

Makerspace at the ECenter User Agreement and Safety Policy

Version 2.0
August 24, 2018

This Agreement is with respect to all users of the Makerspace at the ECenter. The Makerspace at the ECenter is open to all UNH students, faculty, and recent alumni. Users of the space consist of all parties who wish to utilize the equipment available within the space. Users of the space are divided into two categories: volunteer mentors, and non-members. This document elaborates first on the requirements for all users of the space, and then specifically on each user type.

In consideration of the foregoing premises, all users must acknowledge that they have fully read and understood the **Makerspace at the ECenter User Agreement and Safety Policy** before utilizing any available tools or equipment.

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1 General User Requirements

The Makerspace at the ECenter is a place for people to learn and gain experience with the tools available. This does not mean that users are free to do as they wish with the equipment while using the space. There are use cases for the space which are prohibited. While the Makerspace at the ECenter does not own the projects developed using the machines in the space, it has the right to control the types of projects the equipment is used to develop. The projects developed in the space are inherently associated with the image of the space, and anything that is deemed harmful this image or the community of the space will be prohibited. Generally there is no need to worry as most projects are well within these guidelines. The types of projects prohibited from the space are defined in the code of conduct.

1.1 Code of Conduct

As a user of the space, you must agree to the following code of conduct:

1. **You are responsible for following policies and safety guidelines.** By using the makerspace you agree to complete all training and paperwork necessary to use the space and equipment. You agree to follow the rules and policies outlined in this document. You are responsible for following the safety guidelines of the Makerspace - failure to follow rules, policies, and safety guidelines may result in permanent expulsion from the space.
2. **Don't make things for nefarious purposes.** You cannot use the Makerspace to make objects which are used expressly to harm others or to perpetuate crime. This includes 3D printed guns, knives, or other weapons (including non-working replicas; miniatures which could not be mistaken for the real thing are generally okay). If you are unsure whether or not your creation falls under this category, refer to a mentor or the board of directors.
3. **No copyright, patent, or trademark infringement allowed.** You cannot use the space to make, replicate, or alter objects, whether physical or digital, that violates copyright, patent, or trademark law. 3D models, and other digital files available through open source solutions (i.e. Thingiverse) are absolutely fine to use. As stated previously, if you are unsure whether or not your creation is a violation of copyright, trademark, or patent law ask a mentor or operations manager.
4. **Do not use the makerspace as a production facility.** The makerspace is intended for use by students or faculty for personal, entrepreneurial (prototyping), or course-related projects only. We do not permit using the space for the continuous resale of items made in the space. The makerspace is not a factory and the mentors are not for hire as such.
5. **Respect projects that are not your own.** People can put lots of time into their projects and creations, and they expect that it will remain safe in the space. There is project storage available for those who wish to store long-term projects. Do not attempt to stop equipment that is running, remove objects from equipment if they are not yours. Do not alter files stored on the computer that are not yours, and do not take or alter creations that do not belong to you.
6. **Clean up after yourself.** It is your responsibility as a user of the space that you must clean up any messes that you make. The mentors are not there to clean up after your mess. The space has a shop vac, brooms, and dust pans available for you to clean up any mess that you make. Remove any unused materials from the equipment after using it, and place them in the scrap bin or the trash receptacle.
7. **Do not be afraid to ask others for help!** If you are not sure how to use something, it is always better to ask than to risk the chance of breaking equipment or hurting yourself.

1.2 Project Storage

Project storage is available in the project storage cabinet. There are a number of boxes available for you to put your project in. Projects must be placed in its own box to prevent loose parts from getting lost, and to make it easier for labeling. Each semester will have a color of tape associated with it. At the end of each semester the next color of tape will be announced to those who have stored projects. At the beginning of the next semester, any project that does not have the updated color of tape will be removed from the project storage cabinet. When labeling a project box with a new piece of tape, please put your name on the piece of tape to differentiate between labels.

1.3 Machine Training

As a general user you are allowed to use the equipment for whatever purpose that fits the guidelines of the space. To use any of the equipment you must have been previously trained by a mentor to use it. All use of the equipment must be under the supervision of a mentor. Following the code of conduct, if you do not know how to use a machine or fear that doing something may risk damaging it - refer to a mentor or an operations manager for help.

