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FABRICATION SHOP

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DIGITAL FABRICATION – CNC MILLING

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FABRICATION CREDIT AND USER DATA BASE

First time users, after having finished the orientation, create an account in our user database in order to start using the Fabrication Shop including the shop tools, tool checkout and CNC milling. User accounts can be created in the Fabrication Shop using a valid SSA ID card for SSA students who have finished their fabrication orientation; contact aaskarinejad@ccny.cuny.edu. For digital service, users should be present with their ID for submissions and initial processing of their file.

Account Credit: Every semester each student is provided with a virtual sum of money, as a Fabrication Shop credit for the free use of the CNC machine. Each student has a credit of 2 hours of CNC milling. After each CNC use, it will be deducted from your semester long credit. After the free credit has been used, the students can pay for the services after the job is finished. An individual can only use his/her own credits and sharing or combining accounts is prohibited. Team projects may only be submitted under one student name/credit. Those who share their credits (both parties) risk losing the privilege of Fabrication credits for up to two semesters. If a user's account has a negative balance from past projects they may not be allowed to continue using that service until the fees have been paid. To pay for service fees, funds can be deposited into student's/faculty's CCNY ID using a "FLEX" account which will be used for recharging the their account at the Fabrication shop. (Complete Link: <https://citycollege-sp.blackboard.com/eAccounts/AnonymousHome.aspx>)

CNC MILLING

The SSA has a large CNC router with a functional bed size of 4.5 by 8 feet (generally 4in maximum thickness). It can be used for prototype fabrication as well as models, topographic bases, etc. After preparing the file students or faculty schedule a meeting with the shop staff to discuss their project. You can make an appointment at the Fabrication Shop (011-cellar). For questions, contact aaskarinejad@ccny.cuny.edu. The CNC router is operated by the shop staff.

The CNC service is only available for school projects; personal and commercial projects are not allowed. CNC cutting fees are on an hourly basis, deducted from the user's credit or paid (see above, Fabrication Credit and User Database).

- a. First step for a CNC project is to determine the appropriate material. You can consult the shop staff in order to find the best material option for you. Materials are provided by the user. The CNC machine is commonly used for cutting flat sheets such as Foam, MDF, Plywood and Wood. A variety of foams may be used on the CNC machine; we suggest the use of foam for projects with no structural requirements (such as architectural models, topographies, etc) as the mill time is significantly reduced and thus the possibility for the shop staff to be able to schedule your project is higher. Also, shorter cut time consumes less of your semester long free credit, reducing the chance that you may have to pay for your CNC time. Metal or glass cannot be cut on the CNC machine. Discuss the use of any other materials with the director of Fabrication Shop. Unless it is impossible for particular reasons, the material should be larger than the intended final size. A minimum of 1" margin will allow for fixing the material on the bed securely.
- b. The combined maximum height of material and cutting tool (i.e. depth of cut) is 8". The material itself may be up to 6" high (in which case the cut depth can be only 2"). Therefore, the depth of cut may not exceed 4" and thus most projects take 4 inches as the maximum material thickness.
- c. Laminating the boards should be done 24-48 hours in advance under pressure and using a material-appropriate glue. For wood and paper products, wood glue can be used. For foam, use a foam safe construction adhesive or

polyurethane glue. It is common that an inadequate or incorrect preparation results in the delamination of materials and possible accidents and damages.

- d. It is crucial to check the material and make sure there are no metal pieces such as nails, screws and staples. The metal pieces can be dangerous during the operation and will damage the tool. Loose knots in wood should be removed or glued in advance.
- e. Bring your Rhino (.3dm) file to the Fabrication Shop for further directions. The file should be saved as a Rhino6 file or earlier, and named as such: "Last Name-First Name_Professor_Material_Model Name.3dm"
- f. After your file has been approved, an appropriate time should be allowed for the file to be processed and reformatted for the machine. You may be asked to be present when your file is being processed.
- g. The size of file that can be accepted varies during different periods of semester. Material type and size are the two factors of the timing of a job aside from the design details. Large projects should be discussed with the Director of the Fabrication before planning to cut them. They may not be accepted if it is estimated that they will disrupt the normal workflow of the services for other users, when it will be a great burden on the machine or the staff are not available for those services.
- h. For large/group projects, you may be asked to provide your own tool.
- i. Students from the third-year undergraduate class and higher have the priority for using the CNC routers.
- j. Once the file is ready for milling you will be notified (in person or via text/email) to schedule a cutting time.
- k. Bring your material to the shop on the day of milling. The Fabrication Shop does not accommodate material storage in advance.
- l. Users are required to be present at the time of cutting. That is necessary in case of any complications during the operation. And to clean up.
- m. Wear safety goggles and ear protection when you are in the vicinity of the CNC machine.
- n. It is the user's responsibility to clean up after the milling is complete. All scrap material must be taken to the outdoor dumpster and all debris/dust on and around the machine must be swept and discarded.
- o. If the CNC job fails due to reasons other than staff errors (e.g. material failure) the user's credit is deducted for the time spent on the machine. The Fabrication Shop is not responsible for the loss of materials.
- p. You will be notified of the fees after milling (you may also ask for an approximate estimate before milling.) You may use your fabrication shop credit for your CNC jobs. Students may not share their credit. If applicable, pay for your milling job and pick up your model.

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