

Adobe Illustrator Laser Cutter Instructions (basic):

1. Download **AI Laser Cutter Template** from the Woodshop website:
<http://www.arch.tamu.edu/content/inside/services/woodshop>
2. Import your objects and arrange them on the template.
3. Make sure all of the line weights in the art board are at .01pt stroke.
4. In the "Material Outline Layer" draw an outline of your material using the RGB Green color swatch.
5. Any lines you need to cut all the way through your material, put on the "Cut Layer", and draw using the RGB Blue color swatch.
6. Any lines you need engraved/hatched, put on the "Etch Layer", and draw using the RGB Yellow color swatch.
7. Make sure each piece fits well within the outline of your material.
8. Align the top left corner of your material to the top left corner of the art board.

NOTE:

* The art board is 32"x18" (the size of the laser cutter table), which is the maximum size of material the laser cutter can hold. Make sure that your material is not bigger than 32"x18"

*The red line is the 1/4" margin that the laser cutter will not cut passed. Anything that needs to be cut or etched must also fit within the 31.5"x17.5" red box (the limits of the laser). Any lines in the 1/4" margin area, between the red line and edge of the art board, will not be cut or etched. Therefore, scale your drawing to the correct scale if needed.

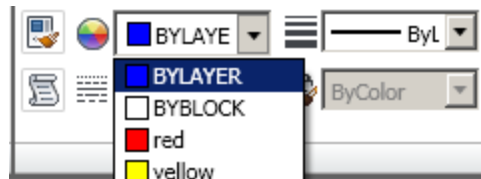
Laser Cutter Operating Instructions – from Adobe Illustrator

- 1.) When you are ready, **'File -> Print'**
- 2.) In the print window, click **'Setup'**
- 3.) In this window: choose your printer (which in this case is the lasercutter)
- 4.) In the same window: click **'Preferences'**. This pulls up the drivers for the lasercutter.
- 5.) Click the **'Engraving Field' tab**. Make sure the width and height of the engraving field matches the size of the document (32"x32") Also make sure the orientation is set to **'Landscape'**.
- 6.) Go back to the **'Laser Settings' tab** and adjust your Power and Speed as needed.
- 7.) Click ok when finished.
- 8.) Back in the print window, make sure your document is oriented correctly and click **'Print'** to send to the lasercutter.

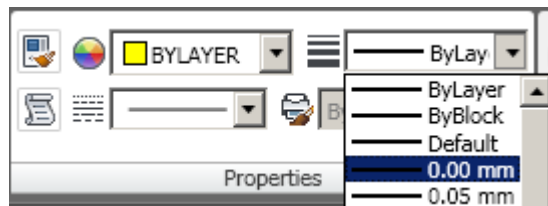
Laser Cutter Operating Instructions:

File Setup:

1. If the student's drawing is not already in a template file, **or** scaled to fit within the template boxes, **or** drawn a material outline and placed their shapes inside, tell them to come back with a fixed file that fits the specifications outlined on our website.
2. **Make sure the student has everything set to the appropriate color:**
Select everything in the drawing and set the color to 'BYLAYER' under the color properties pull down:



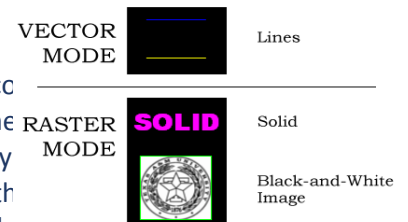
3. To be sure that everything will cut and etched, highlight everything that is to be cut or etched, including any black and white images and set the lineweight to 0.00 mm under the lineweight pull down:



4. In addition, because the laser cutter will pick up every line that is drawn in the drawing, and there may be duplicate lines on top of one another that could result in a cut vs. an etch, highlight everything in the drawing. Then type the command Overkill, space, set the accuracy to .001, hit ok. This will clean up the drawing a bit if the student hasn't already.

Send file and settings to machine:

1. After completing the file setup, hit the print button  or select File → Print, or type “Ctrl” & “P” at the same time.
 2. Select ‘PLS6.75’ under ‘Printer/plotter’.
 3. A dialog appears with options. Choose “Use the default paper size User-Defined Landscape”.
 4. Select ‘Window’ in the ‘What to plot’ pull down under ‘Plot area’. Then highlight the red box on the template that contains the images you would like to laser cut.
 5. Uncheck the ‘Fit to paper’ check box under ‘Plot scale’ and choose ‘1:1’ in the ‘Scale’ pull down. (This sets the scale of the cutting and etching to the same scale in the drawing)
 6. Click the properties button under ‘Printer/plotter’. This is where you will select the settings for the laser’s intensity, speed, and pulses-per-inch for each color.
 7. Click the “Custom Properties” button under ‘Access Custom Dialog’.
 8. There are two pen modes in which the laser cutter cuts and etches: VECTOR and RASTER.
 - Cutting and etching lines uses VECTOR mode
 - Cutting and etching solids or black&white images uses RASTER mode.
 9. a. Set the pen mode for the appropriate colors by clicking on the color and selecting SKIP, RAST/VECT, RAST, or VECT from the “Mode” drop down menu.
 - b. Set the ‘Power’, ‘Speed’, and ‘PPI’ (Pulses Per Inch) for a color by clicking on the color and typing in the appropriate settings that pertain to that color.
 - * These settings are listed on the “Settings for PLS6.75 Laser Cutter” sheet.
 - *If the settings for the material being used are not listed, use the settings of a similar material to run test cuts/etching and adjust them accordingly. Once you decide on the best possible settings, write them down.
 - c. Click the ‘Set’ button to save that color’s setting and proceed to define the other color settings by repeating step a & b.
9. When finished, click the ‘OK’ button.
10. Click the ‘OK’ button in the “Plotter Configuration Editor”
11. A prompt appears informing you of your changes. Choose “Save changes to the following file” and click ‘OK’.
12. Now click ‘OK’ in the ‘Plot’ menu to send the file and settings to the laser cutter.