1.4 Intellectual Property

Part of the original purpose for founding the Makerspace at the ECenter was its separation from UNH's intellectual property policies for their machine shops. It is hereby granted that any product or creation developed in the Makerspace at the ECenter is owned solely by the user who created it. Users do not own the rights to the material or the equipment in the space, but they may use these to produce a creation in which they own the rights to. Note that copyright infringement is explicitly outside of the guidelines of the space, and any creation of an object that violates the code of conduct will result in confiscation of the object and expulsion from the space.

2 Volunteer Mentor

Volunteer mentors are users that have received thorough training on the machines, and are capable of instructing others on how to use them. While being a mentor is a volunteer position, they must adhere to a set of policies that ensure the space remains safe and usable for its intended purposes.

2.1 Mentor Responsibilities

As a mentor you must understand, follow, and enforce the following policies:

- **A mentor must have completed training for all of the machines with an exception for the CNC machine.** This means that without assistance a mentor is capable of using each machine and has the ability to solve problems with the equipment that occur regularly (i.e. 3D printer not connecting to the computer or laser cutter gets jammed). Completion of training is approved by an operations manager.
- **A mentor must enforce all shop rules detailed by this document.** This means the mentor is responsible for handling and reporting violations of the guidelines specified by this document. All violations must be reported to the operations managers of the space.
- **Enforce access rules.** Mentors are allowed to use the space at any point in time, but they must be present in the space when using it. By no means are mentors allowed to give friends, family, etc. access to the space if they are not accompanied by the mentor. Anyone that is not authorized to use the space outside of open hours should not be there unless there is a mentor immediately available nearby.

- **Do not compromise security measures.** All mentors need to ensure security measures are not altered both when the space is and isn't in use. Do not give the key code away to anyone, and do not leave the door unlocked if you leave the space. There is a security camera in the space as a measure of liability in the case that the space is robbed, or someone intentionally violates the guidelines of this document (breaks a machine on purpose, destroys someone's project, sets the place on fire, etc.). The board is only allowed to use the security camera for this purpose, and is explicitly not allowed to spy on users for other reasons.
- **Responsibility to maintain a clean space.** Any mess that is discovered in the space will be attributed to the mentors that were in the space most recently. Mentors that repeatedly leave the space in a sufficiently unclean state must be reported to the board. When leaving the space with no mentor to replace them, the mentor must ensure that all machines are turned off, with the exception of the 3D printers which are allowed to run when no one is in the space.
- **Dedication to open hours.** During the week the space offers open hours for people to visit the space and receive training on or use the machines. It is the duty of mentors to show up on time for these hours, as failure to do so reduces confidence in the availability of the space to those who wish to use it. Any changes to a mentors hours must be reported two hours ahead of time. Consistent failure to show up for your hours will result in removal of mentor status and privileges.
- **Be available for users of the space.** It is also the duty of mentors to maintain the space as a place of learning and collaboration. Mentors must actively engage with the users of the space and always be available to help if needed. Mentors should know what the users of the space are working on, and ensure that safety is being maintained at all times. While working in the space during open hours is not an issue, your attention should be devoted to running the space while visitors are in the space.
- **Never do work for the user.** It is the goal of the space to be a community-oriented educational institute. Unless it is specifically allowed by the board, mentors are not there to make things for users (can be inferred by the word *mentor*). This means any user cannot ask a mentor to make something for them, the mentor must teach the user how to use the machines so they can make it themselves.
- **Materials and tool requests.** If the space is running low on a certain material, a certain tool is broken or worn down, or the mentor believes a new tool or material would be beneficial to the space the mentor should make an order request. The order_request slack channel is available to all mentors, where the request will be reviewed by the operations committee and the board chair.

2.2 Becoming a Mentor

If the following conditions are met, mentor status can be given to the applicable user:

- The user has used the space for a sufficiently long amount of time to understand the community and processes of the space. Someone who has just learned about the space cannot immediately become a mentor. Background experience in using the machines available in the space, and other makerspace experience will be taken into account.
- The user has been trained by a mentor on all of the machines (outside of the CNC machine). The user is completely capable of teaching someone how to use each of the machines and can debug issues commonly experienced with them. The user must be able to prove to an operations manager that they know how to use the machines before they can receive mentor status.

