

### **3D Printing at the Montesano Timberland Library**

The Montesano Timberland Library, with funding from the Friends of the Montesano Library, makes a 3D printer available for use by the public to support the ever-changing and constantly evolving technology needs of the community. 3D printing, also called additive manufacturing, means making things layer by layer according to a 3D design file. The Montesano Timberland Library makes a 3D printer available to members of the public to make three-dimensional objects in plastic using a design that is uploaded from a digital computer file.

#### **What can I make?**

The Library's 3D Printer turns digital models drawn using CAD (computer-aided design) software into three-dimensional objects. 3D "printing" actually refers to the gradual build-up of heated plastic filament in very thin layers—usually just .2 millimeters thick. Filament is available in several materials, but one of the most common (and the one that our printer uses) is PLA, or polylactic acid. It comes on a big spool that feeds into the 3D printer's extruder, which is similar to the tip of a glue gun. The extruder has to heat up to over 400°F in order to melt the PLA! PLA is a biodegradable plastic made from starches such as cassava root and sugarcane. Sometimes when it gets heated up, it even has a slightly sweet smell.

If you want to give 3D printing a try, you can either start with your own design or use someone else's. These are all free to use or offer free options.

- [AstroPrint.com](https://www.astroprint.com) is the best website to choose models and Slice them to fit your printer. For our printer you can choose Ender 5. Here is a youtube video explaining how to use Astroprint: <https://youtu.be/t5AdUXzvyAw>
- [Thingiverse.com](https://www.thingiverse.com) is the best website to find ideas or models for free that can be downloaded and submitted to print.
- [Tinkercad.com](https://www.tinkercad.com) is an excellent website for creating your own designs or tweaking an existing design, and has great tutorials for learning. There is a great class to you can take in the database [LinkedIn Learning](#), which is available on the TRL research database page.

#### **How to Print**

When you're ready to print a file you've designed or downloaded, submit it as an attachment in .stl format to:

cspringer@trl.org

In your email, be sure to include: Color choice, and perhaps a second choice

Filament is usually available in classic rainbow and neutral colors. One color per file, please. Size specifications, if necessary

Maximum dimensions are 6" (15cm) L x 6" (15cm) W x 6" (15cm) H. Jobs are printed in the order they are received and there are many factors that can affect the time it takes to have your job printed. We cannot guarantee any particular timeframe, but we are able to complete most jobs within two weeks.

We look forward to hearing from you!

### **3D Printing**

The library's 3D printers may be used only for lawful purposes. They may not be used to create weapons or materials that

- Are prohibited by local, state, or federal law;
- Are unsafe, harmful, dangerous, or which pose an immediate threat to the well-being of others;
- Are inappropriate for the library environment; or
- Violate another person's property rights. For example, the printers will not be used to reproduce objects or materials that are subject to copyright, patent, or trademark protection.

All 3D printing requests must fulfill the library's requirements:

- The print file submitted must be sent in .stl format.
- Only one print request per person will be accepted and printed at a time.
- Submissions by one person must not exceed one request per every two weeks.
- The print object must be smaller than 6" (15cm) L x 6" (15cm) W x 6" (15cm) H.

Printing is available on a first-come, first-served basis and is coordinated by the Montesano Timberland Library staff. Priority printing will be given to library programs and events.

Library staff will review every object file before it is printed, and the library reserves the right to refuse any 3D print request. The nature of 3D printing does not allow complete member privacy, but the library will not share information about a member's legal activities with third parties. The printer will only print an object in a single color. Color preferences may be submitted, but the library will determine the color of the filament based on availability. Library staff reserve the right to resize projects unless dimensions are specific in the request.

Print jobs take an average of two weeks to complete. Due to the amount of time it takes to print an object, the number of requests received and staff availability, the library will not guarantee that a print job will be ready on a specific day.

The Library is not responsible for failed 3D prints, although we will do our best to assist in completing successful 3D prints.

Montesano Timberland Library will not be liable for functional failure of or injuries or property damage caused by objects or materials made through the use of 3D printers. The library strongly recommends that 3D printers not be used to make things that could prove harmful, or that would result in significant cost to the user if they fail.