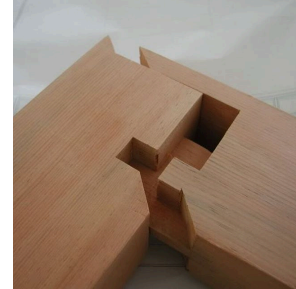


Welcome to the MAPP Fabrication Laboratory



We support the activities of the Architecture Program and the broader initiatives of the School of Architecture, Planning, and Preservation.

Please Note:

A thorough safety training class is required before anyone is given access to the Workshop. We offer skills seminars in a wide range of methods and materials. Experience with specific hand and machine technique provides insight into how things come together—the way things work. Unsafe use of Workshop facilities or equipment may result in revocation of access to the facility.

Hours:

Operating Hours are established at the beginning of each semester and are posted at the Workshop entrance and on our website.

David Atwater, Assistant Clinical Professor, Fabrication Lab Specialist
datwater@umd.edu (301) 405-6324

Shop Access Privileges:

- All Workshop users must be currently registered Students, Faculty or Staff of the School of Architecture, Planning and Preservation.
- Only those who have attended the Workshop Safety Class and have signed the safety contract are permitted to use the shop. The Shop Card you receive on completion will be stamped to indicate your level of access to the equipment.
- Access Level is determined by demonstration of proven ability with individual machines, and will be decided by the Workshop Supervisor.
- Sign in EVERY time you use the shop. Workshop Monitors will collect your Shop Card when you sign in and return it when you sign out.
- Shop Access Privileges can be revoked at any time at the Shop Attendant's discretion. Revocation of Shop Access Privileges must be reconciled with the Workshop Supervisor

Shop Hours:

- Hours of Operation are established each semester. Hours are posted at the shop and on the webpage.
- The Workshop is available for use only when overseen by a Fabrication Lab Graduate Assistant or its Director. The Workshop will be open only during posted hours or by arrangement with the Director.

Personal Protective Equipment and Appropriate Clothing:

- Safety glasses or goggles MUST be worn upon entering the shop and during the operation of any stationary or portable power equipment (non-tinted, plastic-lens prescription glasses are also acceptable).
- Ear muffs and ear plugs are available and must be acquired upon entering the shop and be worn during sustained use of noise generating equipment.
- Dust masks are available and should be worn when generating significant dust.
- No loose clothing may be worn in the shop including ties, scarves, and loose sleeves.
- No open-toe shoes are permitted in the shop.
- Remove all jewelry before beginning work-includes rings, necklaces, bracelets and watches.
- Long hair must be contained and pulled back tightly in a bun. Long beards must also be contained.
- Failure to follow the above will result in suspension of shop access privileges.

Shop Orientation – Required Safety Class and Proper Tool Use Instruction:

- Every individual who wants to use the shop must go through the shop certification safety class and finish the shop certification project.
- All shop users must have a valid UMD ID, and a red certification card. When a patron enters the shop they must hand their University ID and certification card to the shop supervisor or GA on duty. Patrons will have their ID and certification card returned when **they have cleaned up after themselves.**

Housekeeping

- A clean shop is an effective shop. Be considerate of other shop users by keeping your work area neat.
- ANY materials sitting on the floor at ANY time will be considered trash and treated accordingly.
- Sweep up any significant dust or wood chips as you produce them. Throw away scraps as you make them as well.
- Daily clean-up starts fifteen minutes before closing. Please help us clean up by stopping work, returning tools and removing/storing your materials at least fifteen minutes before closing time.

Prohibited Personal Items

- Do not bring food or drink into the shop.
- Do not bring personal book bags, backpacks, purses, etc., into the shop.
- Do not wear headphones (iPod or Phone) while working in the shop.