- The user must 'shadow' another mentor at least twice. During this time the mentor being shadowed should interact with visitors to the space and attempt to teach them how to use the machines. The mentor must report if the user is capable of teaching others how to use the machine before they can receive mentor status.
- Mentors must be available at least two hours a week to run open hours for the space. These hours are publicly posted using Google Calendar.
- Mentors must join the team chat using Slack to send and receive communication about space operations (<https://unhmakerspace.slack.com>).
- **Approval from a member of the operations committee or the board chair must be attained before a user can become a mentor.** The chair and the operations committee members have the final decision in who can become a mentor.

3 Equipment Rules and Best Practices

The following sections describe the rules and best practices for most of the equipment available in the space. All users of the space must adhere to these rules and guidelines.

3.1 3D Printers

One Ultimaker 2+ and three Printbot Simple Metals are available for use for 3D printing. You must get the sliced model approved by the mentor before starting the print. Print models which use excessive materials may not be approved if the mentor believes excessive material will be used. The space cannot support its users if one person utilizes a significant portion of the free materials available. One exception is if the user supplies their own material or reimburses the space. Any reimbursements must be given directly to Heather MacNeill (of the ECenter) and not the mentor in charge of the space.

Long prints are permitted, and are recommended to be started towards the end of the open hours to allow shorter prints to be made by other users in the meantime. The user can then return the next set of open hours to retrieve the completed print.

3.2 Laser Cutter

The laser can be used to engrave or cut out various materials. Engraving will burn off the top surface of the material, leaving a mark behind. Cutting will penetrate through the entire thickness of the material. The maximum thickness in most cases is 1/4 inch. Do not put plastics other than acrylic into the machine. Burning plastics can be very harmful to the machine and your health.

3.3 CNC Machine

Due to the high risk of damage of the machine, **the Datron NEO is to be used by CNC trained mentors only**. This training is extended beyond the typical mentor training. If you have a part or product you wish to be machined, you must prove that the model in question is close to the "final" version. Ideally, the product will be prototyped using the 3D printers which are easier and more economical to iterate your design with. Assuming you have gone through the proper steps to prototype and you are ready to machine a part, you must consult with a CNC trained mentor about the CAD/CAM process.

The CAM process is essential in machining, it involves creating the code to which the CNC machine will follow. This is a technical process which takes time to do right, and is typically the responsibility of the CNC trained mentor. Once the proper toolpaths have been created, the machining process can be completed at the machine by the mentor. You may accompany the mentor during this

process but they must be the operator of the controls. **The CNC machine must be cleaned after each use**, this includes any shavings or chips that accumulate on the machining bed or around the exterior of the machine.

3.3.1 Machine-ability

As with the other machines, when making a design, the part must be conducive to machining before it will be approved. When designing a part, think of how the machine will work. Certain features are only possible to be machined on more advanced machines than our NEO. We recommend that you learn about the CNC machining process in general if you are unfamiliar. This will help you be aware of constraints and considerations when designing. Feel free to ask a CNC trained mentor for advice.

3.4 Tool Cabinet

Various tools are available for use, you can find them in labeled drawers. The top cabinet is for use by CNC trained mentors only. **You must return all tools back to the tool's designated storage location before leaving the space.** Any mess made through use of the tool must be cleaned up immediately after using it.

3.5 Noise

The space is adjacent to a number of offices and quiet workspaces so noise should be kept to a respectable level. Some of the tools can be very loud, alongside music and loud voices in the space which can be a disturbance to the surrounding area. It is the responsibility of every user to ensure that the door is closed when the noise in the space is above normal levels. Music is allowed in the space, but **only if it is okay with everyone currently in the space.** This is a community space, so if a member of the space would prefer to not have music playing then it must be turned off.

