

Woodshop Zone: Safety & Basic Use (SBU)

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**.

The goal of this class is to help aid you in learning how to safely operate the equipment and power-tools, and hand-tools, found here in IFL's Woodshop Zone. Most of the equipment found in here can be very dangerous, and even deadly, if the tools or equipment is used incorrectly, or if woodshop safety is ignored. This does not mean you should be afraid to use the equipment, however, you will need to thoroughly understand the importance of safely using the tools, as well as knowing how to use them correctly.

Carefully study the safety rules which follow. The zone manager 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 woodshop does not equal good safety awareness. Roughly 80% of accidents occur not to beginners, but to experienced workers that feel more comfortable in the shop and therefore become more casual/negligent in their approach to woodshop safety.

****NEVER be afraid to ask a Zone Manager or IFL Administrator for help.****

****NEVER use a new machine without mandatory training provided by zone manager.****

BENCH ORGANIZATION AND SHOP CLEANLINESS

- Keep your project materials carefully organized on your bench with tools located at, or near, the center.
- Do not pile tools on top of each other.
- Never allow tools or materials 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.
- Always have a vacuum hose hooked up to any power tool while in use, **IF** the tool is able to have dust collection attached.
- Do not glue, paint or use any adhesives in the wood shop. Spray-painting, or finishing involving caustic/dangerous fumes, is only permitted in the Spray Booth Zone; after taking the required SBU. Non-toxic paints can be applied with a brush over a dropcloth set up in the zombie room, or outside.
- Gluing is acceptable in the Zombie Room on a designated bench. All gluing projects must be labeled with a piece of paper with your name, and the date you're picking it up.

- Sweep/vacuum the shop of the sawdust generated from your work after each project. Also be sure to pick up any nails/screw/debris that may have accumulated.
- Return any tools to their place in the zone.
- Keeping the shop clean allows all of our member to work safely and effectively, while also keeping the machines in good-working order.

SAFETY GEAR

- 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, and do not allow yourself to become distracted.
- 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.
- Wearing gloves won't protect you from cutters and blades, but it will protect your hands against splinters, chemicals, and debris.
- Always wear a face mask or respirator when working with sawdust or caustic chemicals.
- Prolonged exposure to sawdust and many paints/finishes/stains can cause long term health problems to your respiratory system.

FIRE PROTECTION

- Flammable liquids should not be brought into the woodshop without expressed permission from IFL Staff. If there are any questions regarding this, consult the zone manager.
- Re-familiarize yourself with the location of all fire extinguishers and first aide kits as well as how to use them.
- 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.
- Close cans of finishing materials and thinners immediately after use.
- Use flammable liquids in very small quantities, and be sure the container is properly labeled.
- Consult workers near you to determine whether any potential crossover hazards might be present, as well as giving a heads up to any unpleasant fumes that may become airborne.
- Dispose of oily rags and other combustible materials immediately. Wet oily or solvent soaked rags with water and store in a plastic bag, and take off-site until they have been washed.

INJURIES

- **CALL 911** in the event of life-threatening emergency! Also be sure to contact IFL as soon as possible after treatment to let us know how you're doing.
- In the event of an injury, please don't hesitate to reach out to a member or staff at the lab for assistance.
- Report all injuries, regardless of any severity to the zone manager or IFL Administrator.
- The woodshop has two **First Aid Kits** in the event of an injury, remind yourself of their location as well as how to use them.
- Always remember to properly clean and disinfect any wound that you may have sustained while working on a project.

FLOOR SAFETY

- The floor should be clear of scrap blocks and excessive litter. If it is not, please take the responsibility to clean it up.
- Keep projects, lumber, sawhorses and other equipment and materials you are using out of traffic lanes.
- Immediately wipe up any liquids spilled on the floor. There is a mop located in our Utility Closet.

HAIR & CLOTHING

- Dress properly for your work. Remove coats and jackets. Long sleeve shirts are discouraged, but can be worn if loose sleeves are rolled up and secured as to not fall into your work.
- Frayed clothing or clothing with loose threads or tassels may not be suitable to be worn in the woodshop, use your best judgement.
- Note that the woodshop is not a good place to wear clothing that you are fond of, rips and tears in clothing are commonplace in woodworking.
- Long hair should always be tied back away from face and not allowed to fall into your work or revolving cutters.
- An shop apron that is snuggly tied is permissible and helps to protect your clothing.

VISITORS

- The woodshop is not a safe space for visitors when any of the equipment is in operation, and are not permitted to enter the zone.
- If the tools are not in use, visitors can tour the woodshop if led by an IFL Member.
- Visitors are not permitted to use any of the equipment in the woodshop zone.

