Training SOP

Last edited: Furst (08/26/20)

Instructor:

Date:

Attendees:

	Name	Group or Company	Signature
1			
2			
3			
4			
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Overview:

- This training provides an introduction to the FDM 3D printers
  - File Types
  - Software
    - Cura
    - GrabCad Print
  - Printer Use
  - Post processing
  - Printer Maintenance
    - Changing Print Heads
    - Changing Fulfillment Type
    - Cleaning
- Two printers (Ultimaker and F270) are both set up with ABS by default, Other materials are available upon request.
- Work by extruding thermoplastic filament onto build platform-Build the part layer by layer.
- Remember to enter job information into the 3D print job log!

Safety

- The print heads can be very hot - do not touch them with bare hands unless positive they are cool.
- As with any automated machinery make sure that your body is clear of the moving parts to avoid injury.
- The support removal tank for the F270 is filled with heated caustic chemicals that dissolve the support material. An apron, Gloves, and a face shield must be warn when inserting and removing parts or basket from tank.

Job Setup

- Load your file into the print software on the computer adjacent to the printer (Cura for Ultimaker, GrabCad Print for F270).
- Ultimaker: make sure print bed is clean
- F270 make sure that there is enough room on an unwed build tray for your part, and that the build tray is secured in the printer with the locking arm horizontal. Build trays may be used until the entire build area has been printed on, but printed areas can not be reused.
- Set print parameters (layer thickness, etc.) For the F270 the printer will print a raft before printing the model. Make sure first layer is set to support material or removal will be incredibly difficult.
- Record the material used and print time in the online log along with the other job information requested. The print log should be on the desktop or https://docs.google.com/forms/d/e/1FAIpQLScS3URUxoHOR62PdQeeSTAYg_suV061UsoFafrgoN0qn6DWYg/viewform.
- Send the job to the printer from the computer
- Start the job at the printer

Part Removal and Cleaning

Ultimaker

- Remove part from print bed using a spatula or razor being careful not to cut yourself or scratch the build plate. Make sure no body part is in line with the tool should it slip or the part break free unexpectedly.

F270

- Don gloves, face shield, and lab coat
- Carefully, slowly and without splashing cleaning solution open the support removal tank lid, remove and open the tank
- Place large parts directly in the tank, small parts may be put in the SS box and placed into the main basket.
- Carefully, slowly and without splashing lower the basket back into the tank and close the lid.
- Set timer for 6 hours setting the temperature to 80 degrees C.
- After cleaning time has elapsed follow the instructions above for opening and removing parts.
- Rinse part in warm water

Rates

F270:

Material	$/Spool	cu in/Spool	$/cu in	$/cc
PLA	79	60	1.31	.08
ABS	164	60	2.73	.17
Sup	228	60	3.79	.23

F270 hourly charge: $1/hr to pay for head replacement

Ultimaker: ABS: .12/gram