4 Safety

Makerspace users will comply to standard rules (OSHA, UNH EHS, etc.) for governing a machine shop. It is the responsibility of the community to ensure that the following components of safety are never at risk. User of the Makerspace is not a right - it is a privilege. Failure to follow the safety policy will result in corrective measures ranging from a verbal warning to being removed/banned from the Makerspace at the ECenter. Initial corrective measures are at the discretion of the on-duty mentor, and final corrective measures are at the discretion of the board. Any safety violation must be reported to an operations manager. Appeals may also be made to operations managers by the offenders. Repeated violations or egregiously unsafe actions will result in a permanent ban.

4.1 Personal Safety

All users must adhere to the personal safety policies defined below.

- Avoid working alone. If you are not a mentor or manager, a mentor must be present at all times.
- You must always check in with a Mentor upon arrival in the shop outside of open hours and seek permission to use the facility. It is assumed during open hours that you are allowed to enter the space.
- **Wear the appropriate attire:** Appropriate Personal Protective Equipment (PPE) for specific operations or equipment (e.g. eye protection). Users must also ensure that others around them are suitably outfitted before starting work that could put others at risk (e.g. are people in close proximity wearing safety glasses?).

- **Do not rush**, and do not use machinery when you are too tired to do so. Stop, think, and check before you use a piece of equipment.
- **Never** use hands, fingers, or compressed air to remove chips and shavings. Use brushes, hooks, vacuums, and other tools available in the space. Machines must be in a state where there are no exposed moving parts that pose a safety risk prior to user attempts to perform chip removal.

4.2 Eyewash Station

There is an eyewash station available in the space for anyone who gets chemicals or other contaminants in their eyes that mandates immediate attention. All mentors are required to understand how the eyewash station works, and what to do when someone gets dangerous contaminants in their eyes. Users in the space should always wear eye protection when dealing with machines that could necessitate use of the eyewash station.

4.3 Equipment

All users must adhere to the following rules for ensuring safety when using equipment:

- If you've broken something, it's okay as long as you stop using it and tell the space managers. Things break and it's not a big deal, just make sure to tell an operations manager when and how it happens. However, intentionally breaking a tool, or breaking it from hazardous usage will result in expulsion from the space. If something breaks and is not reported, we will eventually find out who broke it.
- Do not use damaged tools or equipment, equipment that is tagged as being out of service, or does not appear to be operating normally. Report the broken tool to a mentor or operations manager.
- Only use machines you have been trained to use, unless you are being supervised by a mentor.
- Do not use hazardous machines unattended.
- Do not modify equipment unless approved by an operations manager.
- Do not try to stop moving components with your hand or other tools. Always ensure that a machine has completely stopped and will not move unexpectedly before placing your hands in the work area.
- There must always be a single user as the designated operator. If control/use of the machine switches to another user, this must be confirmed verbally and may only happen when the machine is off, and all moving parts are stopped.
- Properly secure the work piece. Avoid clamping the work piece with your hands, and instead use clamps and other fastening equipment. Check with a mentor if you are not sure how to secure a work piece.
- Read all labels around the shop and on machines.

The following subsections describing safety procedures for specific equipment.

4.3.1 CNC Machine



Important: The CNC machine is to be operated by CNC trained mentors only, the typical mentor is not qualified to operate the CNC machine.

The CNC machine has a high likelihood of damage if not operated correctly. To ensure that the machine does not damage itself, the operator, or the parts, proper safety protocols must be observed. Specific CNC best-practices are beyond the scope of this document, but common sense applies. Do not attempt to bypass any safety mechanisms incorporated into the machine.

In the event of a machine problem, stop the current program through the control interface. You may also use the emergency stop button if something goes wrong. Report any issues directly to the CNC trained mentors, and Heather MacNeill of the ECenter.

Important: Do not put anything other than acceptable materials into the machine (current list includes only Aluminum, Brass, Plastics, and Wood). Do not machine steel in the CNC machine.

Always ensure that the components being machined are properly affixed to the machine vacuum plate or vice (if available). Use only Datron approved tools. Machine maintenance is beyond the scope of this document.

