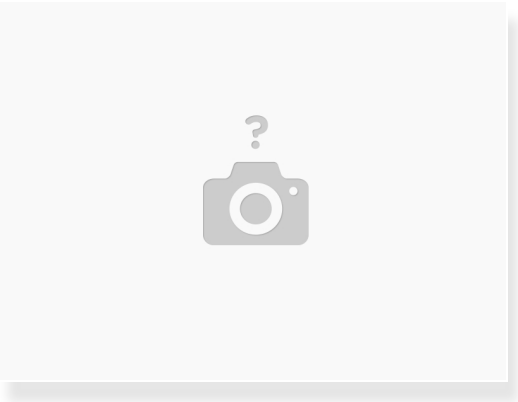
IFL Training Shift 01: Introduction to the Space

Introduction to the IFL

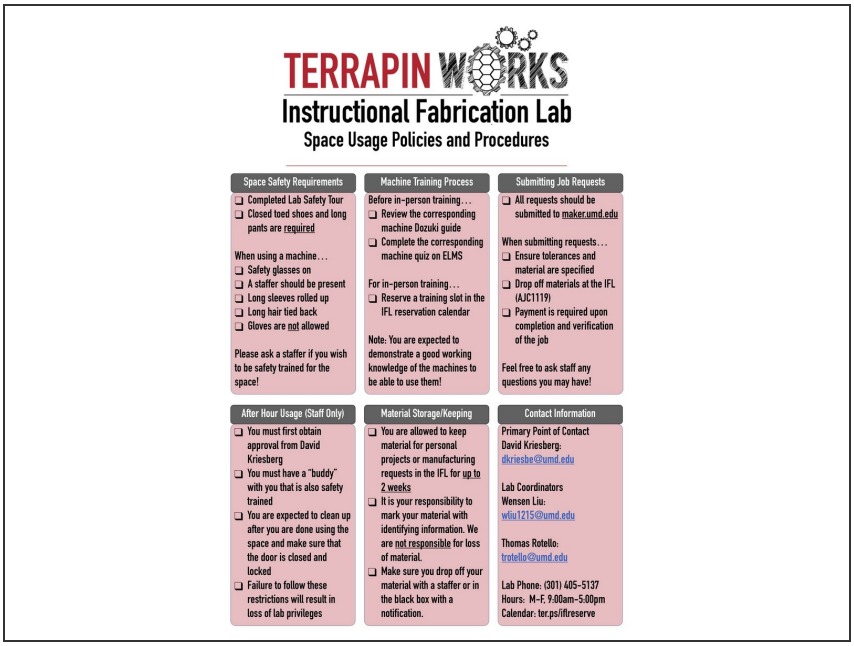
Written By: David Paul Farace

Step 1 — IFL Daily Responsibilities



- Make sure to complete the LM Daily Responsibilities upon entering/using/leaving the space.
- IFL LM Daily Responsibilities

Step 2 — Space Use



TERRAPIN WORKS
Instructional Fabrication Lab
Space Usage Policies and Procedures

Space Safety Requirements

- ❑ Completed Lab Safety Tour
- ❑ Closed toed shoes and long pants are required

When using a machine…

- ❑ Safety glasses on
- ❑ A staffer should be present
- ❑ Long sleeves rolled up
- ❑ Long hair tied back
- ❑ Gloves are not allowed

Please ask a staffer if you wish to be safety trained for the space!

Machine Training Process

Before in-person training…

- ❑ Review the corresponding machine Dozuki guide
- ❑ Complete the corresponding machine quiz on ELMS

For in-person training…

- ❑ Reserve a training slot in the IFL reservation calendar

Note: You are expected to demonstrate a good working knowledge of the machines to be able to use them!

Submitting Job Requests

- ❑ All requests should be submitted to maker.umd.edu

When submitting requests…

- ❑ Ensure tolerances and material are specified
- ❑ Drop off materials at the IFL (AJC1119)
- ❑ Payment is required upon completion and verification of the job

Feel free to ask staff any questions you may have!

