



INTRODUCTION TO 3D PRINTING

FORT FRANCES PUBLIC LIBRARY TECHNOLOGY CENTRE

MAKERBOT REPLICATOR 5TH GENERATION

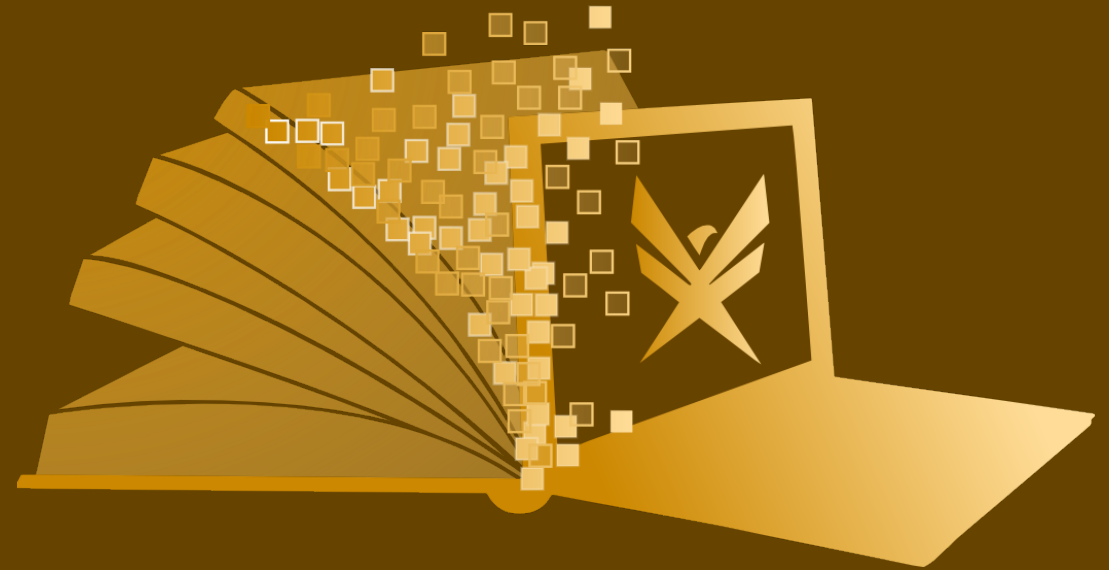
3D PRINTING

- 3D printing is the process of making a physical object from a three-dimensional digital model, typically by laying down many thin layers of a material in succession
- The FFPLTC provides public access to a MakerBot Replicator 5th Generation 3D printer



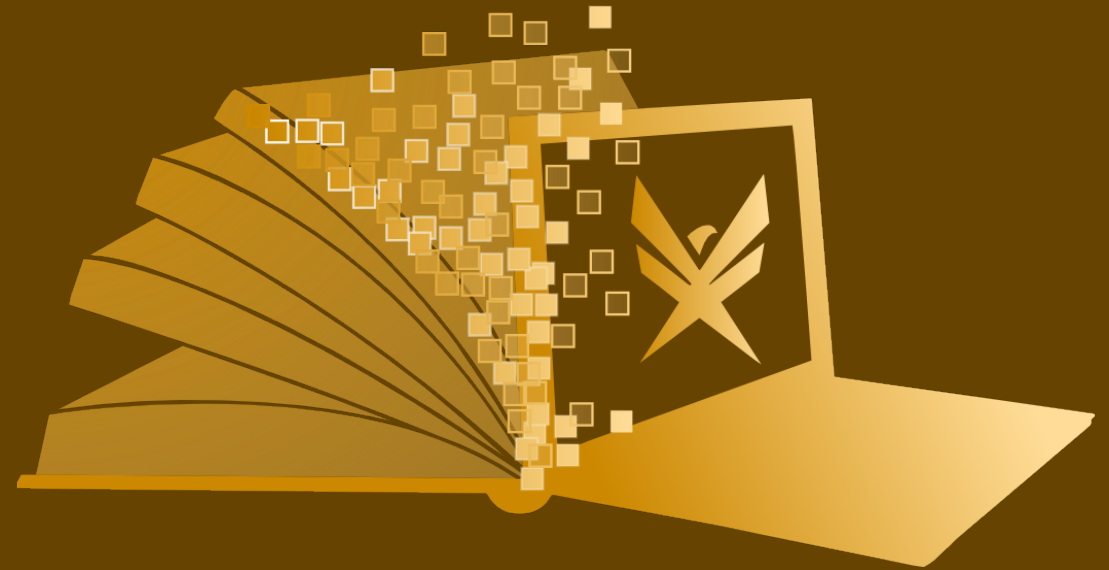
PRINTING @ FFPLTC

- You must bring your library card to access the 3D printer
- 3D printing reservations must be made through and approved by FFPLTC Staff
- Standard 3D printing reservations are available for up to 3 hours
- Extended 3D printing reservations are available overnight
- Printing costs \$2.00 per hour regardless of the success of the print



