

## 3D Printer Policies

### About Our 3D Printers

A 3D printer is a special type of printer with a nozzle that heats plastic filament to its melting point, which it places in thin layers to make a three-dimensional object. It uses 3D files as digital instructions to create the shape, which are converted into a readable format called GCODE. STEAM Central currently has three 3D printers – an Ultimaker 2+, an Ultimaker S5, and a Lulzbot Taz 6.

There are few libraries in the United States that offer access to publically available 3D printers--your library is one! We need your help to keep these machine accessible to everyone in the community. These 3D printers have a total retail value of \$19,000, including accessories and specialized nozzles. Repairs are costly, and we cannot replace these machines if they are permanently damaged.

Please follow all 3D printer policies to help us keep these machines in the best condition possible.

### Before Use

- The 3D printer is operated by STEAM Central staff, and requires a scheduled appointment.
- All files must be submitted through the library's scheduling platform in a compatible 3D format (e.g. .STL or .OBJ).
  - To submit a file, visit [bit.ly/steamcentral](http://bit.ly/steamcentral) and select "Equipment Reservation", then "Custom 3D Print".
  - Select any date and time; the specific date and time are unimportant, as all files are printed in the order they arrive in our print queue.
  - Fill out the required details (name, phone, email), and then choose your file to upload. For multiple files, you may submit a .ZIP file containing all necessary files.
  - Choose your preferred filament type/color, and then provide any notes that will assist us in printing your request as effectively as possible. This includes file dimensions (length/width/height), quantity, support and in-fill instructions, etc.
  - When you submit the file, your submission will be confirmed by an automated email from Acuity. This simply informs you that we have received your file; your file will not be added to the print queue until a staff member has sliced it and sent a follow-up email to confirm the price of the print request.
- A STEAM Central staff member will convert all print requests to the appropriate file format using a slicer software.
- Once all print requests have been converted, a STEAM Central staff member will directly email the patron who submitted the file to inform them of the cost of the print job (see the [3D Printing Policy and Fees](#) for information on cost).
- The 3D printer can only be started and stopped while a staff member is present during regular library hours. If a print request will take longer to print than the allotted time during regular library hours, a staff member reserves the right to reschedule or cancel the request. A 3D print job that will take more than 12 hours of print time requires approval from the Maker Librarian.

### **During Use**

- Only STEAM Central staff may operate any of the 3D printers.
- Do not touch any part of the 3D printer during printing. Temperatures can exceed 210° Celsius (410° Fahrenheit).
- Avoid all moving parts on the 3D printer while a job is printing.

### **After Use**

- When your print request is finished, a staff member will email confirmation that it is complete and available for pickup.
- Retrieve your 3D print request from the Circulation Desk at the Stephens Central Library during the library's regular hours of operation.

### **General Usage Notes**

- Some parts may need to be printed with support or rafting that can be removed once the print job is complete. Part cleaning can typically be done with pliers, but if a knife is needed, always point the blade away from your body and use a solid work surface to remove the plastic.
- Report any problems with the 3D printer immediately to STEAM Central staff.
- The 3D printer cannot transform 2D images into a 3D print. The only files it will accept must be three-dimensional.
- The printer may not be used to print files deemed offensive, dangerous, or in violation of copyright, as determined by STEAM Central staff.



## Resources

- [Thingiverse](#)
  - Thingiverse.com is one of our favorites for finding great 3D files that are suitable for printing. Simply look up what you are interested in, and download the files that you would like to submit for printing.
- [Tinkercad](#)
  - Tinkercad.com is a free web-based 3D design program, to help you get started creating 3D objects from scratch. Tinkercad only requires an email to use, and offers a beginner-friendly interface for designing objects using geometric shapes.
- [Blender](#)
  - For more complex 3D design projects, we recommend trying the free, open source software Blender. This software has a learning curve, but is very robust and capable of designing for 3D printing, videogame assets, animations, and much more.
- Visit LinkedIn Learning to gain free access to the following helpful 3D design tutorials, as well as hundreds of other video tutorials and exercises – simply [click here](#) (or go to [tgclibrary.com](#) > Adult Services > Digital Research A-Z Index, and scroll down to LinkedIn Learning) to log in with your library card number and start learning today!
  - [“Learning 3D Design with Tinkercad”](#)
  - [“Blender 3.3 Essential Training”](#)



### **3D Printing Policy and Fees**

3D printing is available at the Stephens Central Library. Staff prepares the file for printing using the Cura slicing software. This software determines the amount of material that will be used in the printing process, including supports and rafts, and patrons will be charged according to Cura's determination of cost. Patrons will be notified of the cost of the print job submitted and must approve the print.

The cost of printing is 10¢ per gram, with the weight determined by the Cura software.

Patrons will be notified when their print job is complete and must pay for print jobs before they will be turned over.

Objects which are not picked up within 14 business days will be discarded, recycled, and/or used for library programs and the cost of the print will be placed on the patron's account. No additional prints may be requested until the patron record is cleared.

#### **Print Quality:**

Users will not be charged in cases of mechanical failure. However, refunds will not be given if an object does not print correctly due to patron dissatisfaction with color, scale, quality, design, required support material, or other options pre-selected by the customer.

3D printed objects may have small bumps, holes, and/or rough edges. Objects are printed from the bottom up. If a design has a large overhang or suspended parts, support material and/or rafts must be used. These additions are easily removed by the patron. The Library will not be responsible for removing any supports and/or rafts.