MAPP FAB LAB

Tool Check-Out

- Your Shop Card is retained by the Workshop Attendant when a tool is checked out. It will be handed back when the tool is safely returned.
- You are responsible for any tools you check out. If Workshop equipment is lost, stolen or damaged while checked out to you, you are responsible for replacement.
- Obtain approval from Shop Attendant before removing ANY tool from the shop.
- Obtain special permission for periods longer than 2 hours.
- Tools should be returned to the shop promptly upon completion of use.
- Tools checked out overnight should be removed less than 1 hour before closing.
- Tools checked out overnight must be returned within one hour of opening the next day.
- Tool Check-Out privileges can be revoked at any time at the Shop Attendant's discretion.
- Power tools may not be operated in the Great Space unless the user has the express permission of the Workshop Supervisor.

FIRST AID

- Stop Bleeding. Apply direct pressure on the cut or wound with a clean cloth, tissue, or piece of gauze until bleeding stops. If you need additional care and are ambulatory visit the University Health Center 301.314.8180. You will need your insurance card and UID to be admitted.
- Clean Cut or Wound. Gently clean with soap and warm water.
- Protect the Wound. Apply antibiotic cream to reduce risk of infection and cover with a sterile bandage. First Aid Kits are found in the Shop and throughout the Architecture Building.
- THE WOUND IS **SEVERE CALL 911** AND HAVE THE DISPATCHER SEND HELP TO:

Architecture Wood Shop
Building 145 / 3845 Campus Drive
West-end / ground floor of the building
301.405.6324

Workshop Occupancy Policy

The maximum safe occupancy capacity of the Workshop is 8 users. This policy takes into account space, equipment and staff limitations of the Workshop. The primary responsibility of Shop Attendants is monitoring the safety of shop users. The number of users which an individual Shop Attendant is able to effectively monitor is affected by many factors. It shall be each Shop Attendant's responsibility to determine how many users they can effectively monitor under any given circumstances. The nature of the work conducted in the Workshop requires significant space for each machine and user. Each machine requires a clear space for safe operation. Aisles must be kept clear for the safe movement of people and materials. This limit may be adjusted upward or downward at the Shop Attendant/s discretion dependant upon conditions.

If occupancy limits are exceeded:

The Workshop door will be locked. Shop users will be asked to wait in the hall, and establish a queue amongst themselves. As users leave or machines become available, the shop attendant will admit users from the hall. If a safe environment cannot be established through the application of this procedure, the Workshop may be CLOSED to establish order at the discretion of the Shop Attendant/s on duty. Application of this policy will be left to the discretion of Shop Attendant/s on duty. Resolution of any disputes regarding the application of this policy shall be the responsibility of the Workshop Supervisor.

The Workshop requires at least two individuals present at all times to ensure safety. This includes the attendant and at least one patron. It is very easy for an individual working alone to be injured and quickly bleed-out.



MAPP FAB LAB

General Safety Information:

Report any injury, however minor, to a Shop Attendant.

Consult with a Shop Attendant before performing any procedure that is unfamiliar to you. He or she is the one to decide if the work can and should be done, and will be able to suggest the safest, most efficient way to do it.

Stay alert and aware of what is happening around you. Working with tools and machines is like driving a car. You are part of an environment that is always in flux. Check your surroundings at every opportunity.

Be thoughtful and helpful toward other shop users. Be sure the work you are doing doesn't endanger yourself or anyone else.

Caution other students if they are not following safe operating procedures.

Floor safety: The floor should be clear of scrap blocks and excessive litter. Keep projects, work benches and other equipment and materials you are using out of traffic aisles.

Immediately wipe up any liquids spilled on the floor.

Working Speed: Give yourself enough time to complete your work. Rushing can lead to accidents and seldom produces quality work.

Tools: Select the proper size and type of tool for your work. Never use a tool unless it is sharp and in good condition. Inform a Shop Attendant if tools are damaged, dull or in need of adjustment.

Tools shall be used exclusively for their designed purpose (i.e. screwdrivers are not pry-bars, chisels are not scrapers.)

Tools and materials should not be placed on machines while they are running. Machines should never be used as worktables.