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, sawdust, 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; **always unplug a machine before cleaning.**

CARRYING TOOLS

- Keep sharp-edged and pointed tools turned down.
- 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.
- Always place the tools back in their correct storage after each use.

HEAVY LIFTING

- Protect your back muscles when lifting heavy or awkward sized objects. Have someone help you.
- Lift with your arm and leg muscles, **DO NOT LIFT WITH YOUR BACK**. Ask for help with long boards, even if they are not heavy.

MATERIAL & 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.

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.
- Certain operations may require a certain clamping set-up or jig that IFL may not currently have.
- If you are unsure how to perform a certain operation, there are an endless amount of resources online for building your jigs, clamps, and other safety devices.

ODORS

- Be alert for any odors that might indicate overheating of the machine or stock, or any smells indicating possible electrical failure, (similar to the smell of burning rubber or metal).

TOOL SELECTION

- Select the proper size and type of tool for your work.
- Check the tool or bit to make sure it is sharp and in working order. Also make sure any moving parts are secured and/or functioning smoothly and correctly.
- An expert never uses a tool unless it is sharp and in good condition. Inform your zone manager if tools are broken, have loose handles, or need adjustments.
- Be wary of trying to remove too much material on one cut or pass. This can result in severe injury, or damage to the equipment.
- Determine how much material is safe to remove per each cut.
- If you're unsure of how much material can be removed in one operation, start off with

smaller cuts or a smaller bit and incrementally increase the size of your cuts as you work.

ELECTRICITY

- Before you plug in a machine, **ALWAYS** make sure the switch is in the “**OFF**” position. You do not want the machine to start unexpectedly.
- Keep all power cords away from blades and cutters while you work. If anything unusual happens, turn off the machine immediately. If the machine does not sound right, smell right, feel right, or look right, turn it off immediately. As soon as the machine stops completely, check with the zone manager or IFL Administrator.

USING THE 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 members.
- Report **ALL** dull or loose blades to the zone manager or IFL Administrator.
- 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.
- Check the cutters and blades carefully for any dullness or defects; such as chips, cracks, broken/loose teeth, etc.

MATERIAL QUALITY

- Defects in the wood can be dangerous. Check the stock carefully for knots, splits, foreign objects, and other defects; including and especially any kind of metal.
- Loose or decaying knots within your lumber can shatter and be thrown from the wood with great force. Take extra caution when cutting near or through these knots.

WORKING SPEED

- Do not “rush and tear” through your work. Know that a steady, unhurried pace is safest and produces the best work.
- If you hear the machine starting to strain on a particular cut, try decreasing your working speed.
- Going too fast on a cut can result in a kickback, damage to the machine, or cause the wood to splinter or break apart mid-cut.

CONSIDERATION OF OTHERS

- Be thoughtful and helpful toward other members in the Shop. Be sure that the work you are doing does not endanger someone else. Caution other members if they are violating a safety rule.

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. Before operating any power tool or machine you must become thoroughly familiar with the way it works and the correct procedures to use it. 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 below carefully. Pay close attention to the demonstrations and directions given by your zone manager. 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.

GENERAL POWER SAFETY GUIDELINES & REVIEW

- Wear appropriate clothing. Remove coats or jackets, and secure loose sleeves. Make sure long hair is tied back and not allowed to fall into your face or work.
- You must be wide awake and alert. Never operate a machine when you are tired, ill, or under the influence of drugs, alcohol, and/or medication.
- Think through the operation before performing it. Know what you are going to do, and what the machine can, and will do. Also be aware of what could go wrong, and how plan for when something does go wrong
- Always be sure you have been instructed by the zone manager on the correct ways to operate each machine before you use it.
- Power-tools should not be used for trivial operations, especially on small pieces of stock. Many of the hand tools can be used for these smaller jobs.
- When you are operating the machine, you are one in control of it. Start and stop the machine yourself. If someone is helping you, be sure they understand what to do, how to do it, and when to do it.
- Make all the necessary adjustments before turning on the machine. Some adjustments will require the machine to be unplugged from the power source, as well as some adjustments on certain machines will require the zone manager's approval.
- Never remove or adjust a safety guard without the zone manager's permission.
- Use approved push sticks, push blocks, feather boards, and other safety devices. Some operations may require the use of a special jig or fixture.
- Keep the machine tables and working surfaces clear of tools, stock, and project materials. Also keep the floor free of scrap and excessive litter.
- 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.

