A3: Getting started with 3D printing! ⏷

Start Assignment

Due Tuesday by 3:59pm   **Points** 10   **Submitting** a website url

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Assemble your 3D printer and document the process on your website. Include the following steps:

- Adjust the extruder's eccentric nuts such that it does not wiggle
- Adjust build plate level
- Check for loose screws

Once your 3D printer is assembled, create (in Rhino), slice (in Cura), and document (on your webpage) the following test prints. Unless we specify a particular setting, you can change any of the default settings.

First, conduct the bed leveling protocol from Filament Friday: https://www.thingiverse.com/thing:3235018 ⤷ (https://www.thingiverse.com/thing:3235018)

This is explained in this video ⤷ (https://youtu.be/_EfWVUJjBdA)

Once your bed is well leveled, print the following test prints:

- A 2cm cube with the standard "low quality" settings
- A 2cm cube with the standard "standard quality" settings
- A 2cm cube with the standard "super quality" settings

If you are having adhesion issues, we recommend slowing down the initial layer to half speed and/or try using a "BRIM" for build plat adhesion.

Then also print:

- A 2 cm cube with a concentric top and bottom layer and your favorite print setting from the previous cubes.

Next, we will print tubes:

- A tube 3cm in diameter and 3cm high with a single extrusion wall thickness
- A tube 3cm in diameter and 3cm high with a double extrusion wall thickness and random z-seam alignment
- A cylinder 3cm in diameter exported with a 0.1mm tolerance
- A cylinder 3cm in diameter exported with a 0.001mm tolerance
- A cylinder 3cm in diameter with special mode "spiralize outer contour".
- A cylinder 3cm in diameter printed on its side with supports on.

For each of these prints, document how long they took, and measure their height/width with calipers and and document their sizes. Note that even if you *design* the cubes to be 3cm, they might come out a different size! We want you to calibrate your process such that you can print within 1mm tolerance. You might need to calibrate your print settings by measuring output from your printer with your calipers. It is likely you will have to print this several times to get it to tolerance!

Finally, we want you to create a *NESTED OBJECT*

- Design a series of nested parts that can be 3D printed in their nested state. You should have at least 3 nesting structures. Export the objects as one STL, and 3D print the nested structure. The geometry can be whatever you want.

FAQ!

Q: I already assembled my 3D printer! Do I still need to document putting it together? A: You don't have to include build process photos, but include notes of the process, how long it took you, etc.

Q: I have a different printer than everyone else. Do I still document my assembly? A: Yes! For the first 3 prints, use "low", "standard", and "high" quality equivalents for your printer.

Q: Cubes are boring! Can I print something else? A: No! We think it's valuable to print a standard shape so that you can understand more complex stuff later!