GNG 1103 – Deliverable C

Chosen project: Plant-processing station

Plant processing
A multi-purpose station is needed to process the plants that are harvested. It must have space to work with the plants recently collected as well as space to dry some plants for a longer period of time out of the way. The drying section should include a dehumidifier. It must be able to hold all the tools and any other ingredients necessary for each step and be big enough for 2 people to work at the same time comfortably to process the plants into medicines and tinctures. Once they have been dried and processed there should also be space to store them temporarily to be distributed. A space for a freezer is also needed for storage. Ideally it should be mobile.
The station should include power for computers where a database of plants collected would be kept. A database and tagging system would be a bonus for your design.
The station should also be able to accommodate future work for water sampling.

List of Prioritized Design Criteria

Needs	Design Criteria
Enough space to work with plants	- Area of station's surface (m^2) - Dimensions of station (length by width by height)
A drying station with a dehumidifier	- Requires outlet access - Dimensions and weight of the drying station/dehumidifier
Enough space for two people to work comfortably	- Area of station's surface (m^2) - Dimensions of station (length by width by height)
Storage space (including a freezer)	- Volume of storage area - Temperature regulation for freezer
Plant processing station is mobile	- Wheels with proper braking
Must be powered for freezer and computers	- Requires outlet access
Must be easily cleaned	- Material of the station's surfaces - Simplicity of the design
Accommodate future water sampling work	- Dimensions (length by width by height) and area (m^2) of the surface - Free space for future additions

Functional Design Requirements

- Adequate space to process plant samples
- Adequate space for two people to work at the station comfortably (without getting in each other's way)
- Storage space
- Should be mobile (on wheels)
- Access to electricity
- Deep freezer with enough storage space for plant and animal samples
- Adequate braking system and proper stability when immobile

Non-Functional Design Requirements

- Aesthetically pleasing (natural/environmental aspects; non-industrial)
- Multifunctional space
- Working station surfaces are non-porous and easy to clean
- Drying station attached to workspace (mobility)
- Enough free space to be converted into water sampling station + appropriate equipment storage for new projects

Constraints

- Size (length by width by height): must fit in the lab space while also being large enough for lab activities
- Weight (lbs); must be easy to move around

Target Specifications

Available (workable) counter space	Min: 1m^2
Countertop Material	Stainless steel: Durable Non-tarnish Easy to clean. No Contamination
Overall, Min-Max Dimensions	Width: 1.5m – 2.5m Depth: 0.8m – 1.5m Height: Adjustable (sit – stand)
Storage Space	Compact storage for small freezer and dehydrator (see dimensions below) Water sampling/other testing equipment (fragile materials, ex. Glass beakers, test tubes) Handheld tools
Max Weight	Liftable by two people: 80 – 150 lbs or Easy Disassembly (for storage and mobility) As lightweight as possible
Dehydrator Model/Dimensions	https://www.amazon.ca/COSORI-Dehydrator-Stainless-Temperature-Compliant/dp/B07PY5M579/ref=sr_1_5?keywords=dehydrator&sr=8-5&th=1 L x W x H: 34.3 x 45.2 x 31 cm
Freezer Dimensions	https://www.amazon.ca/Midea-MRC04M3AWW-Removable-Adjustable-Temperature/dp/B00MVVITWC/ref=sr_1_5?keywords=small+chest+freezer&sr=8-5 21.5" W x 19.5" D x 33.5" H
Integrated Power Outlets	Min: 5 (computer, freezer, dehydrator, lighting, testing tools/equipment etc.)

	Dedicated space for proper cable management
Mode of transportation	Manual Pushing Motor assisted? Wheel locking mechanism when stationary Breaking system when moving

Technical Benchmarking

Additions to User Benchmarking Information

Potential Studies to Reference:

Is a green building really better for building occupants? A longitudinal evaluation

Mamwi Gidaanjitoomin/Together We Build It: A Systematic Review of Traditional Indigenous Building Structures in North America and Their Potential Application in Contemporary Designs to Promote Environment and Well-Being

Bench Marking

Mobile Desk

Companies name	Worthington Direct	Lab Tech Supply Company
Surface PROTECTION	Non-emitting UV and Chemical-resistant,	Chemical resistant
Weight	Supports up to 220 lbs. weight capacity evenly	N/A
Storage Space	-One Large cabinet with a lock that has internal shelving - three drawer cabinet with locks.	-Custom cabinet/drawers
Wheels	Wheels with locks	Wheels with lock
Structure	structural rigidity is made of 2" x 2" cross brace that is welded and 11-gauge steel "L" Frame is made of 14-gauge thick wall with 2-½" square steel tube	-Adjustable leg - Keyboard pullouts trays - hose cutouts for cables - Reduce Vibration

Links	Mobile Instructor Helm Desk with ChemGuard Top (96" x 30") | Science and Lab Tables | Worthington Direct	Custom Lab Table | Science Lab Furniture - LabTech Supply (labtechsupplyco.com)

The good quality of both desks is that they are chemical resistant, mobile and provide some sort of storage. However, Worthington Direct provides multiple drawers with shelves in them. Lab Tech Supply Company allows customers to custom their products.

Worthington Direct has features such as its well structure which should be considered when designing our own desk. Lab Tech Supply Company has features such as keyboard pullouts trays for the computers, adjustable legs to change the height of the table, and able to reduce vibration.

Target Specifications

Reflection

As we've gone from Deliverable B to C, our path has been shaped a lot by the insightful client meeting. In this journey, we've seen how important it is to make sure our design criteria and specifications match what the client needs. The client meeting really emphasized that we should focus on including everyone, respecting the culture, being eco-friendly, and making sure things work well. These values are now at the heart of what we're doing in Deliverable C.

Meeting Impact:

1. Clarification of Client Needs:
- The meeting provided deeper insights into the program's requirements and cultural considerations.
- Highlighted the importance of sustainability and cultural reflection in our design criteria.
2. Focus on Outdoor Processing Space:
- The client's emphasis on outdoor processing space for traditional hide tanning was noted.
- Aligned with cultural practices and became a high-priority criterion.
3. Incorporating Natural Elements:
- The desire for an environmentally reflective building with exposed timber and green spaces became more pronounced.
- Influenced our non-functional design criterion for aesthetics.