After Hour Usage (Staff Only)

- ❑ You must first obtain approval from David Kriesberg
- ❑ You must have a "buddy" with you that is also safety trained
- ❑ You are expected to clean up after you are done using the space and make sure that the door is closed and locked
- ❑ Failure to follow these restrictions will result in loss of lab privileges

Material Storage/Keeping

- ❑ You are allowed to keep material for personal projects or manufacturing requests in the IFL for up to 2 weeks
- ❑ It is your responsibility to mark your material with identifying information. We are not responsible for loss of material.
- ❑ Make sure you drop off your material with a staffer or in the black box with a notification.

Contact Information

Primary Point of Contact
David Kriesberg:
dkriesbe@umd.edu

Lab Coordinators
Wensen Liu:
wliu1215@umd.edu

Thomas Rotello:
trotello@umd.edu

Lab Phone: (301) 405-5137
Hours: M–F, 9:00am–5:00pm
Calendar: ter.ps/iftreserve

- Welcome to the IFL!
- Before we begin the training, please review the space use policy located next to the door.

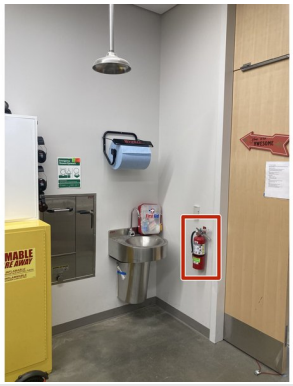
Step 3 — First Aid Kits

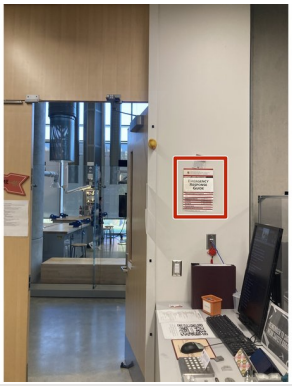
- In the IFL we have two first aid its.
  - The first kit is located just inside the main door of the IFL to the right
  - The second kit is located on the wire rack on the back in the back of the lab

Step 4 — Emergency Exits

- In an emergency, leave out the main entrance of the lab and head either right or left, following the illuminated exit signs, and head out of the building.

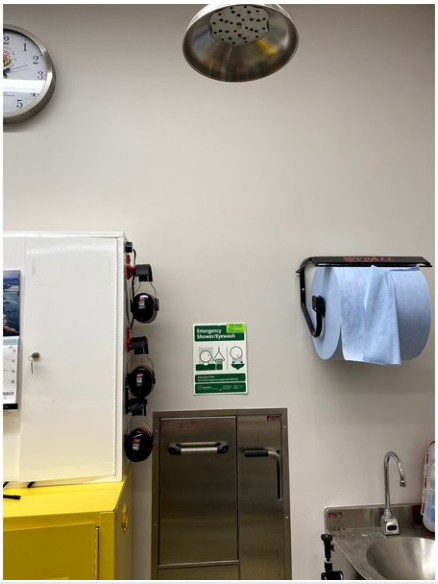
Step 5 — Fire extinguisher





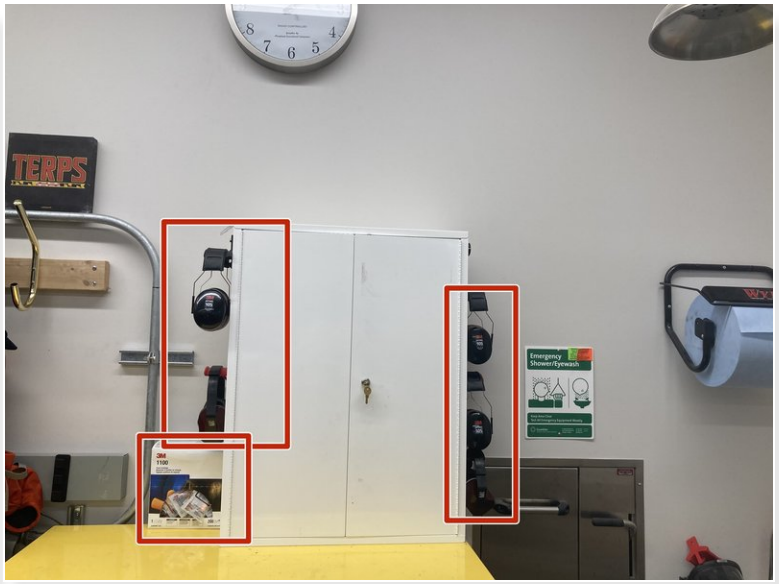
- There is a fire extinguisher right inside the main entrance of the lab to the right.
  - It is right next to the first aid kit.
- If there is an emergency in the lab, please use the emergency response guide (if you are able to safely) to report any dangers, fires, chemcical spills, etc.