4.3.2 Laser Cutter/Engraver



Important: Make sure the fume extractor and blower pump are turned on and operational before making any cuts, this reduces fire risk. Do not open the lid when the laser is operating. Do not stare at the laser spot. Do not engrave or cut any material that is not approved by a mentor. Only use materials from the list below:

- Wood (up to 1/4 inch thick)
- Acrylic (up to 1/4 inch thick)
- Paper Products (cardboard, cardstock, etc)
- Metals (engraving only)

4.3.3 Power Tools



There are a number of power tools available to use within the space. These include drills, a drill press, a jigsaw, a band saw, and a dremel. As part of the safety guidelines everyone using these tools is at least recommended to wear safety glasses and can only operate the tools in an open area away from other users from the space.

- **Jigsaw:** The jigsaw must be operated in an area that does not risk the safety of yourself or another person. Anything being cut with the jigsaw must be secured safely away from your body. Do not put your hands or any part of your body near the blade at any time. Safety glasses are always required when using this tool, and no loose clothing is allowed while using it.

- **Drill Press:** While this is generally not as dangerous as some of the other tools, we still require that no loose clothing is worn around this tool and that safety glasses are required at all times.
- **Band saw:** It is always required around this tool to wear safety glasses and to not wear gloves or any loose clothing while using it. Hands must feed material into the blade from the sides of the material - far away enough that your hands are not at risk of being cut. **Do not remove the material cut by the saw until you have turned the saw off.** When you are finished using the saw, remove the key from the power switch and place it in the switch of the drill press.

4.3.4 Electronics Workbench



The electronics workbench has a bench power supply, soldering iron, and other electronic components available for use. The power supply and soldering iron can be fire hazards if not handled properly. **Both the soldering iron and the power supply must be turned off immediately after use.** The soldering iron should not be placed anywhere other than its appropriate stand.

4.4 Shop

It is a requirement of all users to clean up after themselves, and should always strive to leave the machine, floor, and surrounding areas better than when they found it. **Running around the space is not allowed** - it seems like an odd rule, but there are a number of tools and materials around the space that can become dangerous if you are not being careful. Users should be respectful of others in the space, and avoid being a major distraction. Emergency equipment must be kept clear at all times, which means that placing tools and other objects in the way of emergency equipment is not allowed. Mentors have full authority over the shop and its safe use, including the responsibility and authority to prohibit shop or tool access for the safety of an individual, others in the shop, or the equipment. All users have the ability to speak up and ask other users to change behavior (or report their behavior to a Mentor) if they observe unsafe actions. If you observe a potential violation of safety, inform the mentor in the space immediately.

4.5 Hazardous Materials and Pollution

Hazardous materials may be used in the Makerspace only with prior written approval from the Office of Environmental Health and Safety and Director of Operations. Use of hazardous materials must also be consistent with use conditions specified in the property lease agreement. Hazardous materials are substances that could cause injury or death; or damage or pollute land, air, or water. Hazardous materials include spray paint, epoxy, flammable solvents such as acetone and isopropanol, concentrated cleaning products, etc. The Makerspace heating and cooling system is part of a building-wide recirculating air system. If activities in the Makerspace generate smoke, odors, aerosolized particles, they will be recirculated within the building. Please be cognizant of activities that might affect air quality in other rooms in the building. Do not engage in activities that will generate smoke or strong odors.

4.6 Access to the Space

Access to the space is only given to those who have been trained in all safety procedures and in using the machines. This means only the mentors and operations managers are allowed to use the space or open the space to visitors. Security equipment must never be compromised as it is essential to the well being of the space.

5 Termination

Failure to follow the rules, policies, and guidelines outlined by this document will result in expulsion from the Makerspace at the ECenter and its services. Failure to follow the mentor guidelines will at least result in removal of mentor privileges and responsibilities. Stealing equipment, tools, or materials from the space will result in a fine for the cost of the equipment, expulsion from the space, and depending on the size of the offense a police report will be filed against you.

6 Acknowledgement of Terms

The undersigned has read, understood, and agrees to the terms outlined by **Makerspace at the ECenter User Agreement and Safety Policy**.

On behalf of the User: _____ Date: _____
USER

Makerspace Operations Manager: _____ Date: _____
MANAGER NAME