3D Printing

3D printing is easy at Barrie Public Library with the Ultimaker 3!

What is the Ultimaker 3?

The **Ultimaker 3** is a 3D printer. It builds three dimensional models from an **.OBJ** or **.STL** file by laying down layers of material. At Barrie Public Library, we use PLA (polylactic acid) as the material.You can use an existing design or create your own design!

Things to know

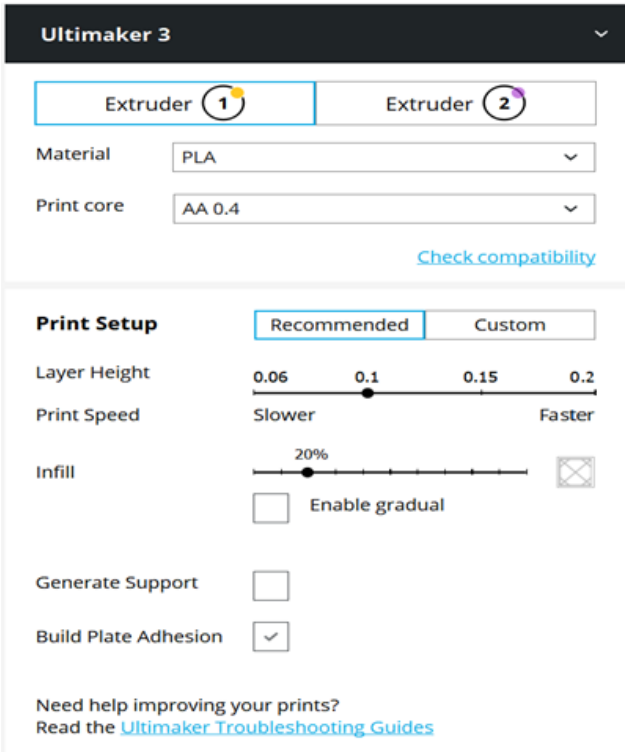
- The **Ultimaker 3** uses cura. software to prepare your model for 3D printing
- cura. software will accept **OBJ** or **STL** files.
- Design your own model using **Tinkercad**, a web-based design software that can be accessed on any internet-enabled computer
- Don't have a model to print but want to try out the 3D print? Pick a model someone else has designed from the **Thingiverse** website!
- Print jobs must be completed in 1 hour and during library open hours
- Please stay in the library while your model is printing
- Models of offensive items, weapons/weapon parts or drug paraphernalia, of any size, are not permitted
- **Print jobs must be completed ½ hour before the library closes**
- Use of the printer is on a first-come first served basis. It cannot be reserved in advance
- Beware! The build plate and extruders are hot

Getting Started

- Open cura. and select Ultimaker 3 as your printer. Download the software if it isn't installed on your computer.
- The *Extruder* settings should be set as follows:

  Extruder 1: Material is PLA and print core is AA 0.4

  Extruder 2: Material is PVA and print core is BB 0.4



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- In Cura, import an **.OBJ** or **.STL** file by selecting the *Open File* icon on the left menu list

  OR

- Search for a model from the **Thingiverse** website
  - Go to *Thingiverse.com*
  - Search for a model to print
  - Select the*Thing Files* tab to view the model files
  - Select a file to download
  - Select to open the file in Cura to print now or save it to a USB to print later
- To optimize your model, once the file is open in Cura, click on the model and use the tools in the left menu:
  - **Scale** – changes the size of your model. Scaling down will decrease the print time
  - **Rotate** – changes the orientation of the model on the build plate
- If your model has overhangs, select *Generate Support*. Without supports the overhangs will collapse during printing
- Selecting *Build Plate Adhesion* prints a base to support your model and will enhance adhesion to the build plate for models with a small base. For example a sphere or the Eiffel Tower. A brim or raft is easily removed after printing
- When you have optimized your model, **take note of the length of time for the object to print in the bottom right corner**
- When the printer is connected and ready, select *Print over Network*
- Only one instance of Cura can be open at a time to print
- When the print is completed, wait until the build plate cools. Your object should easily peel off the glass plate! Objects need time to set or they lose shape

Tips and Tricks

- Changing the scale and infill are ways to decrease the print time of your object
- Learn more about 3D printing from **Lynda.com**. Go to the *Learn* page on our website (barrielibrary.ca/digital-library/learn)
- Use **Yeggi** (yeggi.com) and **Pinshape** (pinshape.com) websites to find more pre-existing models
- **Meshmixer** (meshmixer.com) and **FreeCAD** (freecadweb.org) are alternative free 3D design software
- If you use supports, the PVA material will dissolve in water! No need to cut or file supports!
- Go to the Ultimaker *Tips and Tricks* page to learn more about the Ultimaker and Cura software (ultimaker.com/en/resources/tips-tricks)

Troubleshooting

- Ask staff to help you optimize your model so that it can print in under 1 hour or to cancel a print
- See the Ultimaker troubleshooting guide for help (ultimaker.com/en/resources/troubleshooting/3d-prints)