Always keep sharp-edged and pointed tools turned down. Do not swing or raise your arms over your head while carrying tools. Do not carry sharp tools in the pockets 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, portable electric tools, or drill press.

Air Quality and Dust Collection

- In order to maintain the air quality in the shop and neighboring areas an extensive dust collection system is provided.
- NEVER allow sparks or other incendiary material to enter the dust collection system.
- Sawdust is a known carcinogen; collectively the shop staff is in the shop over 120 hrs/wk: please help to minimize our exposure to this and other toxic substances.
- The generation of harmful fumes outside of properly ventilated areas is against Federal law.
- Never use finishes adhesives, resins and similar products in the Workshop or in the Building!!

Materials Usage Guidelines

The task of providing Fabrication Lab users with a safe, efficient and cost effective work environment is a challenge. Certain materials, processes and/or practices have a detrimental effect on the Workshop's ability to do so. These Materials Use Guidelines are intended to minimize the potential of the Workshops' capacities from being overwhelmed by particular materials, processes or practices. Please consider these guidelines when developing assignments. Feel free to contact workshop management if you have any questions about these guidelines or other workshop related issues.

Obtain permission from a Shop Attendant before leaving any materials unattended in the shop.

Clearly mark any materials with name, date and contact information.

Store any materials neatly and out of the way of other shop users.

Unidentified materials may be disposed of at Shop Staff's discretion.



Sheet Stock

Sheet stock should be employed only in the thicknesses in which it is commercially available. The widespread practice of planing or thickness sanding of sheet materials will not be allowed.

Shaping of rectilinear objects into organic forms through sanding should be kept to a minimum. Such activities are the root cause of the majority of shop accidents and overwhelm our dust collection system. Additive processes rather than reductive processes should be explored when developing assignments involving organic forms.

We have no mechanism for the containment of dust generated by significant contouring of site models or other organic forms. Students conducting such modeling will only be allowed to do it outside the building.

Plaster/HydroCal

Unless it is absolutely dry, the manipulation of cast plaster/hydrocal elements in the workshop is not allowed. Dry plaster may be machined only with the permission of shop staff.

Toxic Materials

The employment of toxic materials is forbidden. Please review the Material Safety Data Sheet for any material before assigning its use.

Spraying

The Fabrication Lab currently has NO facilities for the use of substances that generate harmful vapors. Never use spray adhesive, spray paint, solvents or other volatile materials anywhere in the building or on the grounds.

Material Safety Data Sheets (MSDS)

MSDSs provide information about the health hazards that may be associated with manufactured products as well as recommendations for limiting exposures and treating potential exposures. The Fabrication Lab maintains a library of MSDSs for materials used in our facility.

Reclaimed or Recycled Wood:

Reclaimed / recycled wood may be used in the shop only after all nails, screws, and other metal fasteners have been removed.

Pressure Treated Lumber:

Pressure treated lumber may not be used in the shop due to its highly toxic nature.



MAPP FAB LAB

Portable Power Tool Safety

Wear appropriate personal protective equipment. (safety glasses, ear plugs, dust masks, etc.)

Never attempt to use a tool that you are unfamiliar with. Seek the assistance of a Shop Attendant if you have any questions about the safe operation of any tool.

Think through an operation before performing it. Know what you are going to do and what the machine will do in response.

Make all the necessary adjustments before turning a tool on.

Never remove or adjust a safety guard on any machine or tool without permission.

You must be wide-awake and alert. Never operate a power tool when you are tired. If you appear to be tired you will be asked to leave.

Allow the tool to reach its full operating speed before feeding it into your stock. Work the tool carefully and only as fast as the material will be cut easily.

Most cutting tools should work without the use of excessive force. If a tool does not cut cleanly and easily, it is probably dull or damaged. Please bring it to a Shop Attendant's attention.

If a tool is not working properly, shut off the power immediately and inform a Shop Attendant.

