

NEED:

- Notes - plan is to:
 - Day 1: Teach them the difference between cutting & engraving. Show examples, show equipment.
 - Day 2 - let them edit it & show them the process. Intro safety.
 - Day 3 - Then, one by one open on Corel and & send to laser engraver. Review safety
- Will not get into detail on Corel.
Will only do that in 202. The purpose here is to see the whole process.

Laser 101

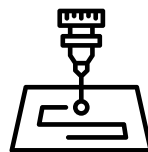
- Class 1: Laser engraving vs. cutting overview
- Class 2: Laser Process Overview
- Class 3: Safety & Sample prints

Laser 201: Time in Corel

- Class 1: Basic design principles
- Class 2: Create basic SVG design
- Class 3: Engrave basic SVG design

Laser 301

- Class 1: Basic vector principles
- Class 2: Create layered SVG designs
- Class 3: Cut layered designs



Laser 101 Tool Training Series - Day 1

Learn how to laser engrave and cut simple signs while learning the ins and outs of C02 laser machines.

Supplies:

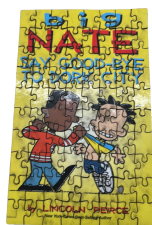
- Basswood + Slate
- *Canva
- *Design file
- Corel & InkScape

Laser Engraving 101



Laser engraving is used to create a permanent design on a material.

Laser Cutting 101



Laser cutting is used to cut materials in a permanent design.

Engraving & Cutting

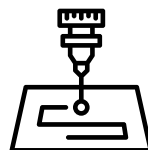


Engraving & cutting blend both into a unified design.



Watch laser engraving & cutting in action!





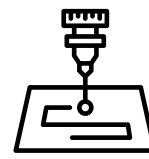
Laser Engraving The process of using a focused laser beam to mark the surface of a material. By removing a thin layer of material, it creates permanent marks.

- Who & How:
 - The Epilog Fusion Edge 12 directs a CO₂ laser beam to the material surface.
 - The heat vaporizes or discolors a small area of the surface.
 - The engraved design can be shallow (for surface marking) or deeper (for more tactile effects).
- What:
 - Wood, glass, leather, acrylic, paper, fleece, etc. (anything except vinyl or plastic)
 - Adding logos or serial numbers to products, creating detailed artwork on surfaces, making custom signage and awards
- Why:
 - Lasers work in absolute black and white. In order to engrave, images may either be complex images (photographs) with many colors that are converted to B&W or Clipart (flat) images that are converted to B&W.
 - All laser files must become SVGs.

Laser Cutting Using the same laser beam but with enough power and slow enough movement to cut entirely through the material, the beam fully separates material.

- Who & How:
 - The Epilog Fusion Edge 12 laser follows the cutting path in your design file.
 - The laser moves slowly with higher power, burning or vaporizing the material completely.
 - Air assist and proper ventilation remove debris and prevent excessive scorching.
- What:
 - Wood, cardboard, acrylic, fabrics (except plastic, vinyl, glass, metal)
 - Creating custom shapes from acrylic, wood, or fabric, producing puzzle pieces or model components, making stencils and templates, fabricating product parts and packaging inserts.
- Why:
 - In order for a laser to cut, the design must be set to “hairline” in Corel or “0.01” in Inkscape. The machine will automatically assume it is a “vector.”
 - Only SVGs accepted.





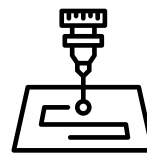
Epilog Fusion Edge 12 Features

- The Epilog Fusion Edge 12 is a compact yet professional-grade CO₂ laser, perfect for learning and growth.
- Work Area: 24" x 12" (610 x 305 mm)
- Power: 50 watts
- IRIS™ Camera Positioning: See exactly where your design will be placed
- Touch Screen Controls: Simple, intuitive operation
- Engraving Speed: Up to 120 inches per second
- Material Versatility: Works with a wide variety of materials

Laser Engraving & Cutting Features

Feature	Laser Engraving	Laser Cutting
Depth of Work	Surface removal or shallow etch	Full material separation
Purpose	Decoration, marking, personalization	Shaping, separating parts
Speed Setting	Generally faster (less power)	Slower (more power, multiple passes possible)
File Setup	Uses raster engraving settings (bitmap images, grayscale art)	Uses vector cutting paths (lines in design file)
Edge Appearance	Slightly textured surface	Clean, sharp edges (may darken on some materials)
Material Change	Changes surface appearance	Removes entire section of material





Learn how to laser engrave and cut simple signs while learning the ins and outs of C02 laser machines.

Supplies:

- Basswood + Slate
- *Canva
- *Design file
- Corel & InkScape

Step 1: Laser Process Design - GENERAL



- Decide if you will laser engrave, cut, or both.
- Choose your material.
- Get material approved.
- Search for a design or
- Create a design (SVG end goal) - Take 202 for design tutorial.

