KINGSPORT PUBLIC LIBRARY

3D PRINTING GUIDELINES

The Library strives to offer community access to technologies that inspire learning, creativity and innovation and supports STEAM programming within the library. A 3D printer is available for Kingsport Public Library cardholders 16 or older in good standing.

* Printing is available on a first come, first served basis and is done by Designated Library staff or Trained Volunteers. Priority printing is given to Library programs and events.
* Persons wanting to print should bring their file on a USB flash in .stl format during library open hours. Only files submissions under 25 MB will be accepted.
* Only one job may be submitted at a time. Print jobs must be picked up before submitting another print request.
* We cannot print objects that require more than 10 hours to complete.
* You must clean your own rafts and supports. The Library cannot guarantee model quality or stability, or confidentiality of designs.
* Staff and Trained Volunteers review and prepare all project files. Users will not be permitted to use the Library’s 3D printer to create material that is:
1. Prohibited by local, state or federal law
2. Unsafe, harmful, dangerous, or an immediate threat to the well-being of others
3. No guns, gun parts, weapons, or salacious objects
4. Construed as having the intent to harm
5. Obscene or otherwise inappropriate for the Library environment
* The print must fit within the printer’s volume.
* Printed objects must not infringe upon any third party’s intellectual property rights. By submitting content or objects, the user agrees to assume all responsibility for, and shall hold the library harmless in, all matters related to patented, trademarked, or copyrighted materials.
* The Library reserves the right to refuse any 3D print request.

**THE PRINTER, MATERIALS AND COSTS**

* The Library has an Ultimaker 2+ 3D Printer, located on the 4th floor in reference. It prints objects a maximum of 23cm wide x 22.5cm deep x 20.5cm high in a variety of single colors. If you want a color that is not supplied by the Library, you can donate the cost of a whole spool and the Library will purchase it. Please indicate this to the Library when you request your print job and Library Staff will contact you with further instructions. Any remaining/unused filament becomes your donation to, and the property of, the Library.
* The Library has a Matter and Form 3D Scanner, located on the 4th floor in reference. This scanner takes 360 degree real-life scans to create copies of 3D objects that are scanned. These digital copies can then be printed using the library’s 3D Printer. The scanner can scan objects up to 25 cm high x 18 cm deep x 18 cm wide. Please alert Reference staff if you are interested in using this device.
* The Library has a Doodle3D WiFi Box, located on the 4th floor in reference. Doodle3D is a very simple sketching tool to make your own 2D drawings come to life using a 3D printer. It allows you to connect wirelessly to the library’s 3D printer using any wifi device, such as a computer, tablet, or phone. Please alert Reference staff if you are interested in using this device.

Objects that are larger than these dimensions will not be printed.

The Library uses plant-based, recyclable PLA, nGen and XT filament.

Cost: Printing cost is $1.00 per request for set-up plus $0.15 per gram of filament used, rounded up to the nearest gram. The Library will give the patron a cost estimate prior to printing. The patron must pay for the item when it is picked up. If the item is not picked up and there is an outstanding balance, that amount will be charged to the patron’s library account.

Patrons will be notified when print job is finished. Files will be deleted at that time. The Library recognizes that an original design is the property of the designer and designs will not be duplicated for others.

Library staff and trained volunteers will print all projects as quickly as possible based on staff time and availability. Most models will be printed in about a week, but printing times can vary. You will be notified when your object has been printed and is ready for pickup. Completed models can be picked up at the Reference Desk. Items musts be picked up by the individual who printed them. Items that are not picked up within 14 days of notification will become the property of the library.

**WHAT IF A PRINT FAILS TO COMPLETE?**

The Library will endeavor to print quality objects for submitted files, but we cannot guarantee that the files will print the way you want. The Library assumes no fault if the design does not print as expected, or encounters an error during the printing.

**SUPPORTS AND RAFTS:**

Some models will not print well without supports or rafts. Supporting structures are usually needed if the design includes a section that protrudes from the base at more than a 45 degree angle. Occasionally, a raft must be added to a design to help it adhere to the printer bed. Staff will use their best judgment in adding supports or rafts to your mode. The library will not be responsible for removing supports or rafts from a print job.

**HOW CAN I VIEW THE 3D PRINTER IN ACTION:**

Check the online calendar for the current schedule of 3D printer coaches. Visit the Library at any of the listed times and unless there has been an unexpected cancellation by one of our volunteers, you can see the 3D printer in action.

**FINAL CHECK/SUBMISSION OF YOUR DESIGN:**

You can check designs with Netfabb to be sure there are no errors in design. Or download the free Autodesk 3D Print Utility, which will repair any errors and prepare your object for printing.

 Submit the *3D Printing Request* form to reference staff. You will also need to bring your library card.

*Approved by the Kingsport Public Library Commission on July 18, 2016*

**3D Printing Resources:**

Ready-to-Print 3D Designs

Thingiverse -- a thriving design community for discovering, making, and sharing 3D printable things.

3D Warehouse – Sketchup’s searchable design library

Instructables – from the 123D community

Cubehero- Cubehero hosts your 3D printed and hardware projects to make it easier to work together with others

Bld3r- an open-source 3D community that offers designs and tutorials

Free 3D Modeling Software

Tinkercad: a browser-based 3D design platform, now part of Autodesk (free version available)

Blender – open source 3D animation suite. Enable the 3D Printing Toolbox

Open SCAD – free software for creating solid 3D CAD models. Useful for creating models of machine parts

Sketchup – comes in free or pro versions. Get the Sketchup STL from the Extension Warehouse

123D Design – a free, powerful, yet simple 3D creation and editing tool from Autodesk

List of additional free software packages from 3ders.com

3D Modeling tutorials

3D Modeling for Beginners

How do I make a Solid Model

How to Fix and Repair Your 3D Files

3D Printers on the cutting Edge

5 amazing ways 3-D Printed food will change the way we eat

How 3D printing could save wild animals

3D concrete house

TED 2015: terminator-Inspired 3D printer “grows” objects

Will 3-D printing revolutionize medicine?