

# 3d Printing

3d printing is the process of building an object one layer at a time by heating plastic and extruding it through a nozzle.



3d printing at the Bettendorf Public Library is subject to the Library's Makerspaces policy, available at [www.bettendorflibrary.com/policies](http://www.bettendorflibrary.com/policies).

## Step 1: Submit a 3d model.

Design a 3d model using CAD software or download a completed design from web sites like [printables.com](http://printables.com) or [thingiverse.com](http://thingiverse.com). The Library printers use .obj or .stl files. You can submit your file on a flash drive at the Bettendorf Public Library's Information Desk or Creation Studio, or by emailing the file to [create@bettendorf.org](mailto:create@bettendorf.org). The information on the back of this form must accompany the file.

If your print job has multiple pieces, please submit a separate .stl or .obj file for each piece. This will allow Library staff to assign different print settings to each piece, if needed.

## Step 2: Library staff slices the file.

Library staff will process the file through software that gives the 3d printer the information it needs to know about where to put down the plastic. This is also called slicing, since the 3d model is "sliced" into layers.

Among other settings, the following parameters are set during slicing:

- ▶ **Size:** Our 3d printers work with the metric system, so your model needs to be designed with metric measurements. The largest a model can be is 360×360×360 mm (14.17"×14.17"×14.17").
- ▶ **Resolution:** The thickness of each layer of filament is what determines the resolution. The thinner the layer, the higher the resolution. The higher the resolution, the smoother the object.
- ▶ **Infill:** The infill percentage determines how densely printed an object is. Purely decorative items can have a low infill; objects that need to withstand strain will need a higher infill percentage.
- ▶ **PLA vs PETG:** We print using either PLA plastic or PETG plastic. PLA is easy to use, comes in a variety of colors, and has a nice glossy finish. PETG is stronger and more resilient; we recommend PETG for prints that will be more functional, rather than decorative.

## Step 3: Confirm the print

Once the file has been sliced, we know how much plastic filament will be used. At this point, Library staff will contact you to get approval for the cost, and let you know what options are available for the color of your print. Cost to print is 5¢ per gram.

After Library staff has received the go-ahead from you, the file is sent to the printer. Library staff will contact you when the print is complete and you can pick it up and pay for it.



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**3D PRINTING APPLICATION**

**Date** \_\_\_\_\_

**Your name**

\_\_\_\_\_

**Your email address** or phone number

\_\_\_\_\_

**Name of file**

\_\_\_\_\_

**File format:** \_\_\_\_\_ .stl \_\_\_\_\_ .obj

**Plastic Type:** \_\_\_\_\_ PLA \_\_\_\_\_ PETG

**Resolution:** \_\_\_\_\_ Low \_\_\_\_\_ Standard \_\_\_\_\_ High

**Infill:** \_\_\_\_\_ 5% \_\_\_\_\_ 10% \_\_\_\_\_ 15% \_\_\_\_\_ 20% \_\_\_\_\_ 25% Other \_\_\_\_\_

**Dimensions:**

width (X) \_\_\_\_\_ mm front to back (Y) \_\_\_\_\_ mm top to bottom (Z) \_\_\_\_\_ mm

**Description of Project:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Staff use only: Weight: \_\_\_\_\_ Cost \_\_\_\_\_ Printing time \_\_\_\_\_

Completion date \_\_\_\_\_ Staff member initials \_\_\_\_\_