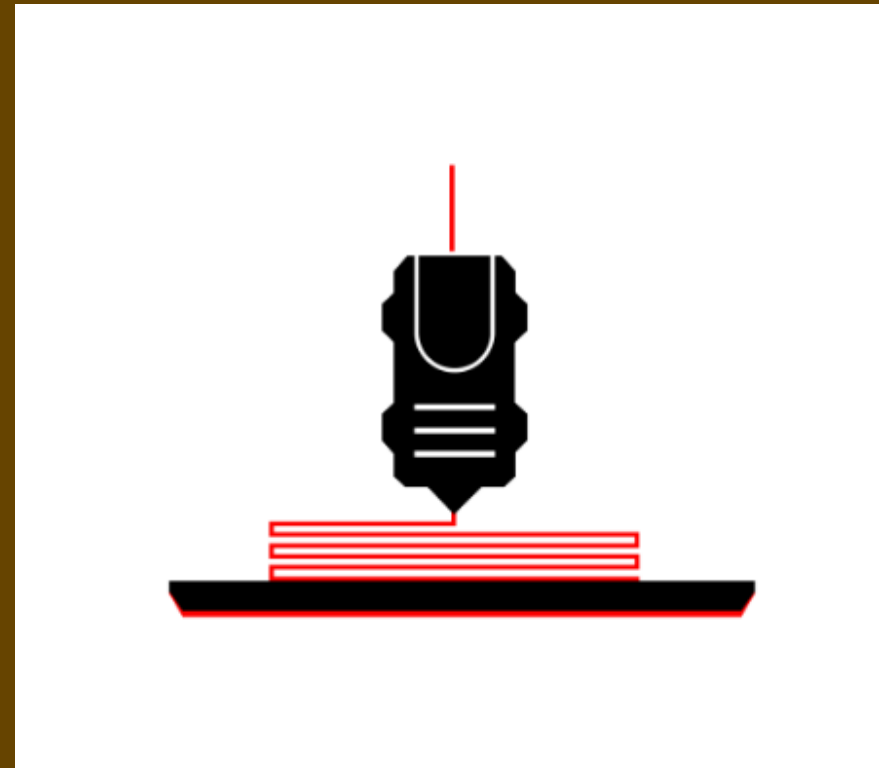
PRINTING RESTRICTIONS

- Children under the age of 14 must be accompanied by an adult
- Parents must sign a MakerSpace agreement before their children can use MakerSpace equipment
- 3D models must be approved by FFPLTC Staff
- You may terminate only your own prints
- FFPLTC Staff may terminate any print that has clearly failed