Do not allow your attention to be distracted while using a tool. Do not distract other shop users while they are using power tools.

When you're done using the shop, put away all tools, clean up your workspace and sign out.



MAPP FAB LAB

Stationary Power Tool Safety

Never operate a machine or power tool without the approval and/or instruction of a Shop Attendant.

Tell us what you want to do and we will suggest the safest, most efficient way to get it done.

Think through an operation before performing it. Know what you are going to do and what the machine will do in response.

Make all the necessary adjustments before turning on the machine. Adjustments on certain machines will require approval.

Never remove or adjust a safety guard on any machine or tool without permission.

Use approved push sticks, feather boards and safety devices.

Some operations require the use of a special jig or fixture.

You must be wide-awake and alert. Never operate a machine when you are tired or impaired. If you appear to be tired, you will be asked to leave.

Keep the machine tables and working surfaces clear of tools, stock and project materials. Also keep the floor free of scraps and excessive litter.

Allow the machine to reach its full operating speed before feeding in the work.

Feed the work carefully and only as fast as the machine will easily cut it.

Most cutting tools should work without the use of excessive force.

If a tool does not cut cleanly and easily, it is probably dull or damaged. Please bring it to the Shop Attendant's attention.

If a machine is not working properly, shut off the power immediately and inform a Shop Attendant.

When you are operating the machine, you are the only one to control it. If someone is helping you, be sure they understand what you are doing and what they will be doing.

Do not allow your attention to be distracted while operating a machine. Do not distract other shop users while they are operating equipment.

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.

When you're done using the shop, put away all tools, clean up your workspace and sign out.



BAND SAW



- 1 **Stock must sit flat on the table** or be securely clamped to something sitting flat on the table.
- 2 **Adjust the upper guide assembly so it is 1/2 inch above the work.**
- 3 **Allow the saw to reach full speed** before feeding the work.
- 4 Use appropriate fence and/or guide.
- 5 Feed you stock only as fast as the teeth will easily remove the wood.
- 6 Make turns carefully and do not cut radii so small that the blade is twisted. Whenever possible, plan saw cuts to avoid backing out of curves.
- 7 STOP the machine before backing out of a long curved cut.
- 8 Round stock should be mounted securely in a jig or hand screw.
- 9 **If a blade breaks:** step away from the saw, shut off the machine and wait for the machine to come to a complete stop. Have a Shop Technician install a new blade.
- 10 Turn off the machine as soon as you have finished your work. **Do not leave the machine until it has stopped running.**



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

BELT/DISC SANDER



- 1 Stock must sit flat** on the table or be securely clamped to something sitting flat on the table.
- 2 Be certain the belt or disk is correctly mounted.** The belt must track in the center of the drums and plate. **Do not operate if the abrasive paper is loose.**
- 3 Check the guards and table adjustments to see that they are in the correct position and securely locked in place.
- 4 Whenever possible, use the table, fence and other guides to control the position of the work.
- 5 Small and irregularly shaped pieces should be held in a hand clamp, special jig or fixture.
- 6 Sand only on the side of the disk sander that is moving down toward the table.
- 7 Move your work-piece as you sand so that it doesn't burn or clog the abrasive.
- 8 Always use a backing block or other technique when sanding thin pieces on the belt sander.
- 9 Do not use power sanders to form and shape parts if the operations could be better performed on other machines.
- 10 Sand only clean, new wood.**
- 11 Do not sand work that has excess glue or finish on the surface. These materials will load and foul the abrasive.



