3D Printer

The Library creates opportunities that inspire curiosity, exploration and connection. 3D printing, and the software behind it, is becoming an increasingly important part of many educational, professional, and recreational pursuits. The Library believes a 3D printer is an important resource for the community to learn about and to experiment with. 3D printing is the process by which a physical object is made by setting thin layers of plastic, one atop the other.

The Library has a Bambu Labs X1 Carbon printer. The printer uses an FDM process--fused deposition modeling--for 3D printing; it uses PLA, a corn-based plastic. PLA is not a food-safe material. We do not have a resin printer.

3D printing can be used for almost anything where a part or model needs to be made. Some common uses include:

- Prototyping new products
- Making parts
- Creating toys, memorabilia, décor
- Designing objects for problem solving
- Making props for performances or role playing
- Making figures, game pieces, and accessories
- Building educational models

General Questions

Can I use my own filament?

- No, the Library will only print using Library provided filament. Do not attempt to load your own filament in to the machine.

Does the 3D printer print in solid plastic?

- 3D printed models are mostly hollow with 15% infill on the inside.

What is Bambu Studio?

- Bambu Studio is the program used to prepare 3D models for printing. It is called a "slicer" because it converts a 3D model into "slices" which are laid down by the printer as layers.

3D Printing Processes

How can I 3D print at the Library?

- To 3D print at the Library you need:
- a Library card
- to be 14 years or older
- a Work Bench card
- a 3D printing badge

Is there an age limit for using the 3D printer?

- The minimum age to obtain a Work Bench card is 14 years old. Children younger than 14 may accompany a parent or guardian who has a Work Bench card and a minor waiver on file.

Do I need a Library card to 3D print?

- Yes, anyone submitting models for 3D printing needs to have an active library card and have a Work Bench card with a 3D printing badge.

Do I need training to 3D print?

- Yes, you need to earn a Work Bench 3D printing badge before using the 3D printer. This badge can be earned by attending a class in person, going through an online course, or studying the Work Bench 3D printing binder. After training you will need to pass a quiz and submit an initial project for printing.

What kind of file do I need to 3D print?

- You will need to submit an .3MF file (this is a sliced file type) to the Library for printing. You can start with a .STL file that the Library's Bambu Studio software will slice, then export the .3MF file for printing.

How do I slice my 3D file for printing?

- You will need to bring your .STL file in to Bambu Studio either on your own computer or on the Library's design computer. Then you will choose how to place and support your model and slice it. You may slice as many times as necessary to adjust the parameters of your print. We recommend leaving the layer size at 0.2mm and the infill at 15%. Make sure you choose how to support your model, if needed, and choose if you want a brim. Pay attention to how much filament will be used and how long the print will take after slicing. Finely, submit the .3MF file to the Library.

How large can a 3D print be?

- Our printer has a build volume of 256mm cubed. This is about 10 inches in all directions.

How much does it cost to 3D print?

- The Library is currently testing out providing free 3D printing.

Do I have to pay if I don't like how the model printed or if the print could not be completed?

- Yes, incomplete prints or prints that do not come out as hoped are an important part of the learning process and they need to be paid for.

What software can I use to create or modify 3D designs?

- Any Computer Aided Design (CAD) software can be used to create 3D designs. We recommend beginning with Tinkercad which is web based and free. Please note that Tinkercad is not associated with the Library and we are not responsible for its features or content.

Where can I find files for printing?

- The website thingiverse.com has a wide variety of free to download 3D files. Note that this website is not associated with the Bozeman Public Library and we are not responsible for its contents. You are responsible for knowing and following intellectual property and copyright law.

What are supports?

- Supports are 3D printed structures that are used to hold up portions of the model while printing to prevent falling and sagging. They are manually removed from the model after pick up. You select the type and amount of supports you use during slicing.

What support types are there?

- Bambu Studio has options for regular supports (which look like skyscrapers) and tree supports. Depending on your model one of these support types may be better than the other.

What colors can you print in?

- The Library generally has 4 colors of filament available at a time. Which colors are available will change from time to time. Call the Library at (406)582-2427 for current filament colors. You may note your color preference when submitting your model, but note that depending on queue length and model size, particular colors may not be available at the time your model prints.

Can you print in multiple colors?

- The 3D printer can print in multiple colors. However, please be aware that multicolor prints have a lot of purged filament and so they will be significantly more expensive and take significantly more time than single color prints.

Do I need to be at the Library while my model is printing?

- No, you do not need to be at the Library during printing. Your project will be sent to the printer queue, and depending on the length of the queue, it may be several days before your project prints. The Library will manage this process and contact you when your print is finished.

Can I print more than one object at a time?

- Yes, if all the objects fit together on the build plate and can be sliced, you may print multiple objects at a single time. Please note when doing this, the failure of one object will likely result in the failure of all objects on the build plate.

How will I know my 3D print is ready for pick up?

- You will receive an email notifying you the print is finished.