

1 Laser Cutting: Overview

MODULE 2

Within this assignment, you will be learning how to properly use the “self-serve” Laser Cutters located in AB 031 of the Architecture Building. If you are new to the fabrication world you may be wondering what a laser cutter is and how it can be used. To put it simply, laser cutters are computer-controlled machines that

use a laser beam to cut and engrave material. These machines are used in a vast number of different industries, from electrical engineering to at-home projects. For this module, we will be sticking to the basics in terms of design and will be focusing strongly on getting you comfortable with the workflow of the laser cutters to ensure the safety of the user as well as the machine.

Assignment A1, A2, and A3 Overview

A1. Before you should to even think about operating the laser cutters, you must ensure that you have valid line work. For the best results, you must have Clean, Closed, and properly Colored vectors. Module 2 Assignments 1a, 1b, and 1c provide different options you can choose from when preparing line work (You will only need to complete one of these assignments).

-Clean lines means there are not any double curves where you do not intend on them being and no stray lines that could potentially ruin the clarity of your cut.

- For through cuts, you **MUST** have closed curves, or else the material you are trying to remove will not come out cleanly.

-The machines use specific print colors to differentiate between types of cuts. For example, if you want to both engrave and through cut you will need at least two different colors. Set up your file so that the different types of cuts are on different layers to make it easier to change the line color as needed.

A2. Once you have valid line work, you can move on to setting up your cut sheets. The laser cutters in the CAP Fab Lab use Illustrator and Rhino so it is recommended that you use one of these software when setting up your cut sheets for the best results. Set up cut sheets for the cutter you choose to use (more info below).

A3. Now that your cut sheets are all nicely laid out and you have triple-checked that your geometry is clean, closed, and properly colored, you are ready to get going on the machines.

-Keep in mind: there are four laser cutters (three 18”x32” and one 18”x24”) and each machine has different parameters for how the laser cuts through a certain material. So, even though you may be using the same material on each of the machines, there can be slightly different values that need to be inputted during set-up for each laser cutter. But do not worry! There is a “deck of cards” that is located next to each machine that has all of the approved materials and what values need to be input into them.

For this assignment, you will need to choose to do 1a, 1b, or 1c