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

OSCILLATING SPINDLE SANDER



- 1 Select desired drum diameter and abrasive grit.
- 2 Remove drum retaining bolt by turning CLOCKWISE.
- 3 Confirm that there are washers on both ends of the sanding drum.
- 4 Insert throat plate with appropriate opening.
- 5 Install new drum/abrasive and tighten retaining bolt by turning COUNTERCLOCKWISE.
- 6 **Hold workpiece down firmly while pressing gently against rotating spindle.**



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

DRILL PRESS



- 1 Use the right bit and drill speed for the job.** Holes over 1/2 inch and in harder materials should be bored at the lower speeds. Check with the Shop Technician if you're unsure of proper speed.
- 2 UNLOCK** table before adjusting height.
- 3 Mount the bit securely** in the drill chuck.
- 4** Position the table and adjust the feed stroke so there is no possibility of the bit striking the table.
- 5** Use a backing board to protect the table and to drill cleaner holes.
- 6** Small or irregularly shaped pieces must be clamped to the table or held firmly by some means.
- 7** Feed the bit smoothly into the work.
- 8 When the hole is deep, withdraw it frequently to clear the shavings and cool the bit.**
- 9** Hold stock with vice or other fixture to prevent injury caused by spinning stock.
- 10** Use only an approved bit. Bits with feed screws or those that have excessive length generally should not be used in a drill press.



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

SCROLL SAW



- 1 De-tension blade before changing.**
- 2 Pass blade through hole drilled in stock for blind cuts.
- 3 Install blade in a vertical position with the teeth pointing down.**
- 4 Tighten blade clamping bolts firmly to prevent blade slippage.
- 5 Apply sufficient tension to blade AFTER clamping, by rotating the blade tensioning lever.
- 6 Maximum cutting thickness is 1", excessive thickness will cause the blade to break.
- 7 Rotate material to adjust track rather than pushing into the side of the blade; DO NOT push stock into the side of the blade.



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

ROUTER TABLE



- 1 Have a Shop Technician check your set-up before using machine.**
- 2 Select router bit and install in appropriate router collet. DO NOT "bottom out" the router bit: install bit with >90% of shaft in collet.
- 3 Cut only new stock that is straight and true, and free of splits, checks and knots.**
- 4 Consider the direction of cut. Stock is almost always moved from right to left.
- 5 Use caution to avoid "self-feeding" cuts. Such cuts can rapidly throw stock from the operator.
- 6 Make numerous shallow passes** rather than one deep pass; excessive depth of cut is dangerous, and damages tooling and equipment.
- 7 Use the fence for all straight line cuts. Be certain it is properly adjusted and securely locked in place.
- 8 Use guards, feather boards and hold-down devices** whenever possible.
- 9 Use appropriately sized stock. Small profiles should be milled out of lengths of stock. A jig or fixture may be necessary for milling small pieces.
- 10** Make a trial cut on an extra piece of stock that is the same thickness as your project work.



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

PLANER



- 1 **Get approval of Shop Technician before operating.**
- 2 Allow machine to feed stock.
- 3 NEVER push or pull material through machine.
- 4 If stock binds or stops, adjust depth to allow completion of the cutting pass.
- 5 Shut off the machine if stock fails to feed all the way through.
- 6 **NEVER look or reach into the mouth of the machine while it's running.**
- 7 Plane only with the grain of the wood.
- 8 The maximum depth of cut per pass should not exceed 1/16th inch.
- 9 The stock MUST be at least 12 inches long.
- 10 Keep hands away from the cutterhead.



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

JOINTER



- 1 Get a Shop Technician's approval before operating the jointer.**
- 2 NEVER run used wood through this machine; only NEW, SOLID wood can be used.**
- 3 Use push sticks or push blocks to handle the stock.
- 4 Inspect stock carefully for staples, nails etc. Any foreign matter will damage the knives.
- 5 Make adjustments for depth of cut and position of fence before turning on the machine.
- 6 Recommended depth of cut for jointing an edge is 1/8inch; for a flat surface, 1/16 inch.
- 7 Stock must be at least 12 inches long. Stock to be surfaced must be at least 3/8 inch thick.
- 8 Feed the work so the knives will cut with the grain.
- 9 NEVER attempt to joint end grain.**
- 10 Use only new stock that is free of knots, splits and checks.
- 11 Keep your hands away from the cutterhead even though the guard is in position. Maintain at least a 4 inch margin of safety.