Step 2: Laser Process Software - GENERAL



- Send the file through an editor like Corel (\$\$) or Inkscape (free).
- Choose laser engraving and/or cutting settings.

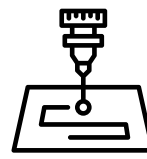
Step 3: Laser Process Hardware - GENERAL



- Send the design to the Epilog software.
- Connect computer to Laser.
- Follow laser prompts.
- Ensure safety & use!

Watch in real time as we demonstrate the laser engraving and cutting process.
*Do this with a sample SVG.





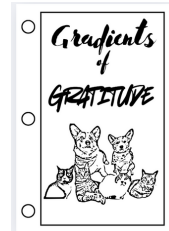
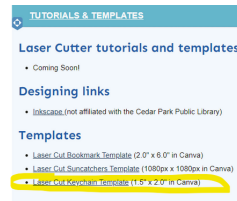
Laser 101 Tool Training Series - Day 2

Learn how to laser engrave and cut simple signs while learning the ins and outs of CO2 laser machines.

Supplies:

- Basswood + Slate
- *Canva
- *Design file - NO PHOTOS
- Corel & InkScape

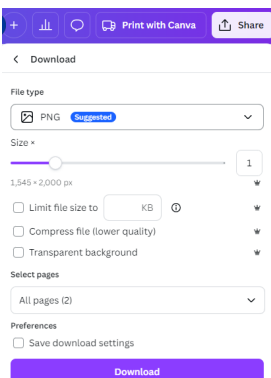
Step 1: Your task 1



Go to the CPPL Makerspace site and make a copy of the Tool Training 101 Series file (on laser cutter page). You will need a Canva account.

Title your design with your name. Add black & white text or graphics onto the sign.

Step 2: Your task 2



Click Share.
Choose to
download as
a PNG>

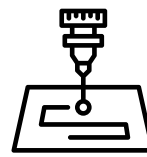
Step 3: Your task 3



Click File → Save As. Save to your downloads as your first and last name. Then let staff move file to USB. Do not leave until we have your file.

Behind the scenes, we will open up an 8" x 4" file in Corel. We will import the PNG. We will trace the Bitmap (specify black color) as a high quality image.





Learn how to laser engrave and cut simple signs while learning the ins and outs of C02 laser machines.

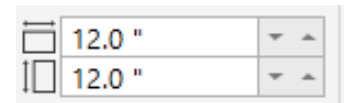
Supplies:

- Basswood + Slate
- *Canva
- *Design file
- Corel & InkScape

Step 1: Open Corel Draw & import

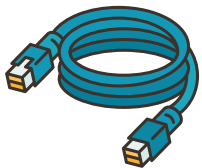


On the Laser Computer, open Corel Draw.



Open your SVG file from the downloads. Adjust page size to 8 in. x 4 in.

Step 2: Send to Epilog



Plug in the blue network cable to the laser computer.



Click on File → Print. Select the Epilog Engraver

Step 3: Position

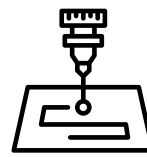


Place a piece of slate directly under the laser camera. Use the camera and your mouse to line up the image onto your slate.



Click on the Import Material button. Choose Photo Engraving under Marble. Click Print!





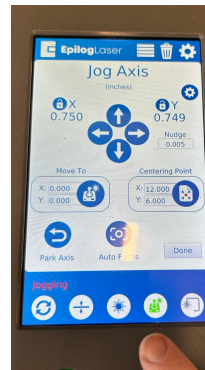
Follow the steps below while using the laser cutting and engraving machine

Step 1: Prep the materials



Verify slate piece is against top left corner.

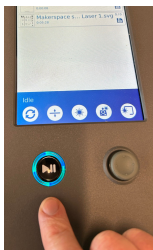
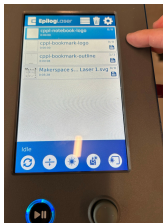
Step 2: Focus the laser



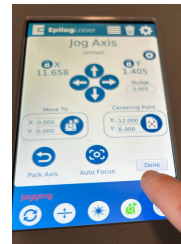
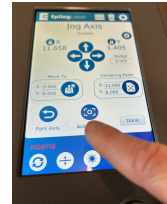
On screen, click on 4th button. Move joystick so red dot is over where you're cutting



Step 3: Engraving/Cutting



Click on the 3 lines. Then, click on "[NAME]". Press the play button.



Click on autofocus. Then, press done when it is complete

Watch the laser to ensure it is cutting safely. When it finishes, it will beep. Open the lid and remove items.

