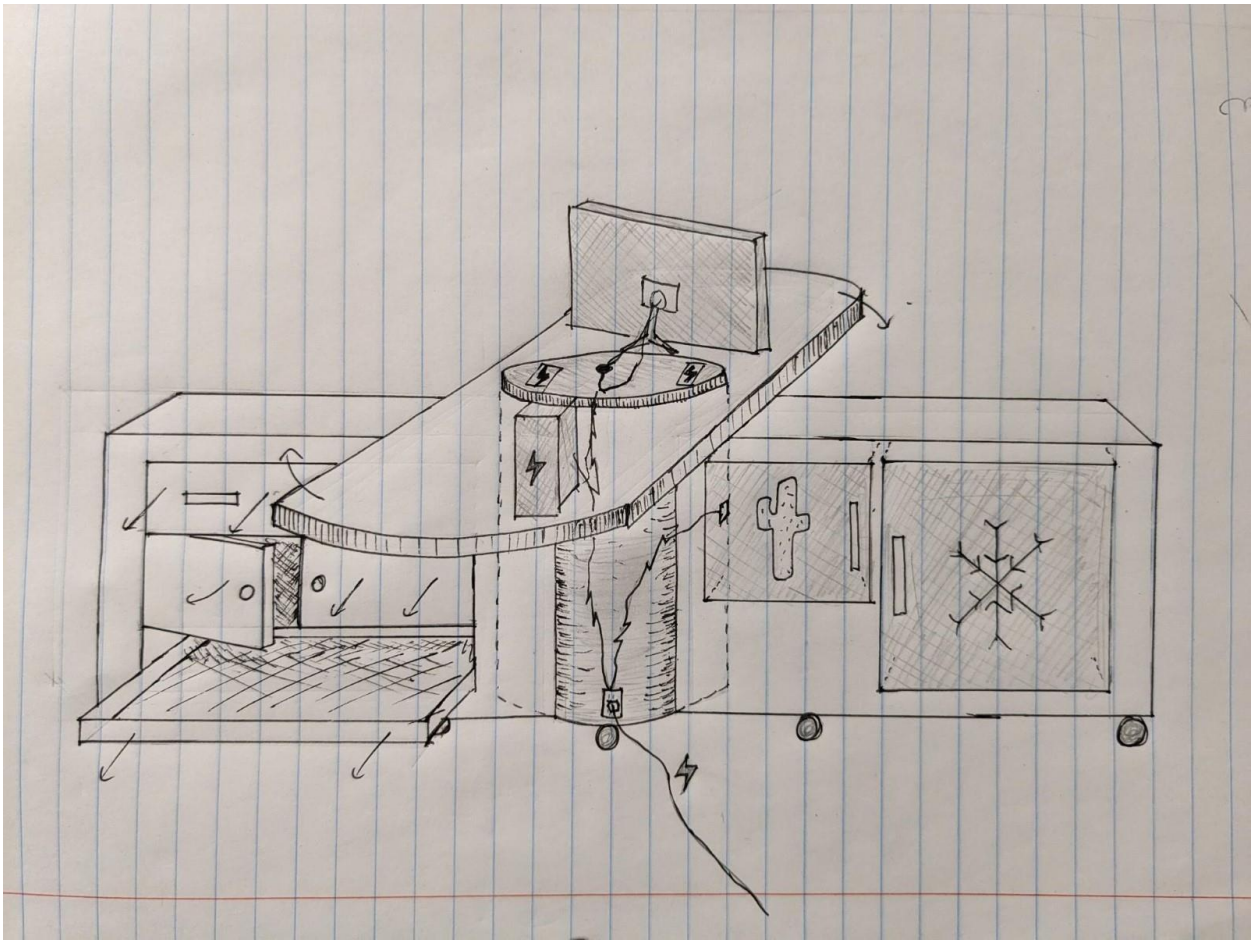
Project Deliverable E: Project Schedule and Cost

