

UNIVERSITY OF MEMPHIS DEPARTMENT OF ART & DEPARTMENT OF ARCHITECTURE

SAFETY POLICIES FOR ART & ARCHITECTURE 3-D SHOP

WOOD, METAL, PLASTER, CLAY, MULTI-MEDIA

GENERAL RULES

The University of Memphis Department of Art has designated studios for wood, metal, plaster, clay, foundry, and multi-media work. Students are responsible for knowing safety requirements of Wood, Metals, and Ceramics/Clay, as referenced in the U of M Safety Manual.

1. The Department of Art welcomes students from all disciplines into the Art & Architecture Shop. However, no one is allowed to use the shop or the equipment in it without first obtaining permission from the Sculpture Program Director. The program director will establish a list of students who are qualified to work in the shop. All other students may only work in the shop when their class is in session or when an instructor or monitor is available to supervise them. Anyone who has not been certified by the program director must check in with an instructor or monitor before beginning work in the shop.
2. All students will be required to read, discuss and ask any questions they might have about safety procedures, rules and regulations for the Art & Architecture shop. Upon completion of this reading the student must sign an acknowledgment form stating they understand the policies and procedures of the shop. This form can be acquired from the 3-D Shop Tech or your instructor.
3. No one may work alone in the Shop at night, and students should not operate machinery at any time unless at least one other person is present in the studio.
4. Use the Shop only when alert, rested and focused. To do otherwise is to expose yourself and others to risk. Under no circumstances attempt to use machinery when your judgment is impaired or you are ill, under the effects of medication, drugs or alcohol, or sleep deprivation. No smoking or eating is allowed in the shop.
5. Prepare yourself for the use of machinery by securing your clothing, hair and jewelry. Also outfit yourself with appropriate hearing protection, gloves, goggles and **Personal Protective Equipment**. See to it that all necessary aids, such as push sticks, saw horses, hold-downs, guide fences, or someone to help are within reach or in their proper place. **ALL GUARDS MUST BE USED**. Safety eyeglasses or goggles should also be worn when doing some bench work such as chipping stone or wood, filing

metal or cutting wood, or when working with materials corrosive to eyes such as plaster, solvents, varnishes, or hardeners.

6. Dust collection, welding ventilation and plaster/clay ventilation have been provided for your protection. You must engage these systems when working on projects. Inhaling foreign substances is one of the biggest health hazards in the 3-D shop. Be sure you have adequate ventilation for either dust or fumes before proceeding with a project.
7. Approach any wood, metal, stone machine, hand-held or stationary equipment, with respect, which begins with a thorough examination of the equipment before using it.
8. Keep your attention focused on both the machine and on the operation you wish to perform with it.
9. Never distract or talk to someone who is welding, cutting metal or operating a machine, or allow them to distract or talk to you while you are in the process of using equipment. If you must pass by someone using equipment, approach them head-on so they may see you coming and not be startled.
10. Be alert for any unusual sounds, loose parts, dull blades, poor adjustments, when turning on or operating a machine. Correct the situation before continuing to use the machine. Never force a machine to do work. Report any gas, electrical or mechanical hazards immediately.
11. Clean up scrap wood, sawdust, metal cutoffs, plaster, clay or other scrap materials when finished with an operation. Return the machine to a state of readiness for the next person to use. Also return all hand-held machines to their proper storage area, clean off all workbenches of foreign or scrap material. Dispose of them properly.
12. If you have any question about the use of any material or operation of a machine, ask for assistance before going ahead with your work.
13. All students must clean their work area before leaving the shop. All students must assume responsibility in this important matter. Scrap materials including wax, plaster, saw dust, metal, clay, fabric etc. generated by both machines and handwork is a health and fire hazard, and should be cleaned up daily.
14. All flammables and hazardous solvents must be used in a well-ventilated area. They must be stored in the facilities provided in the shop. Solvent soaked rags should be placed in an approved, self-closing waste disposal can which is emptied on a regular basis.
15. The patina of metals involves the use of several toxic chemicals. Special ventilation and caution shall be exercised during this process.
16. Students must familiarize themselves with all of the materials they are using, and take suitable precautions. Stripping, painting, grinding, melting and finishing, for example involve a wide variety of materials which must be treated with respect. The solvent benzene, for example, is a known carcinogen and may not be used in any form.

