End of term documentation

Haya Dakhil & Gaby (most tasks were done together)

U-bracket Mount Machining

Done by: Haya, Gaby with the help of Joshua

- Drilled holes in the U-bracket
- As of right now, we are working on the work order to be completed so the brackets can be bent

Attachments:

- ZStepperHolderDrawing.jpg - Preliminary 2D sketch in SOLIDWORKS, uploaded as JPG
- ZStepperHolderPart.png - Snapshot of machined part

Tools used: SOLIDWORKS, UW E5 Machine shop

Dimensioning of PSU, Circuit board, Screen

Done by: Haya

- Measured dimensions of the PSU including hole placements, the screen, and the control board.
- These measurements were used for CAD and assembly planning.
- Measured in inches

Attachments:

- Dimensions.pdf - measurements and its diagrams

CAD Design and Printing - PSU Box

Done by: Haya

- Designed the PSU enclosure, which includes two parts:
    - Base, with a wire slot
    - A slide-in lid

During testing, I had to file down the top part of the base slightly for the PSU to fit through

Attachments:

- PSU_LID.SLDPRT
- PSU_BODY.SLDPRT
- PSUCasePhoto.png

Tools: SOLIDWORKS, 3D printer from RPC

Preliminary Sketch - Fluid Deposition Mechanism

Done by: Haya and Gaby

- Created a mechanism for fluid deposition for the screen-printing process.
- The design was based on constraints to use a syringe and stepper motor
- Components can be CADded, but need to be screwed together
- Next steps: Create a schematic drawing and CAD parts surrounding the dimensions of our syringe and stepper motor

Attachments:

- FluidIntegration.png file explaining the concept, and its components needed
- https://www.youtube.com/watch?v=Ya2Ck09Q0-Q&start=1 Link showcasing process

PCB assembly and wiring

Done by: Haya and Gaby

- Most of the PCB work was done by Andrew, but we finalized it by doing its final connections of male and female connector wires.
- We followed the documentation in a link I'll provide.
- An issue came up where the Z-axis connection didn't fit, so Andrew soldered the wires directly.

Attachments:

- PCBAssembly.png Snapshot showing the assembly
- https://osoyoo.com/2016/07/03/reprap-3d-printer-circuit-connection-graph/ Our guide

Electrical components - PSU/Components assembly

Done by: Haya, Gaby, Ahyan. Dany

- Helped attach electrical components to the PSU and tested wire connections.
- We submitted a photo of this, though note: the wires have been continuously connected and disconnected due to ongoing testing

Attachments:

- ComponentsAssembly.png

Education Liaison

Done by: Haya

- Acted as the Education Liaison for the team. My role was to support the Education sub-team by helping them understand the technical aspects of the project.
- I connected with them to clarify details about the mechanical and electrical subsystems and answered any questions they had so they could complete their documentation accurately.
- We only had time to mainly discuss the chemical side of the curriculum

Software/Tools Used

- SolidWorks 2023 / 2024
- PDF editor: done on Goodnotes
- Machining: UW E5 Machine shop
- Soldering & electrical work done using standard lab equipment