Rapid Prototyping Centre

The Rapid Prototyping Centre has two Techno ISEL computer numerically controlled (CNC) Routers. Access to the CNC routers is open to all students and faculty of OCAD U for academic based projects only.

Cost

The cost to use the CNC router is $20 per hour, with a minimum charge of one hour. There is a $6 file set up fee which includes the review of your file and the set up on the CNC bed. There will be an additional $5 fee for every sheet of material beyond the first sheet.

Overview

The CNC router can be used for cutting 2d part files and 3d surfacing. The CNC router has a 4'x8' bed with a 4"gantry clearance (Z height). For 2d cutting, there should be a 1" margin no cut zone around the perimeter of your material stock to screw into the router spoil board. The router is a 3-axis router, therefore it cannot make undercuts and bevel cuts.

Materials you can use are:

Wood, including plywood and hardwood
Rigid Insulation Foam
Plastics, such as acrylic and polyethylene (LDPE / HDPE)

Preparing Your Files For CNC

There are a few steps involved in preparing your files for the CNC router.

The first step involves preparing your part geometry. This can be done in any software program (Rhino, 3dsMax, Maya, Solidworks, Sketch-Up). 2D cutting requires only 2d line drawings. Software programs AutoCad and Illustrator can be used to generate 2D line drawing files. 2d cut parts should have all parts joined as a closed vector geometry. Be sure your lines meet exactly at endpoints, and there are no duplicate, intersection, or overlapping lines. 3d surfacing uses a surface or solid model. These files should be at actual scale of the part you are making.

Tool-paths need to be generated to program the machine to cut your part. We use VisualCAM Import file types: DWG is recommended for 2d files, and STL for 3d surfaces. The three basic operations of VisualCAM are profiling (cutting), horizontal roughing (rough cutting of surfaces), and parallel finishing (finish cutting of 3d surfaces).

Cutter Information

To improve cut quality We recommend purchasing your own cutter. Available collet sizes are 1/8", 1/4", 3/8" and 1/2".
To determine the best type of cutter for your project, speak to the technician.
If you do not provide your own cutter, a $25 cutter fee will be charged for the use of our stock cutters.

Before your part can be milled, you need to review your file with the technician. The technician will quickly preview your file for errors and correct settings. Do not expect that this part can be run immediately. There is a 3 day lead time for the CNC router.

Material Preparation

Students must supply their own materials. If your material stock is glued up, be sure that it has had at least 24 hours to dry. Use liberal amounts of glue spread evenly across the material to ensure complete adhesion when laminating materials. Please ensure the material is cut square and true. Also please note your actual material thickness, as this may effect your VisualCAM settings. Use calipers to get the exact thickness of your material. For example, if using ¾" plywood, it is likely the actual thickness is .6875". This information is important when designing your file.

Questions

If you have questions about the CNC router, please drop by the Rapid Prototyping Centre (Room 130) and speak to the technician.