3D Printed Cookie Cutter

# Objective

This class will teach some of the basic concepts behind designing a small holiday ornament in Inkscape™ that can be made using the Full Spectrum Laser® Muse™ laser cutter and a sheet of ⅛” acrylic.

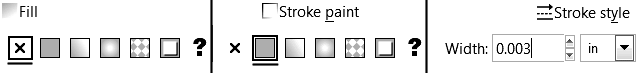
# Ingredients

* A close up of a device

  Description automatically generatedInkscape™ vector graphics app[[1]](#footnote-1)
* Gcodeplot tools[[2]](#footnote-2) (includes Inkscape cookie cutter plugin)
* OpenSCAD parametric 3D design app[[3]](#footnote-3)
* PrusaSlicer 3D printer “slicing” app[[4]](#footnote-4)
* Prusa i3 MK3S 3D printer[[5]](#footnote-5)

# Steps

## Part 1: 2D in Inkscape

In order to go from 2D to 3D, the cookie cutter Inkscape extension expects our drawing to satisfy these conditions: 

* 1. everything should be converted to paths (**Path > Object to Path**)
  2. use **RED STROKE** on *outside walls*
  3. use **GREEN STROKE** on *inside walls* (holes)
  4. use **BLACK STROKE** on *inside detail* (this marks the cookie, but doesn't cut through it)
  5. use **RED FILL** or **GREEN FILL** on areas you want filled in at full wall height
  6. use **BLACK FILL** on areas you want filled at inside detail height (walls that don't reach all the way through)
  7. use **BLUE FILL** or **CYAN FILL** on inside connection polygons which keep inside detail and inside walls connected to the outside walls.

Save your file as an SVG, then use File > Save as… to save a copy on the Desktop as an **OpenSCAD Cookie Cutter file (\*.scad)**.

## A picture containing vector graphics Description automatically generatedPart 2: 3D in OpenSCAD

Launch OpenSCAD, check over your design (making any changes to your original Inkscape file) and if you’re happy with how it looks, choose **Design > Render** from the menu. When the render finishes, export your 3D file with **File > Export > Export as STL…** and save the resulting .**stl file** on the Desktop.

## Part 3: Slicing in PrusaSlicer

Launch PrusaSlicer, then drag-and-drop the .STL file you generated onto the virtual build plate. Position it in the middle. Choose the cfollowing settings from the right:

1. Print Settings: **0.3mm CRAZY FAST**
2. Filament: **Generic PLA**
3. Printer: **Original Prusa i3 MK3S**

Click **Slice Now** at the bottom-right to process your file, then click Export G-code. This **.gcode file** contains the instructions for the printer to build the object.

If you choose **File > Save Project** in PrusaSlicer, you can save your 3D model (with printer settings!) in a **.3MF file** that you can use if you want to print the file again later, either here at Elk Lab or on another 3D printer.

1. Free and available for download from [inkscape.org](https://inkscape.org/). [↑](#footnote-ref-1)
2. Free and available for download from [github.com/arpruss/gcodeplot](https://github.com/arpruss/gcodeplot). [↑](#footnote-ref-2)
3. Free and available for download from [openscad.org](https://openscad.org/). [↑](#footnote-ref-3)
4. Free and available for download from [prusa3d.com/drivers](https://prusa3d.com/drivers). [↑](#footnote-ref-4)
5. Available for purchase from [prusa3d.com](https://prusa3d.com/). [↑](#footnote-ref-5)