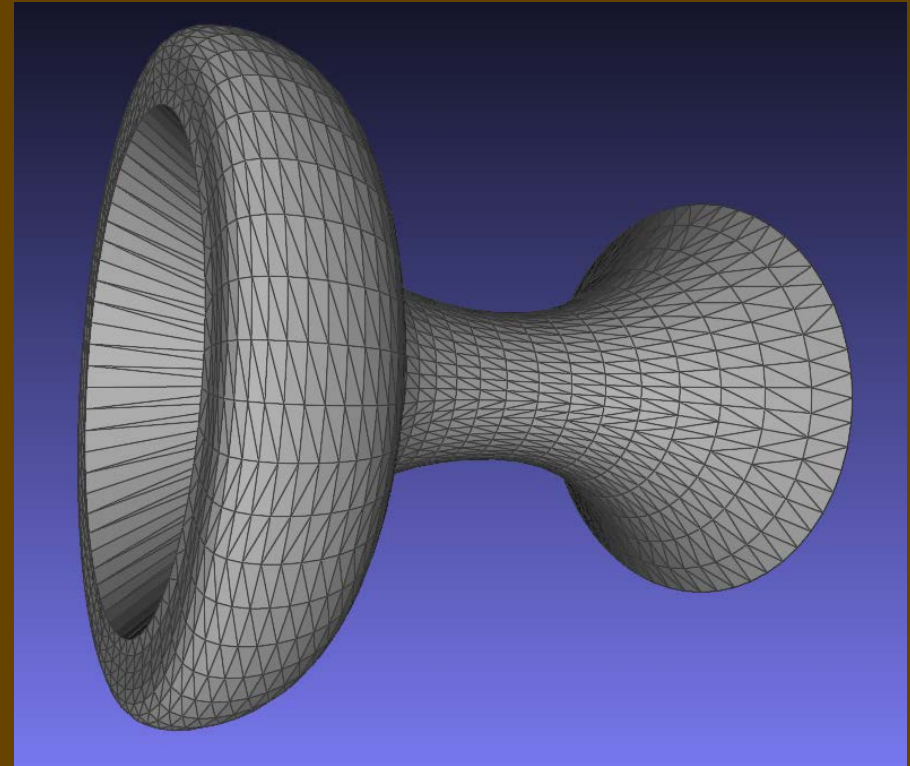
HOW IT WORKS

- MakerBot 3D Printers rely on a technology called FDM or Fused Deposition Modeling
- FDM uses an extruder similar to a hot glue gun
- Plastic filament is melted at 215°C, and is extruded out of a nozzle into layers
- The extruder prints one layer horizontally, then moves up to the next layer
- NEVER touch the nozzle of the extruder while it is heating, printing or loading filament!



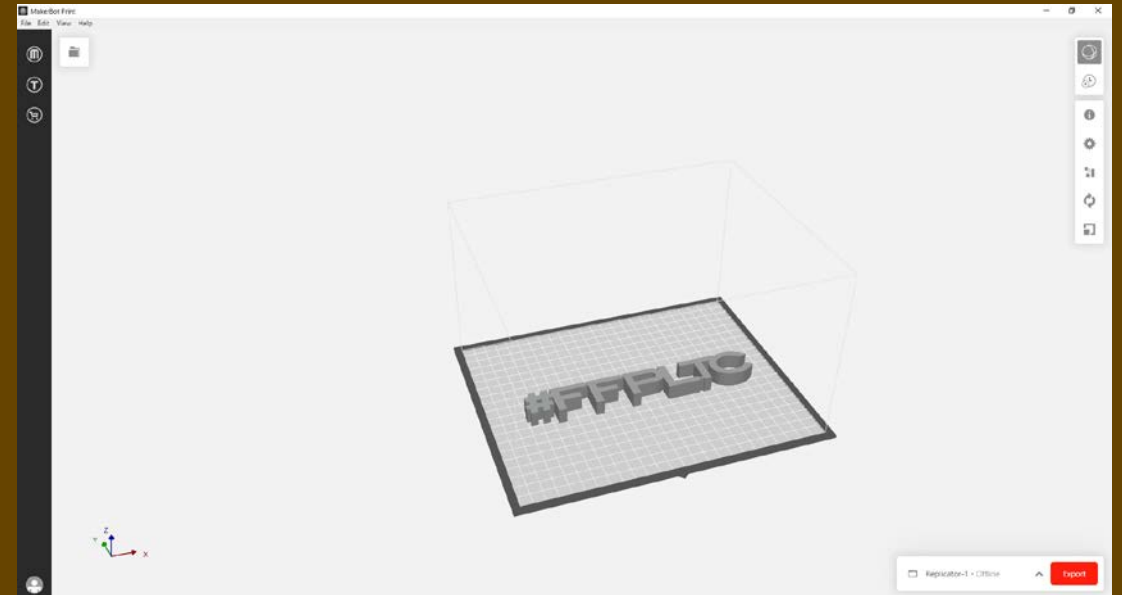
FILES

- Only 3D models with extensions such as ".OBJ" and ".STL" can be printed
- These files are composed of vectors and vertices and contain no colour
- 2D pictures with file extensions such as ".JPG" cannot be printed



MAKERBOT PRINT

- MakerBot Print transforms an “.STL” file into a “.MAKERBOT” file
- The “.MAKERBOT” file slices the 3D model and tells the 3D printer how to print each layer



WHAT IS FILAMENT?

- Filament is a slender, threadlike plastic
- Filament is melted to shape an object
- We primarily use PLA filament @ FFPLTC
- PLA stands for polylactic acid, a bioplastic derived from corn
- PLA is a hard, strong material with a low rate of thermal expansion, making it ideal for 3D printing applications

