Instructions for 3d printing

* Create model and settings in Ultimaker Cura
* File -> Open, and open .stl file
* In sizing, note that printer build plate is ~ 5in x 5in; 120mm x 120mm x 120mm
* In cura window, icons on left side allow resizing, as well as shifting, rotating, etc
* Click print settings dropdown menu at top center of cura window
  + For terrain models, can take all Normal profile defaults
* Checking slice in Cura will give estimate of print time
* Click “save to file” in cura to save gcode
* Get micro SD card from 3d printer and transfer gcode to micro SD card
* Clean printer base plate with alcohol if dusty/dirty
* Spray with 2-3 bursts of hairspray to help filament adhere
* Put micro SD card in printer on right side (microchip facing down)
* Turn on printer using red switch in back
* On printer, rotate wheel to select (push wheel) Monitor menu, then select “Start preheat”
  + Note that preheat settings only need to vary when you vary print material
* Once extruder is heated up, go to Move menu, then E menu (for Extrude), and rotate wheel to force extrude some filament (ensure the printer is off the glass enough so it doesn’t stick to glass) – this just clears the filament in case of any old blockages
  + Note that counterclockwise pushes filament toward extruder onto plate
  + Look to make sure the extruded filament is smooth looking, and no jagged snags
* Once base plate is heated up, go to Print menu, select gcode file from SD card and printing will begin
* After finishing printing for long term, suck back out filament to avoid breakages in small hose leading to extruder
* Cover printer with plastic tarp

If you need to edit a .stl file, go to tinkercad.com. Note the ruler tool is great for micro-alignments.

If you download an .stl file from thingoverse or myminifactory that is too large to load into tinkercad, then use meshmixer software -> select icon from left-hand tool bar, then hit control+A to select all of object, then go to Edit -> Reduce, then change Reduce Target dropdown on to Max Deviation option, set Max Deviation to 0.01 (the best the printer can really discern. Once reduced, you can export reduced .stl file and use in tinkercad/Cura.

<https://i.materialise.com/blog/en/reduce-the-file-size-of-stl-and-obj-3d-models/>

max deviation: <https://www.youtube.com/watch?v=Aia-lXy-wh8>

Get .stl files from:

Thingiverse: https://www.thingiverse.com/

Cults3d: https://cults3d.com/en

Printables: https://www.printables.com/