

(40 pts) Approx. 3 days

The second option in this unit is to learn how to work with our laser cutter. We have a 40-Watt laser that can cut and engrave on plastics, woods, and even glass if we do it right. The machine can work in a flat 2D space (most common) or even on round surfaces (for devoted students) like water bottles. In this option you'll learn how to create an image in Photoshop that is good for laser cutting, then you'll learn how to setup and use the laser cutter for working with acrylic.

1. Start by watching the introductory videos on our website, *How to Use Photoshop*, *Converting Your Image*, and *Using the Laser*. Take at least a full page of notes on these topics. Be sure to focus your notes on the process of using the laser and the different tools you'll need in Photoshop.
2. Next, draw – by hand – a design for something you want to make with the laser cutter. Your design should include a cut edge/border as well as an etched portion. For example, maybe you create an image like:



3. Get onto a computer and create your image in Photoshop. Your finished image needs to be:
  - a. All black & white (no color)
  - b. Saved as a .JPEG image on your jump drive
4. Transfer your image to the laser computer and drag it into the program called Corel Draw 5. Here, you need to adjust your image so that:
  - a. A cutting border outlines your image in a **hairline** border that is **red**.
  - b. Is not bigger than 6" x 6"
5. Choose File -> Print -> Print. The default printer is the laser.
6. Choose your acrylic and place it in the laser. Follow the directions in the *Using the Laser* presentation to cut your acrylic piece out! As you do so, make sure you do the following:
  - a. Define the material settings using "Lathrop Robotics Acrylic" and a thickness of 0.14
  - b. Focus the laser
  - c. Turn on the exhaust fan
  - d. Don't hog the machine – do your work and let someone else get a turn 😊

Part 2: Tasks	5 points	4-3 points	2-1-0 points
Laser Notes	+ You took a full page of notes on Photoshop & the laser + Your notes include details on useful tools in Photoshop + Your notes include details on the work flow with the laser	- Your notes are less than a full page - Your notes do not include Photoshop or laser details	- Very brief or no notes in your engineering notebook
Plan Project Assembly	+ You drew out your project plan in your engineering notebook + Your plan includes dimensions and desired colors	- Your plan is missing important information - Your plan has no drawing	- No planning is apparent
	<b>30-24 points</b>	<b>23-15 points</b>	<b>14-0 points</b>
Build Laser Project	+ You created a complete item on the laser + Your item included a nicely cut edge as well as an etched design on the surface	- You built your project but there are significant errors - Messy soldering has ruined some connections	- You did not build your project

