

3D Printer Certification



Student:

Trainer:

Date:

Version: 0.1.0 - 2020-11-05

Certification required 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

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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

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- 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

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Pass/Fail:

Comments:

.....
.....
.....

Student Signature: **Date**

Certifier Signature: **Date**



Certifier: 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!).