Step 6 — Eye wash and shower station



- Before entering the lab, you can see that there is an eyewash/shower station directly to the right of the entrance to the lab.
- Upon entering the lab, you will, again, find an eyewash/shower station.
- When activated, the shower will dump 10 gallons of water to decontaminate the user.

Step 7 — Safety

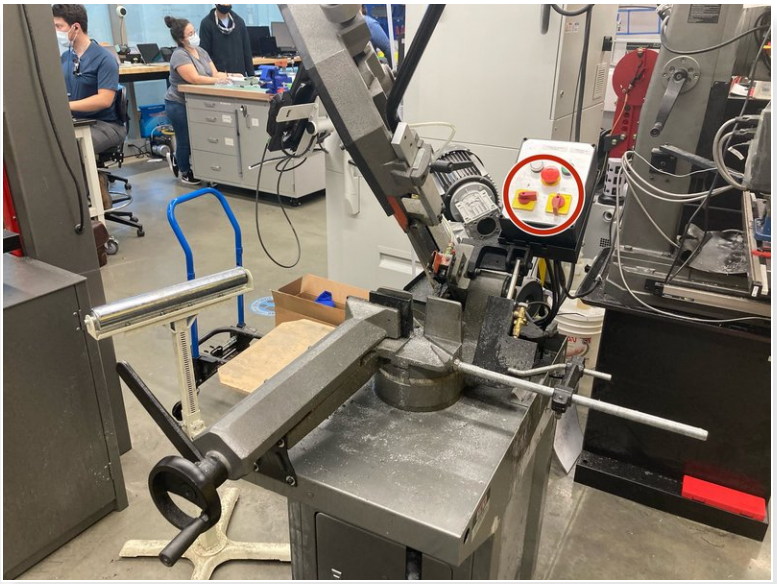


- Whenever you are using a machine, we require you to be wearing safety glasses.
- The dress code for the lab is long pants and closed toed shoes. Make sure any loose clothing is secured and hair is tied back.
- When machining, it is best to take off any bracelets or jewelry and remove any long sleeves.
- Never wear gloves when machining.
- These safety glasses can be foung in the cabinet directly left of the eye wash/shower station in the lab
- If you would like to use hearing protection, this can be found on the safety glasses cabinet,

Step 8 — Machine Safety Tour

- Now that we will look at each machine in the lab.
- Each machine has a safety training checklist located in the brown binder by the front door. Review this before training or giving training on each machine.
- All emergency stop buttons (E-Stops) will be circled in red for the following step.

Step 9 — Machine Safety Tour - Vertical/Horizontal Bandsaw



- The first machine is the Vertical Bandsaw.
  - This machine is for cutting along a thin plate of metal, either in a straight line or a curve.
  - The biggest potential danger is getting fingers to close to the blade.
- The second machine is the Horizontal Bandsaw.
  - This machine is for cutting long pieces of metal to a specific length.
  - The biggest potential denger is getting your finger/hair to close to the blade.
- When cutting with any reciprocating blade you must have hair tied back, short sleeves, and you may **not** wear gloves.
- The Horizontal Bandsaw has an emergency stop, while the vertical bandsaw only has an off button.

Step 10 — Machine Safety Tour - Drill Mill

- The drill mill is a useful machine when you need to make two faces perpendicular to each other, cut a pocket into metal, or simply drill a hole through metal.
- The biggest potential danger is getting hit in the eye with a chip from the machine or getting your hand caught under a bit.
- This machine has an emergency stop for safety reasons.

Step 11 — Machine Safety Tour - Belt Sander

- The Belt Sander is a great machine for slowly taking off any burrs or excess metal on something that was cut using another machine.
- The biggest safety concerns would be keeping your fingers away from the belt as it is rotating and keeping hair and jewelry away from it, just like any other machine.
- Parts will heat up very quickly on this machine so go slowly when removing lots of material.
- When using the Sander/Grinder, be sure to turn the vacuum cleaner on!