Machine Setup/Operation:

1. First lay the material on the table.
2. Open UCP (if it is not already pinned to your taskbar search it in the “Start” menu)
3. With the focus tool, in UCP, send the laser to the various extremes of the file (with the lid open) to verify the lines are all on the material provided.
4. Place the laser in the middle of the material with the focus tool, and on the actual machine, if the Z axis is not already in use, use the arrow button to highlight Z axis, and then hit the Check mark button, then adjust the Z setting with the Up & Down arrows. With the focus tool sitting on the material, adjust the table height by hitting the up and down buttons until the notch (located about a half inch from the top of the tool) is level with the bottom of the red laser head.
5. Place the tool back to the side of the table, and close the lid.
6. Once the laser is focused, and material limits verified, hit the 0.00 button in UCP and then click “Ok” it will run a time estimate that you can then forward to the student who is waiting.
7. Finally, with the file you want to cut selected in the LED read out, hit the green ‘START’ button and the laser cutter will begin cutting your file.



Remember:

*If the linewidth of what you want to cut is not set to 0.00 mm, it will not get cut.

*If what you want to cut does not show up in the plot preview, it will not get cut.

*If the 'pen mode' is not set to VECT or RAST for the color you're cutting, it will not cut.

Laser Cutter Instructions

File Preparation:

1. Download **Laser Cutter Template** from the Woodshop website:
<http://www.arch.tamu.edu/content/inside/services/woodshop>
2. Create a 2D drawing using AutoCAD or if not on the template already, paste your drawing on the template.
3. Make sure your drawing has **no double lines**. That is a line on top of a line. If you did, simply erase these lines, leaving only one line on your drawing. (This is important because the laser will cut each and every line. If the laser cuts a certain line twice, it tends to burn your material. It also takes a lot longer for the laser cutter to cut a drawing full of double lines.) Just to do a clean sweep approach, highlight everything in the drawing, then type the command "Overkill", space, set the accuracy to .001, hit ok. This will clean up the drawing a bit by deleting double lines.
4. On the template, an **18"x32"** rectangle is drawn to represent the size of the cutting table. **Make sure your material fits within these dimensions.**
5. If you have not already, **scale your drawing to the correct scale.**
6. On the template, an **18"x32"** rectangle is drawn to represent the size of the cutting table. The dashed lines are the $\frac{1}{4}$ " cutting margin, please make sure all your cut or etch lines are inside these lines. **Make sure your material fits within these dimensions.**
7. Using the "**Material Outline Layer**" draw the size of your material. Simply move your original drawing (that you want the laser cutter to cut) inside the outline of your material.
8. Place the top left corner of your material in the top left corner of the solid lined red rectangle.
9. On the template, there are layers labeled according to the type of cut. Lines you want cut through the material are on the "**Cut Layer**" (Blue) while engraved/etched lines go on the "**Etch Layer**" (Yellow). Organize your lines to the layers you want them on.

***These are just a quick list of instructions on how to set up your file to laser cut. Please see the "**Using the Laser Cutter Document**" for more detailed instructions.

Cut Preparation:

1. Again, make sure your file is saved as an **AutoCAD.dwg** file.
2. Bring your file and materials down to the woodshop. Make sure your material is cut to fit inside the laser cutter **before** you sign up to laser cut.
3. **Please sign in.** We operate on a first come, first serve basis. The list starts over every day at 8am.
4. The laser cutter is available from **8 am – 5:00 pm Monday - Friday**. Be sure to come **before 4:30 pm**. There are times when the laser cutters get backed up so please plan ahead. Even if you are signed-in before 4:30 you still may not be able to Laser Cut that day. (Times are subject to change due to decreased need for students to Laser Cut. We apologize for any inconvenience).
5. The last cut of the day begins 30 minutes before closing. **ABSOLUTELY NO EXCEPTIONS.**
6. If you have any questions, feel free to ask one of the woodshop assistants or call the woodshop (979) 456-0558.

If you do not know AutoCAD there is an "AutoCAD Help Document**" available. There is tutorial websites and a list of common commands on the AutoCAD Help Document.