

Mechanical Engineering Machine Shop

Safety & Procedures

Meet the Machinist

- Adam Krichbaum - Shop Supervisor



- John Wheeler – Assistant Supervisor



Who Has Access/Use ?

- Mechanical Engineering Students
- ME officially approved student organization
- ME Class projects or Labs
- ME Student Personal Projects
- ME Research Projects

Safety/Procedure Quiz

- You must pass the Safety/Procedure Quiz before you can enter the ME Student Machine Shop G039 and material room G042
 - Link: <https://engineering.purdue.edu/MECL/projectshop/>
 - A video about the safety and procedures is available for viewing (4 minutes)
 - With the video and the PowerPoint you should have enough information for successful completion of the quiz

Machine Shop - G039



General Rules

- To enter the MS you must swipe your PUID
 - Pass the Safety/Procedure Quiz
 - Every student must swipe to enter
 - Even as group entering the Shop at the same time
- Consult the Student Staff or one of the machinist (Adam or John) upon entering
- Have a detailed drawing for each part of your project
- After your machine project is complete clean up machine and surrounding floor (note: all scraps go in the blue barrel)
 - Clean the machine, tools and floor around the space you are using and if possible cleaner than you found it
 - Do not use your hand to swipe off machines of metal chips
 - Press the E-Stop
 - Put all tooling away




General Safety Rules

- Safety and Procedure Quiz online required before Machine Shop entry G039 and G042
- Approved Safety Glass Required and always after you cross the yellow line
- Shoes that cover the entire foot
 - NO open toe or High-heels
- NO loose clothing
 - Sleeves rolled up to elbow
 - No draw string dangling
- Remove all watches and jewelry while working on machines (put in safe a place)
- Long hair pulled back and secured
- Backpacks and personal belongings to be kept outside the door of shop in hallway
- Hearing protection needed if asked by shop staff to wear or if you feel necessary
- Shorts are permitted but long pants encouraged
- If you have had anesthetics or strong pain medication within the past 8 hours you may not use the shop tools or machines



General Rules

- If you have an injury no matter how small notify the shop staff and seek first-aid help. There is an eye wash near the sink
- If you witness strange behavior of others or unusual machines noises from another persons machine operation please notify the shop staff
- If you hear unusual noises from the machine you are operating 1st hit the E-Stop  and notify the shop staff
- If the an emergency alarms sounds please turn off your machine, look to the shop staff for instruction and check your phone for emergency information
- Do not remove safety guard or shield from machines

General Rules

- If you break a tool notify the shop staff
- If you are using non-standard materials you will need to notify the shop staff, bring the MSDS data sheet and receive permission from shop staff to machine the non-standard material
- Compressed air can be dangerous and must be used properly. If you use compressed air to clean your machine area please be mindful of others around you and keep the mess from spreading all around the area you are cleaning
- Some materials that require excessive tooling consumption will result in the student providing own tooling

Safety and Professional Behavior

- The first responsibility is personal safety
- The second responsibility is the protection of others
- The third responsibility is the protection of University property
- Always have respect for the Staff and University Property

Machine Shop Rule Violations

- **Minor Offense:** Verbal warning
- **Major Offense:**
 - User will be unable to use the machine shop for one full day and you schedule a meeting with Dr. Jones to get reinstated access.
 - Any offense creating a dangerous situation: user will be unable to use the Machine Shop for a minimum one week and you must schedule a meeting with Dr. Jones to get reinstated access.
- All offences will be documented and habitual offences will move to Third Offence Status
- A ban from Machine Shop is possible!

Machine Overview

- Lathe
 - Facing
 - Turning
 - Drilling
 - Boring
 - Basic Lathe video

<https://engineering.purdue.edu/MECL/projectshop/>



Machine Overview

- Mill- Vertical
 - Face Milling
 - Drilling
 - Boring
 - Basic Mill video

<https://engineering.purdue.edu/MECL/projectshop/>



Machine Overview

- Drop Saw

- Video

<https://engineering.purdue.edu/MECL/projectshop/>

- Vertical Band Saw

- Video

<https://engineering.purdue.edu/MECL/projectshop/>

Materials and Other Resources

- We have some used materials for your use located in G042 across the hall from the Machine Shop
- Safety Glasses required



- Inside the Machine Shop G039 there is a variety of fasteners for your use that are leftovers and salvage from past projects.

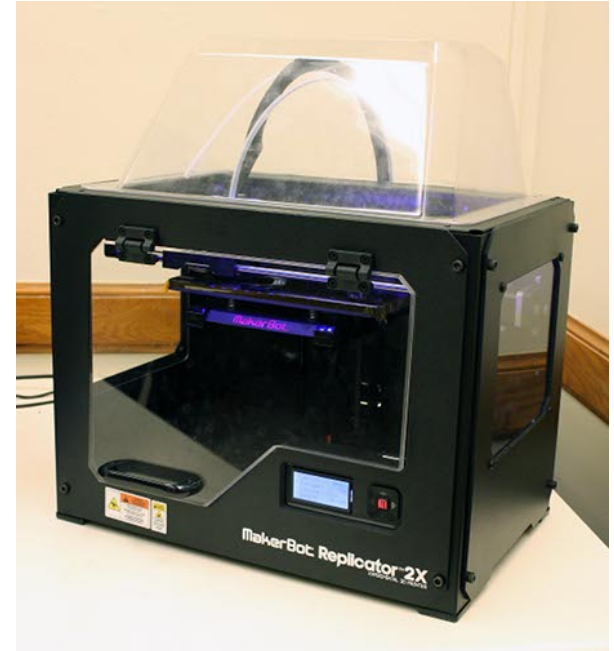


Shop Drawings

- Fabrication will not start until all complete project drawings have been approved by Shop Personnel.
 - Individual part drawings
 - Material needed for each part
 - Complete dimensions
 - Quantity of each part
 - Purchased or fabrication part
 - Exploded assembly drawings

3D Print LAB

- ME Room 1020 with PU-ID swipe access
- To gain access to the facility, students must review the policies/procedures for the lab, read and understand the getting started manuals for the machines and software, and pass a final quiz.
- SD cards, SD card reader and ABS Filament available for check out from room G027 M-F for class project only
- Research must provide their own filament and it must be ABS Maker-Bot Brand only
- <https://engineering.purdue.edu/MECL/3dprint/>



Conclusion

- Make sure you ask questions to the student workers and machinist. ***When in doubt ASK***
- Learn and use the machines as much as you can to become comfortable & safe
- These machines are in the English System of measurement.
- Have the MS Staff review your drawing for feasibility of fabrication or manufacturing.
- **ALWAYS HAVE RESPECT FOR THE MACHINE & STAFF**
- Machines are dangerous if not used properly and or their intended purpose.
- Enjoy the experience in the ME Machine Shop
- Set a realistic manufacturing schedule
- BE SAFE

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