- Allow the machine to reach its full operating speed before starting to feed the work.
- Never leave a machine running while unattended.
- Feed the work carefully and only as fast as the machine will easily cut.
- Maintain the **MARGIN OF SAFETY** specified for the machine. This is the closest your hands and fingers should ever come to the cutting tool while in operation.
- If a machine is dull, out of adjustment, or not working properly, shut off the power immediately and inform the zone manager or IFL Administrator.
- When you have completed an operation on a machine, shut off the power. Wait until it stops completely before leaving the machine or setting up another cut.
- Stay clear of machines being operated by other members. See that other members are out of the way when you are operating a machine.
- Do not crowd around or wait in line to use a machine. Ask the present operator to inform you at your workstation when finished.
- Always leave our tools and equipment better than you found it, with all safety guards properly in place, the machine cleaned and ready for the next member to use, as well as neatly putting it back wherever it is stored.

SPECIFIC POWER EQUIPMENT SAFETY GUIDELINES

To operate a machine safely, you must know more than just how to turn it on and off. You must know how to perform basic operations. You also need to know how to make simple adjustments. Above all, you must know the machine's limits. Always keep the machine at a safe, steady speed. Never use the machine for a job the machine was not designed to do.

Safety Rules for Finishing

- Wood finish that can be applied with a brush can be used outside when used over a drop cloth. All finishing work involving spraying must be done in the spray-booth.
- Make sure you have taken the Spray Booth SBU before using the Spray Booth zone.
- Wear chemical goggles or safety glasses when applying finishing materials.
- Wear a face-mask or respirator when working with materials that can be hazardous to your respiratory system.
- Wear rubber gloves, goggles, and rubber apron when applying bleaches and acids. Be

careful to avoid a possible flashback from these chemicals. Many of these chemicals can cause skin damage as well as the other health risks listed on the container.

- Thinner and reducers such as naphtha, benzene, lacquer thinner, and enamel reducer should be applied in the spray-booth with the ventilation fan running and while wearing the proper respiratory protection. These fumes can have a toxic effect.
- Store all chemicals and soiled rags properly. Many chemicals and rags are highly flammable. Be sure to wet any brushes, cloths, or rags with water, store them in a plastic bag, and take off-site until they have been fully cleaned and washed.
- Do not smoke while sanding, painting, 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.
- Wash your hands well after applying a finish in order to remove any toxic materials that you have handled.

Safety Rules for Sanding Machines

- Be certain the belt or disc is correctly mounted. The belt must track in the center of the drums. Do not operate the disc sander if the abrasive paper is loose.
- Check the guards and table adjustments to see that they are in the correct position and locked securely in place.
- Use the table, fence, and other guides to control the position of the work, whenever possible.
- Small or irregular-shaped pieces should be held in a hand clamp, or a special jig or fixture.
- When sanding the end grain of narrow pieces on the belt sander, always support the work against the table.
- 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.
- Always use a pad or push block when sanding thin pieces on the belt sander.
- Do not use power Sanders to form and shape parts when the operations could be better performed on other machines.
- 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 Drill Presses

- Check the speed setting to see that it is correct for your work. Holes over $\frac{1}{2}$ in. should be bored at the lowest speed.
- Use only an approved type of bit. Bits with feed screws or those with excessive length should not be used.
- Mount the bit securely to the full depth of the chuck and in the center. Take extra time to make sure bits with hexagonal shanks are secured and centered in the chuck before turning it on.
- Position the table and adjust the feed stroke so there is no chance of the bit hitting the table. Use a spoiler-board if necessary.
- Work that will be held by hand should be center punched. All cuts into metal however, must be center-punched. Use lubrication for cuts into metal if necessary.
- Small or irregular shaped pieces must be clamped to the table or held in some special clamping setup or jig, fitting to the given operation.
- Feed the bit smoothly into the work. When the hold is deep, withdraw it frequently to clear the shavings and cool the bit.
- When using special clamping setups or a hole saw, make sure it's secure before turning on the drill press.
- Be careful when removing the bit from the press as the friction from cuts may heat it up to being too hot to handle with bare hands.

Safety Rules for Portable Circular Saws

- 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.
- Thin materials should be supported on benches. Small pieces should be clamped in a vise or onto a bench top or sawhorse.
- Be careful not to cut into the bench, sawhorse, or other supporting devices.
- Adjust the depth of cut to the thickness of the stock, and add about $\frac{1}{4}$ in.
- Check the base and angle adjustment to be sure they are tight.

- Plug in the cord to a grounded outlet. Plan your cuts and position the power cable in such a fashion as to avoid potentially cutting the cord.
- Always place the saw base on the stock, with the blade clear of the material, before pulling the trigger on the saw.
- During the cut, stand to one side of the cutting line as to avoid a possible kickback.
- 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.
- Always keep your hands on the designated handles of the saw. These are pretty easy to spot based on their ergonomic design. Not only are these handles positioned a safe distance from cutter, but are typically insulated to protect the user from electrical shock as well.
- Always unplug the machine to change blades or make **ANY** adjustments.
- Always use a sharp blade for your work.