17. Many skin conditions and allergies can be caused by wood glues and adhesives such as epoxy and phenol-formaldehyde-resin glues. Glues and cements which contain solvents can dry and defat the skin making it more subject to infection. Safe use of the more hazardous adhesives (which might contain, for example, hexane, naphtha, mineral spirits, and methyl chloroform) requires avoiding skin contact, sparing and careful use, keeping containers closed as much as possible during application, and good general shop ventilation. Water-based contact adhesives, casein glues, hide glues, white glue (polyvinyl acetate), and other water-based adhesives are slightly toxic through skin contact. Dry casein glues are highly toxic by inhalation or ingestion, and moderately toxic by skin contact since they often contain large amounts of sodium fluoride and strong alkalis. The safe use of wax demands constant ventilation as does all welding fumes and dust created by the mixing of plaster and clay or silica based materials. Silica must be ventilated.
18. Vibrating tools can cause health problems with extended use. Get instruction in the proper use of such tools from the instructor before use.
19. Certain woods, especially those of an exotic nature, and/or wood treated with pesticides, may be irritants or cause allergic responses. Students should be aware of these potential hazards, and seek information from their instructors.
20. A Fire and Emergency list of telephone numbers and procedures is posted in the Sculpture Studios and should be consulted in the event of any mishap. All accidents, large or small, must be reported immediately to the instructor or person in charge.
21. A locker of First Aid equipment has been provided in the shop Rm. 113. Sculpture Tech is responsible for keeping it replenished.
22. Should symptoms of a health problem or illness appear and persist, report the matter to your instructor and go to the Health Office for an exam.
23. As the nature of art materials becomes inclusive of almost any material, before work can be started with materials that are not provided by your given Program, all materials must be approved by Sculpture Program Director.
24. Ventilation must be used when working with wood, metals, wax, clay, plaster.
25. Certain metals, stones, plastics may be hazardous and must be inspected before their use is allowed.
26. The Art & architecture shop require the use of different techniques, tools and materials and all procedures should be done in specifically designated areas.

DEPARTMENT OF ART POLICY FOR VIOLATIONS OF SAFETY PROCEDURES

The Department of Art expects that all students will abide by the safety and health procedures outlined in this manual. Major and minor infractions will be addressed immediately, and such violations will become part of the student's record.

The instructor or 3-D Shop Tech shall:

1. Identify the nature of the violation to the student.
2. Inform the student of the correct procedure, and observe the student performing the procedure in a proper manner.
3. A violation may result in a student's not being allowed to engage in a specific procedure unless supervised.
4. A Violation Form shall be signed and dated by both the instructor and the student and placed in the student's file. A copy shall be given to the student.

Repeated violations will bring into question whether the student involved will be allowed to continue work in the shop. The department involved will meet with the student and make a recommendation.

SAFETY REGULATIONS FOR SPECIFIC EQUIPMENT IN THE ART & ARCHITECTURE SHOP

TABLE SAW

1. It is the responsibility of those using the table saw to first determine if this machine is the safest way to accomplish the desired task.
2. Always wear safety goggles, hearing protection, and use the dust collection system. Also, do not wear loose or dangling clothing and jewelry.
3. Clean the table of the machine and the floor around the saw before beginning work, and then again when you are finished.
4. Position the saw guard, splitter and anti-kickback device before turning the saw on. Always lock out power before changing the saw guard or servicing the machine in any way.
5. Use only new stock that is free of dirt, paint, nails, loose knots, splits and warps. Also, attempting to rip short, narrow or thin Sculpture invites trouble.
6. Stock should be surfaced on one side and at least one edge jointed before being cut on the saw.
7. Make sure that any necessary aids such as a push stick, push blocks, or rollers to catch outgoing Sculpture are ready before beginning an operation. If a person is going to help you cut a large piece of stock, be