Detailed Design



The final design will consist of a base unit with a rotating tabletop. The base unit will have a central circular unit, which cords can be threaded through at the base and connected to a wall outlet to provide a power source. Attached to this will be two rectangular blocks, one with shelves for storage and one with a built-in freezer and dehumidifier. The freezer and dehumidifier will also have access to power through the central unit (electrical wires are threaded through the block into the central unit and out the bottom to be plugged into an outlet). The tabletop will be rotating (using a swivel) to allow it to fit in different spaces and so workers can position it in a way to maximize space and efficiency for the project they are working on. Desktops will also be included on the tabletop with the electricity access the same as stated above. The entire unit will be mobile with wheels attached to the base; these wheels will have manual locks (kick-down). Another thing that we are trying to consider is accessibility for people who require seating or who use a wheelchair. Based on the Accessibility for Ontarians with Disabilities Act, 2005 (AODA) it is required for businesses and public places for accessibility for people with disabilities. This is still a work in process to incorporate this in our design. (Ontario, 2023) Accessibility in Ontario | ontario.ca

Bill of Materials

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Equipment List

Prototype 1	Prototype 2	Prototype 3
Solidworks	Solidworks	Solidworks
		3D printer
		3D printing filament

Project Risks and Contingency Plan

In regards to testing the prototypes, the group will follow the schedule outlined below. In the scenario in which any number prototype fails to pass a test, the team will take some time to adjust the prototype accordingly or switch to the contingency plan. The largest project risk pertains to the functionality of complex mechanisms, such as the rotation of the top table. In the case of failure to figure out how this section can be implemented into the physical and online prototypes; the proposed course of action would be to either simplify the overall design centered around rotation or switch to the existing U-shaped table design, as suggested by the TA and PM. Another related concern is time management. There is a risk that, given the complexity of the design, there will not be enough time to complete the prototypes. There is also a concern that, if at some point the team switches to a simplified design too late into the process, there will not be enough time to complete that design either, given the poor distribution of allocated work time. The team will be continuously monitoring the probability of successful prototype completion to lessen the chance of the above issues occurring.

Prototyping Test Plan

Test ID	Description of Prototype used and of Basic Test Method (What)	Test Objective (Why)	Description of Results to be Recorded and how these results will be used (How)	Estimated Test duration and planned start date (When)
1	Client meeting 2 Prototype: Hand drawing, simple CAD model	Determine any required or desires changes based on client preferences	Record notes from client meeting	Nov 10: 2nd client meeting
2	SolidWorks static table-top load simulation. Prototype II	Determine max load on the spinning tabletop before failure. A method to determine an appropriate material or structure to support the required weight.	Stress, deformation, factor of safety plot	Digital simulation can only be completed after a detailed CAD prototype is made (prototype II: Nov 9) Since digital, relatively low testing duration/time requirement
3	SolidWorks static fastener simulation Prototype II	Fastener load simulation to determine the appropriate fasteners according to structure.	Stress, Factor of safety plot	^ |
4	SolidWorks static simulations for shelving and storage Prototype II	Determine make carrying capacity of storage units for equipment, freezer, and dehydrator.	Stress, Factor of safety plot	^ |
5	SolidWorks overall weight on wheels Prototype II	Determine how many wheels/contact points are necessary to support the overall weight of the workstation	Based on decided wheels, calculate load capacity of one. Divide total force of gravity by the max load of one wheel. Consider weight of equipment and factor of safety	^ |

Stopping Criteria

1. When client is satisfied with overall design and features
2. 3. 4. When acceptable results for max load on fasteners, tabletops and shelving is met.

Schedule

November 5: Prototype I

- Have idea finalized by November 3rd

November 12: Prototype II

- Aim to complete by lab meeting on Thursday November 9th so there is time for any necessary modifications

November 26: Prototype III

- Continuously work on the 3D model in between deliverables to print the 3D prototype by the 26th