Safety Rules for Reciprocating Saws

- Select the correct blade for your work and be sure it is properly mounted.
- Disconnect the saw to change blades or make adjustments.
- Place the base of the saw firmly on the stock before starting the cut.
- Hold the tool very steadily, the saber saw generates strong vibrations when in operation.
- Turn on the motor before the blade contacts the work.
- Do not attempt to cut curves so sharp that the blade will be twisted. Follow procedures described for band saw operation.
- Make certain the work is well supported and/or clamped securely. Do not cut into sawhorses or other supports.

Safety Rules for Router

- Know and follow the general safety rules for operating power tools.
- Disconnect the power before changing router bits.

- Clamp router bits securely in the chuck. At least 1/2 inch (12 mm) of the shank should be inserted.
- Make sure the router switch is in the off position before connecting the power.
- Do not make any router cuts unless the stock is securely clamped. The router can throw loose stock with great force.
- Before you start cutting, make sure nothing is in the router's path.
- Hold the router tightly when starting the motor.
- Always feed the router against the rotation of the bit. If you feed with the rotation the bit can dig into the stock. This can cause the router to kick back or throw the stock.
- After finishing a cut, wait for the router to stop completely. Then lay the router down. The bit should point away from you.

Safety Rules for Jointer

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

Safety Rules for 13" Planer

- Adjust the machine to the correct thickness of cut before turning on the power.
- Stock should be at least 12 in. long, or several inches longer than the distance between

the centers of the feed rolls.

- Surface only new lumber that is free of loose knots and serious defects.
- Plane with the grain, or at a slight angle with the grain. Never attempt to plane cross grain.
- Stand to one side of the work being fed through the machine.
- Do not look into the throat of the planer while it is running.
- Do not feed stock of different thicknesses side by side through the machine.
- Handle and hold the stock only in an area beyond the ends of the table.
- If the machine is not working properly, shut off the power at once and inform the zone manager.
- Do not remove more than 1/16" of material with each pass.

Safety Rules for Band Saws

- Wheel guard doors must be closed, and the blade properly adjusted, before turning on the machine.
- Adjust the upper guide assembly so it is roughly ¼ in. above the work.
- Allow the saw to reach full operating speed before making contact with the material.
- The stock must be held flat on the table.
- Feed the saw only as fast as the teeth can easily remove the wood.
- Maintain a 2 in. margin of safety.
- Plan saw cuts to avoid backing out of curves whenever possible.
- Make turns carefully and do not cut radii so small that the blade is twisted.
- Stop the machine before backing out of a long, curved cut.
- The bandsaw blade moves in a downward motion, because of this round stock should not be cut unless mounted securely in a jig or hand screw.

- If you hear a clicking noise, turn off the machine at once. This could indicate a crack or defect in the blade. If the blade does break, shut off the power and move away from the machine until both wheels stop.
- Turn off the machine as soon as you have finished your work. Do not leave the machine until it has stopped running.

Safety Rules for Table Saws

- Be sure you have the zone manager's approval to operate this machine.
- Be certain the blade is sharp and the right one for your work.
- Set the blade so it extends about 1/4 in. above the stock to be cut.
- Stand to one side of the operating blade. Do not reach over the blade when it is raised and exposed, even if the power is off.
- Maintain a 4 in. margin of safety when using the table saw.
- The position of the stock must be controlled either by the fence or the miter gauge. Use appropriate push sticks, push blocks, push pads, and other necessary safety devices if needed.

**** NEVER CUT STOCK FREE HAND ****

- Use only new stock that is free of knots, splits, warps, metal, and other defects.
- Stop the saw and wait for blade to stop spinning completely before making adjustments to the fence or blade.
- Do not let small scrap cuttings accumulate around the saw blade. Use a push stick to safely push them out of the way of your work.
- Special setups and jigs must be inspected to be safe before power is turned on.
- The dado or any special blades should be removed from the saw after use.
- Members 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. Those tailing-off are only helping to make sure the work doesn't fall to the floor during the cut, or at the end of it.

- As you complete your work, turn off the machine and remain until the blade has stopped completely, then fully-lower the blade back into the saw's housing.
- Clear the saw table and place waste cuttings in the scrap box.
- Do not allow material to become trapped between fence and blade
- Use the sled jig to safely cut smaller pieces of material.
- Always use the red zero-clearance plate for any cuts greater than zero-degrees.

ALWAYS take the time to reach out to the IFL Woodshop Zone Manager for any questions