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.

MITER SAW



- 1 Hold stock firmly against back fence of saw.
- 2 **Keep hands clear of cutting area. Fingers should be at least 6" from blade.**
- 3 Set desired cutting angles and lock adjustment mechanism.
- 4 DO NOT cut any workpiece that is not firmly anchored against back fence.
- 5 **Use appropriately sized stock.**
- 6 NEVER interfere with the operation of retractable blade guard.
- 7 NEVER force the tool. If the saw doesn't cut properly, ask a Shop Technician for help.



Consider the size of your stock/work when picking a machine. Use small machines for small cuts and large machines for large cuts.



MAPP FAB LAB

Policies and Procedures at a Glance

Shop certification class required for use of shop and its tools. Individuals with certification must present their UID and certification card to the attendant on duty.

Proper clothing, shoes, ear and eye protection are to be used at all times.

All accidents, whether they cause injury or not, are to be reported to the workshop attendant.

Every patron is responsible for cleaning the shop on a regular basis.

Storage of materials and projects – the shop is not a storage facility. Patrons must store their materials elsewhere.

The workshop is for the fabrication of model components and not assembly. Model assembly tables are provided in the Great Space and throughout studio.

Tools – Power tools may be used in the shop only. The use of power tools in the Great Space and/or studio is prohibited. Hand tools may be checked out per Fab Lab procedures. Personal power tools are prohibited in the Architecture Building or on the University's grounds.

Materials – The FAB LAB is a wood only facility. Other materials must be cleared with the Workshop Supervisor prior to use in the shop.

Paints and Finishes – Due to the chemical nature and different toxicity levels all paints, stains, glues, finishes, etc., must be preapproved by the shop supervisor before being used. If it is a material the shop is unfamiliar with a Hazcom safety report will have to be provided before use can be allowed and even then if the material is deemed too dangerous it will not be allowed in the building. **Absolutely no Aerosol paints, glues or finishes. This is expressly prohibited in the Architecture building or the surrounding grounds.**

Shop Rules

1. Shop supervisors and monitors may prohibit shop access or machinery use for any reason.
2. No power machinery may be used without approval of the shop manager and completion of safety training.
3. Never work alone w/o a shop supervisor present.
4. Always wear safety glasses.
5. Always wear protective hearing gear.
6. No loose clothing may be worn in the shop-including ties, scarves and loose sleeves.
7. No open toed shoes or shorts are allowed.
8. Remove all jewelry before beginning work-includes rings, necklaces, bracelets and watches.
9. Long hair must be contained and pulled back tightly in a bun. Long beards must also be contained.
10. If you do not understand how a machine works than ask the shop supervisor for help, that's what they are here for.
11. Do not use damaged equipment, or equipment that does not appear to be operating normally. Report conditions to supervisor or monitor.
12. All machines with guards and shields must have them secured in place prior to operating equipment.
13. Always check wood for screws, nails, staples or other embedded metal objects.
14. Clear dust and debris before and after machine use.
15. Keep exits and access to emergency equipment clear at all times
16. Never talk to or touch someone operating a machine.
17. No cell phone usage in the shop.
18. Don't operate equipment or use tools if you are tired. Take frequent breaks to stay alert.
19. Portable music players may not be used; store them at your desk prior to working in the shop.
20. No food or drinks are allowed in the shop.
21. Immediately report all problems or concerns to the shop supervisor on duty.
22. Use equipment for its intended use. If in doubt ask for help.
23. Always keep your eyes on your fingers, ears tuned to the sound of the machine and nose tuned to the smell of smoke.
24. Make sure machines are in the "off" position and motion has stopped before leaving them or putting them down.
25. If you have made an adjustment to a machine return it to its normal position after you are done.
26. Respect the rights and property of others students
27. Horseplay, running, yelling and/or fighting are absolutely forbidden in the shop.
28. Headphones are prohibited in the shop.