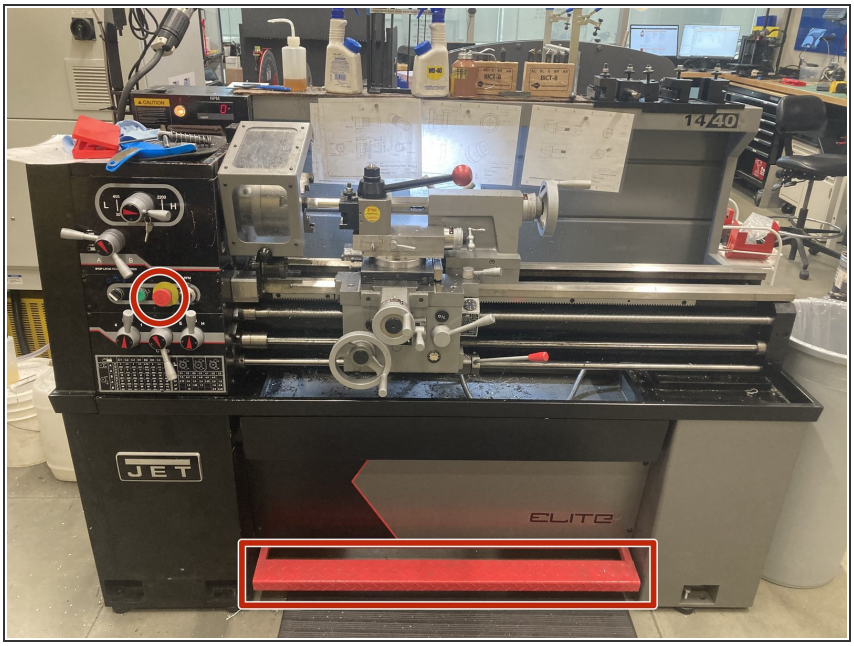
Step 12 — Machine Safety tour - Drill Press

- The Drill Press is a very common, standard machine for cutting holes perpendicular to metals.
- There are two drill presses: one for drilling aluminum and one for drilling steel. Each is set to different speeds for each material.
- The biggest safety concern is not holding your hand to close to the cutting bit of the drill press.

Step 13 — Machine Safety Tour - Surface Grinder

- The Surface Grinder is very useful for creating a flat level surface on ferrous metals.
- The biggest safety concerns would be keeping your hands away from the grinding disk.

Step 14 — Machine Safety Tour - Lathe



- The Lathe is a very powerful and useful machine for creating patterns or angles on metal bars or pipes.
- The Lathe comes with a lot of safety concerns: keeping hands and arms away from the rotating metal, being careful around the sharp bits, making sure no bit breaks off and hits you...
- This machine has an emergency stop button and a red emergency foot brake near the floor .

Step 15 — Machine Safety Tour - Waterjet

- The Waterjet is probably our most used machine in the space.
- The waterjet does not have any big safety concerns, the only concern would be when changing the slats on the bed be careful to not cut yourself.
- The waterjet has its own software and computer which require more training than most other machines.

Step 16 — Machine Safety Tour - Iron Worker

- The Iron Worker is a great machine for cutting, shearing, punching, or notching large amounts of metals.
- The Iron Worker has a lot of safeties built-in but do NOT put your fingers near anything red when the machine is turned on!
- The red box in the image shows the location of the emergency stop button.

Step 17 — Machine Safety Tour - Datron Neo

- The Datron Neo is our CNC mill and it is very precise and used for more detailed works than normal CNC mills.
- While cutting, the Datron is compeltely sealed off from its operator so the only real safety concern is not cutting yourself on a tool when changing tools out of the machine.
- The red boxes in the image show the emergency stop buttons for the machine.

Step 18 — Machine Safety Tour - Hand Tools

- In the IFL, we have a wide range of hand tools.
- Each tool is unique in what it requires to operate safely, so please ask us before using a tool for the first time.

Step 19 — IFL Processes and Information

- The IFL is a lab that is accessible to students who need to cut a piece of metal quickly, drill a hole, or do other simple tasks that they may need to do in order to complete a project or task.
- Our papercut system is what handles all 3D printing, Waterjet, and CNC jobs. It can be found here.
- If a student wishes to use a machine though, they must be safety trained in the lab and they must be supervised (lightly) while doing their work.
- Students must have advanced training before using the Datron Neo, the Waterjet, or the Welding Station.