3D Printers

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3D Design

The simplest 3D design software (and easiest to access) is TinkerCad. It is a cloud-based software, free to create an account, and easy to learn. For more complex design Blender is a free open-source software.

TinkerCad

Once you sign up for an account, you can access your 3D designs from any computer with a web browser. They recommend the Chrome browser, but Edge works just as well. For Apple users, Safari does not work well with TinkerCad.

Tutorials: There are several tutorials you can use to familiarize yourself with the software. Go to https://tinkercad.com/learn.

Blender

Blender is a much more complicated program that take some time and effort to master. Though the software is free, it must be installed on your computer to use it. Go to https://www.blender.org/ to download the program and follow the directions to install.

Tutorials: Youtube has many channels devoted to learning Blender. BlenderGuru is one of the most popular. The Blender Reference Manual is available online and in several languages. The English version can be found at https://docs.blender.org/manual/en/latest/.

Design Considerations

Take note that your design is completely connected in places where it should be. Especially in TinkerCad, it is easy to miss small gaps that could result in printer errors.

Make sure your design is no larger than 300mmx300mmx300mm. Large designs often have printing errors, and could take one day or more, so scale your design to a reasonable size.

Remember that your design will only print in one solid color: the color of the filament. Many people like to paint their designs.

3D Printing

Once you have a 3D model, there are several more steps to get your model printed. A finished 3D model should be in either an. stl or .obj format. You can save/export this type of file from TinkerCad or Blender. From there, you need convert that file into a .gcode format. This process cuts the 3D model in to layers and instructs the 3D printer on the temperature and speed of the print. The program we use to make .gcode files is called Cura.; it can be downloaded for free at

https://www.ultimaker.com/software/ultimaker-cura. This software needs to be installed on a computer. There is a computer with this software in the maker space. Cura is a free program released by Ultimaker but it is not proprietary; it can be used with any model of 3D printer.

Build plate adhesion

Bed Temperature

Print Supports

Print Density

Extruder Temperature

Extruder Speed