Student: ----------

Trainer: ----------

Date: ----------

Certification for: 3D Printers (Digital Fab. and Electronics Lab)

Training Check-Off List:

Please note that the person to-be-certified is not allowed to have this list during certification. After successfully demonstrating knowledge in these areas, a member will be certified and can schedule (https://claremontmakerspace.org/membersonly/scheduler/) the 3D printers.

Tool Anatomy

- ☐ Identify the general parts of a 3D printer:
  - ☐ User interface (Taz 6)
  - ☐ Power switch
  - ☐ SD card slot (Taz 6)
  - ☐ USB port
  - ☐ Control knob (Taz 6)
  - ☐ Extruder
  - ☐ Print surface / print bed
  - ☐ Lead screw
  - ☐ Tool head
  - ☐ Hot end
  - ☐ Nozzle
  - ☐ Filament holder
  - ☐ Filament
  - ☐ Cooling fan(s)
  - ☐ Wiping pad
- ☐ Identify the differences between the Taz 6 and the Mini
- ☐ Identify the X, Y, and Z axis

Pre-Operation

Printer preparation

- ☐ Prepare the bed
- ☐ Wipe down with isopropyl alcohol

- ☐ Confirm nozzle wiping pad is clean

Models and Slicing

- ☐ What is the name of the software used for preparing models for the printers? (Cura Lulzbot Edition)
- ☐ What kind of file types can be loaded into Cura?
- ☐ What is the difference between saving for Cura and saving for printing?
- ☐ How does Cura handle inches versus millimeters?
- ☐ Demonstrate the ability to set up a print:
  - ☐ Set material type
  - ☐ Set the correct quality / speed profile
  - ☐ Confirm the model fits on the print bed
  - ☐ Confirm the model is oriented correctly
  - ☐ Basic understanding of supports and why they may or may not be necessary
  - ☐ Can manipulate the model and view in Cura
  - ☐ What is infill?
  - ☐ What are the build plate adhesion types and why are they necessary?
    - ☐ Skirt
    - ☐ Raft
    - ☐ Brim
  - ☐ Can preview the printed model by changing the view from Solid to Layer

Octoprint

- ☐ Know how to get to the Octoprint web page via the wiki
- ☐ Can login and generate an API key for Cura (this is fine if it’s already done, just confirm knowledge)

Connecting to the Printer from Cura

- ☐ Connect to the Mini and set the temperature via the Monitor tab (requires connecting to Octopi)
- ☐ What kind of filament type is recommend at the CMS (PLA)
- ☐ What is the diameter of the filament used by the CMS printers (2.85mm or 3mm)

Load and unload filament

- ☐ When changing filament types, what temperature is it recommended for you to set the hot end to? (The higher recommended print temperature of the two filament types)

- ☐ Identify parts related to loading and unloading:
  - ☐ Idler retainer
  - ☐ Hinged idler
  - ☐ Drive gear
  - ☐ Hobbed (ridged) extruder bolt
  - ☐ Feed hole
  - ☐ Hot end
  - ☐ Nozzle
- ☐ Complete load or unload process
- ☐ What to do if the printer is not extruding?
  - ☐ Repeat
  - ☐ Check idler retainer springs (to* tight, to* loose)
  - ☐ Check hobbed bolt (contact shop lead)
  - ☐ Contact shop lead

Operation

- ☐ Describe the expected machine response when a print is started
- ☐ Describe the expected machine response when a print is in progress
- ☐ Describe the expected machine response when a print is finished

Post-Operation

- ☐ How do you remove a print?
- ☐ Clean up

CMS Etiquette

- ☐ If both printers are available, which should you use? (The smallest one that can print your part.)
- ☐ How is scrap / waste filament handled (Trash can. Only leave a failed print in the shop if you have shop lead permission.)
- ☐ Honor box instructions
- ☐ Reporting problems (yellow tag outs, email address)
- ☐ Resource scheduler

CMS Safety

- ☐ Where is the fire extinguisher?
- ☐ Where are the light switches?
- ☐ Who to contact if there is a problem

3D Printer Certification

Pass/Fail: _____

Comments:

_____

_____

_____

Student Signature: _____ **Date** _____

Certifier Signature: _____ **Date** _____

Certifer: Please scan this QR Code to email info@claremontmakerspace.org, and include a list of students who have passed this test.

Then, return this form to the front desk (even if the student failed!).