- sure they only support the stock and do not attempt to push or pull it. YOU, the operator, must control the feed and direction of the cut.
8. Be certain the blade to be used is sharp and the proper type for the operation.
 9. Adjust the height of the blade to no more than one-eighth inch above the stock to be cut.
 10. Stand to one side of the blade, and never reach across, behind or beyond the blade while cutting. Again, your hands should never be IN LINE with the cutting blade. Maintain a four-inch margin of safety: do not let your hands come closer than four inches from the blade. USE the push stick.
 11. Be sure no one is standing in a direct line behind the saw.
 12. Always use either the rip fence or the miter gauge when cutting. NEVER CUT STOCK FREEHAND. When setting the rip fence, make sure that the fence locks parallel to the blade. Otherwise the stock can bind and kick back. Never use the miter gauge in combination with the rip fence unless a clearance block is used. Never try to support both pieces on opposing sides of the saw blade when using the miter gauge; support the portion positioned against the gauge side only. When ripping, always support the portion of your piece that is in between the rip fence and the blade.
 13. If you tilt the blade or change the miter gauge, return them to their original position after using the saw. When changing blades always be sure that the washer and lock-nut are tight to the blade.
 14. When making a cut, make sure you pass the stock completely past the blade as you finish your cut. NEVER BACK UP STOCK ONCE YOU HAVE PROCEEDED WITH A CUT. If need be, stop, and shut the machine down. Always turn the saw off before attempting to remove scrap.
 15. Never talk to anyone or let them distract you while the saw is running. Keep your attention focused on your work.

THE BANDSAW

1. Always wear safety goggles, hearing protection, and use the dust collection system. Secure all loose clothing, hair and hanging jewelry.
2. Clean the table and the area around the bandsaw before beginning work and when you are finished.
3. Saw only stock which is free of dirt, paint, nails, splits, warps and loose knots.
4. Make all adjustments to the machine before turning it on. Never open the wheel enclosure doors while the machine is in operation. Adjust the upper guide post so that it is no more than ¼ inch above the work.
5. If the blade is not tracking properly or needs adjustment stop the machine and see the instructor or 3-D Tech. Do not use a dull blade.

6. Be extremely cautious of the exposed blade. Keep fingers clear. Never allow your hands or fingers to be IN LINE with the blade. Make sure your fingers are out of the way as you near the end of a cut.
7. Avoid backing out of saw cuts. You could pull the blade off the wheel.
8. If a blade breaks, step back quickly, turn off the saw, report to the instructor or 3-D Tech.
9. Clean up.

SINGLE SURFACE PLANER

1. Always wear safety goggles, hearing protection, and use the dust collection system. Secure hair, loose clothing, dangling jewelry.
2. Stock should be at least 15 inches long, and never thinner than ¼ inch. Do not attempt to take more than a 1/16th inch cut (one revolution of the wheel).
3. Surface only new lumber that is free of loose knots, dirt, paint, nails. True up stock on the jointer before surfacing it on the planer.
4. Plane WITH the grain, never cross grain.
5. Stand to one side of the work being fed through the planer.
6. Never look into the throat of the planer while it is running.
7. Do not attempt to feed stock of different thicknesses side by side through the machine.
8. Only handle stock as it passes before and after the machine table. If the machine is set and running correctly you have no reason to have your hands on or above the machine's table.
9. If the machine is not working properly, shut it down at once and inform the instructor or 3-D Tech.
10. Clean up after your work is complete.

OTHER SCULPTURE STUDIO MACHINES AND TOOLS

The Art & Architecture Shop has many other machines, such as lathes, drill presses, router tables and sanders, many hand-held power tools, such as the biscuit joiner, portable rotary saw, drills, routers, grinders and sanders, as well as many potentially dangerous hand tools such as chisels, saws, carving tools, and knives.

1. Students may not use any of these tools without instruction and supervision. See faculty or 3-D shop Tech for instruction and supervision before use.
2. All of the Art & Architecture Shop general rules and procedures apply to these tools and machines.

