander

Upright Horizontal Belt Sander

Vertical Belt Sander / 12" disk sander

Oscillating Spindle Sander

BANDSAW

The **Band Saw** is used to cut stock to size and to rough out shapes. It is also used for organic or circular cuts. This saw cuts material with a vertical steel blade on a continuous loop. The blade rides on two wheels, which pull the blade through the table of the band saw.

Cuts may be made 'free hand' or with the aid of guides such as the rip fence or miter gauge. The material being cut needs to sit flat on the table in a stable manner, ie, no orbs or organic shapes that can rock.

STEP BY STEP:

1. Set the blade guides to support the blade ½ inch above the greatest thickness of the material to be cut.

2. Turn on the dust collector.

3. Turn on the machine and allow the motor to come up to speed.

4. Begin cut. Feed the material at a slow steady rate. The thicker the material, the slower the speed. Let the blade do the cutting. Do not force the piece through the blade.

5. Use a push stick when the cutting operation requires your fingers to enter the 4" margin of safety. Keep push sticks within easy reach.

6. Do not twist the blade. You need to push the material forward while turning in order to make curved cuts. Make relief cuts if the cut radius is less than the blade will allow.

7. When you are finished cutting, turn off the machine and wait for the blade to come to a complete stop before removing any off cuts. Return the blade guide to its lowest position.

Bandsaw

The guard can be found on the back of the bandsaw. Adjust it so it sits **1/2" above your stock**.

SCROLL SAW

The **Scroll Saw** cuts material with a short, thin steel blade that moves up and down through the table of the saw.

The scroll saw is used to cut tight freehand curves and intricate patterns in sheet stock. The removable blade is flexible and care must be taken to not break it when cutting. Because the blade is removable, it is possible to make closed interior cuts by passing the blade through a hole drilled into the wood.

STEP BY STEP:

1. The blade needs to be under tension in order to cut. With machine turned off, check if the blade is tight - it should feel similar to a guitar string. If not, make sure the blade is held tight in the gripper then push the tensioner into the upright position and check again.

2. Turn on the machine and wait for the motor to come up to speed (it will take about 3 seconds to start).

3. Approach the blade gently and take care not to break the blade while cutting. Adjust the speed as needed.

4. 4. When you are finished cutting, turn off the saw and wait for it to stop before removing your work.

Scroll Saw

DRILL PRESS

Drill Presses are used to make accurate holes in a wide variety of materials. A drill press consists of an overhead drill mounted above an adjustable table. Much like a hand drill, the drill press uses bits that are held in place in a rotating drill chuck. With the aid of a chuck key, drill bits are interchanged as needed to fit the task.

The rotating drill chuck and bit are lowered into the work piece.
The work piece and the table surface may be manipulated as needed.

STEP BY STEP:

1. Install the desired drill bit in the chuck making sure that it is properly centered - hand tighten until it holds.

2. Lock the bit in place with the chuck key. (Be sure to remove the key from the chuck before turning on the machine)

3. Position the piece to be drilled flat on the table, clamp or secure in a vice as needed. (Make sure the bit will not damage the table or vice as it exits the work piece by putting a sacrificial board underneath)

4. Raise the table to position your piece 1" above your work.

5. Turn on the machine and wait for the motor to come up to speed.

6. Feed the drill by lowering the head assembly at a slow steady rate. Use the "peck" method of incrimentally lowering and raising the drill to bring chips out of the hole while you drill. The harder the material,the slower the speed—let the bit do the cutting.

7. When you are finished drilling, raise the head assembly to its full up position.

8. Turn the drill off, and wait for the chuck to come to a complete stop before removing the work piece or making any adjustments.

9. Remove drill bit and clean up.


DELTA
20" Drill Press
Taladradora de 508 mm
I Wake Up With
KAUAI
COFFEE

Drill Press

MITER SAW

The **Miter Saw** (sometimes referred to as a chop saw) is used to cross cut linear stock to size and at accurate mitered angles. The miter saw is used to make through cuts. Only cut material that can be cut completely.

The miter saw cuts wood by turning a circular steel blade that turns downward and away from the operator. To produce a cut, the saw is lowered into the work piece, which is supported by the table and fence.

STEP BY STEP:

1. Rest the material on the table and tight against the fence.
2. Set the angle to the desired position and lock the pivot into place.
3. Without turning the saw on, lower the blade to align it with your mark on your material.
4. Turn on the dust collector.
5. Gently raise the saw all the way up. Do not release the saw suddenly.
6. Hold the material securely with your hand to the table and fence. Make sure that your hand is at least 4 inches away from the blade.
7. With the saw all the way up, firmly grip the handle, press and hold the switch.
8. After the blade has come up to speed, lower the saw slowly through the material.
9. When your cut is complete and the saw is all the way down, turn the saw off by releasing the switch, and wait for the blade to come to a complete stop in the table.
10. Wait until the blade has fully stopped, then slowly raise the saw to its full upright position.

Miter Saw

JOINTER

The **Jointer** is used to apply a smooth, even surface on a piece of wood. The jointer uses a sharp cutterhead to clean up rough-sawn, warped, or irregular edges of the board.

Always feed work along the length of the grain, from the infeed to the outfeed table The jointer is only used for wood in the direction of the grain—material moves right to left.

Do not run pieces smaller than 12" long through the jointer

STEP BY STEP:

1. Check that fence is square.
2. Turn on dust collector.
3. Locate the on/off switch - turn machine on
4. Always keep fingers outside of the 4" margin of safety. Use push pads if the jointing operation requires that your fingers enter the 4" margin of safety.
5. Press material firmly against the in-feed table bed and against the fence. Using even, steady pressure, move material from the in-feed table over the cutterhead to the out-feed table.
6. Once one foot of material is past the cuterhead, maintain steady pressure on the outfeed table.
7. When using the jointer on longer boards, use the support of a roller stand.

Jointer

PLANER

The **Planer** is used to create a consistent thickness and a smooth, flat surface on linear stock. The Thickness Planer removes wood by shaving material with blades on a rotating cylinder.

Material is supported by the bed and fed to the blade automatically. The thickness planer will not fix a board that is warped or twisted. Prepare one side of your material first with the jointer before bringing it to the planer.

Do not run any pieces shorter than 12" long or 1/4" thin through the jointer.

Make sure you have scraped any glue off and removed any stickers/staples/nails.

Make sure your grain direction is running perpendicular to the cutter head (Do not run any stock where the the grain runs parallel - it will get destroyed)

STEP BY STEP:

1. With the machine off, begin by lowering the deck of the planer so you can place your stock underneath the cutterhead and move it freely - leave your stock halfway underneath the cutter head.

2. Turn on the dust collector

3. Turn on the planer

4. Begin to raise the deck using the handle on the right until the feed mechanism grabs your stock - stop turning the handle at this point.

5. Remove your stock from the back of the machine and bring it back to the front. Rotate the handle one half turn and feed your stock through again.

6. Repeat step 3 as many times as necessary until your stock is smooth across one side. Flip your stock over and continue if you want to plane the back side of your stock.

7. Turn the planer off and wait till it comes to a complete stop before making any adjustments or walking

Planer

WOODSHOP SAFETY & GUIDELINES