SAFETY REGULATIONS FOR SPECIFIC SCULPTURE AREAS AND EQUIPMENT

Foundry Area

1. Foundry includes the processes of mold making, clay modeling, wax casting and construction, metal casting and metal chasing and patination.
2. Only students enrolled in sculpture classes are allowed in the foundry area with the permission of sculpture faculty.
3. All plaster and clay work must be done in designated areas and with proper ventilation.
4. All wax work must be done in designated area and an inspected and an approved fire extinguisher must be present at all times along with a source of water.
5. Metal casting includes the use of a high temperature furnace and gas kiln. Both furnace and kiln may only be operated by sculpture faculty and faculty must be present during foundry operation. Students may never turn on gas for any reason.
6. Proper clothing for foundry work is provided by the sculpture program and must be worn at all times during foundry operation.
7. Chemicals for the patina of metals must be clearly labeled and stored in a fire proof cabinet. Any chemical patination must be done with proper ventilation and under the guidance of sculpture faculty.
8. Eye and ear protection are mandatory when using foundry related equipment.
9. Personal protective equipment use is mandatory when melting, pouring and grinding cast metals.
10. When working with wax, all fire precautions should be taken. The melting of wax creates hazardous fumes and must be properly ventilated. Wax may only be melted in an approved wax melting pot or an approved double boiler.
11. Hazards in foundry work result primarily from dust and fumes and from the handling of molten metal during casting.
12. Studio organization, maintenance and cleaning is mandatory and must be done after any foundry work.

Welding

1. The welding studio includes both gas and electric welding equipment. Only students enrolled in U of M Art & Architecture classes with faculty approval may use welding equipment.

2. All gas welding tanks must be properly secured to carts or chained to walls in designated areas. All empty and full tanks must be labeled and properly stored.
3. Students must wear proper fire resistant clothing including approved aprons, gloves, and proper eye protection.
4. Welding and cutting metal and general metal work must be done in designated areas only. Proper pressure for gas gauges should be clearly stated in the welding area along with proper procedures for turning on and off gas welding tanks.
5. All related metal working machinery or hand tools requires the use of eye, ear and personal protective equipment protection.
6. Electric welding must be done in designated areas free of any flammable materials or water which may cause electric shock.
7. Arc welding (electric) is electrical, watch for wet hands or wet work which can cause shock. Light produced by arc will seriously damage the retina of the eye. Over exposure can cause skin cancer. Face and eye protection and ventilation over work must always be in place before applying electricity. Always work behind welding screens and watch out for others around you.
8. Any metal used in the welding area must be approved by faculty or 3-D Tech.
9. Metals maintenance, organization and cleaning is mandatory and must be done after any welding activity. Metal scraps and residue must be removed after studio use.

Clay/Plaster Area

1. The clay and plaster studio includes materials which may contain silica and proper ventilation must be used.
2. Only students enrolled in U of M Art or Architecture classes may use the clay/plaster studio with permission from designated faculty.
3. All clay material must be properly stored in rolling clay bins with proper covers.
4. Studio maintenance and daily cleaning is mandatory because of the nature of clay and related silica concerns.
5. Plaster and clay must be mixed and used in designated areas with proper ventilation.
6. Proper clothing must be worn when modeling clay and casting plaster and should not be brought out of the studio environment.
7. Proper personal protective equipment use and eye protection is required when using clay and plaster.
8. Silica in clay dust (silica dioxide) is present in dry clay and in many glaze materials either as a component or contaminant. Inhalation may result in

- silicosis, permanent scarring of the lungs, which may incubate for 15-20 years. Personal protective equipment use is mandatory.
9. Plaster must be kept packaged and away from any source of moisture.

Multi-Media Area

1. The combination of various materials has become common place in the field of Art & Architecture. All materials which are brought into the shop must be examined and approved before they can be used by U of M students.
2. The combination of various materials and methods used to secure them may pose hazardous conditions for both the user and studio environment. Extreme caution must be used when using various glues, adhesives or unorthodox methods of combining materials. Approval from U of M Art or Architecture faculty or 3-D Tech is mandatory.