

Plant Operations keeping campus safe during COVID-19

January 2022

Stepanka Elias
Executive Director, Facilities



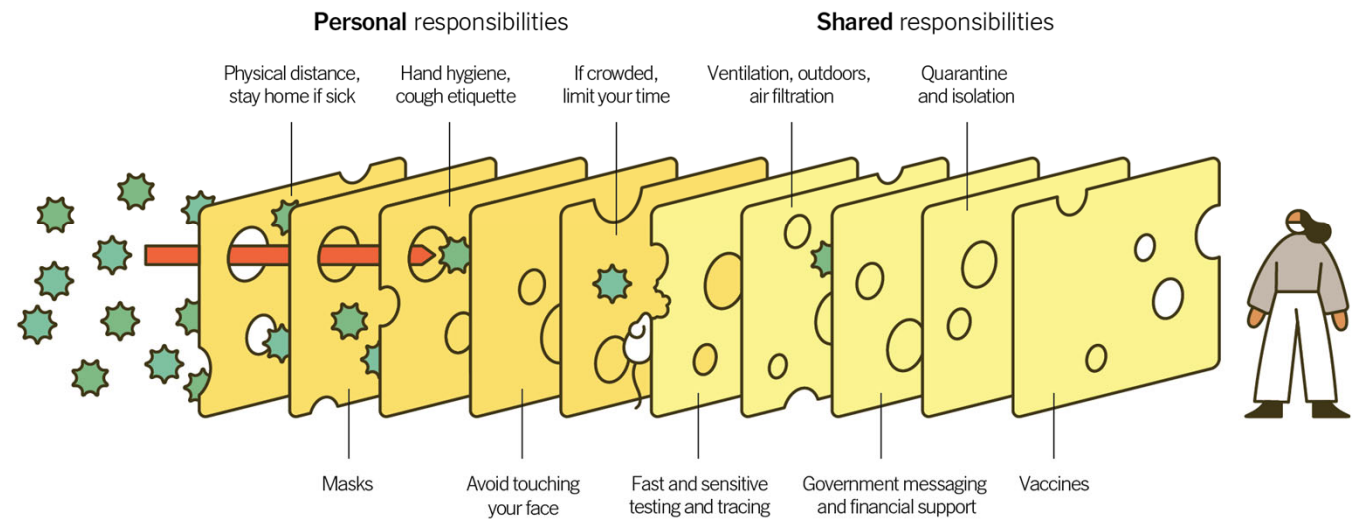
Keeping campus safe – Plant Ops

Safety is multi-layer approach

Plant Ops staff never left the campus

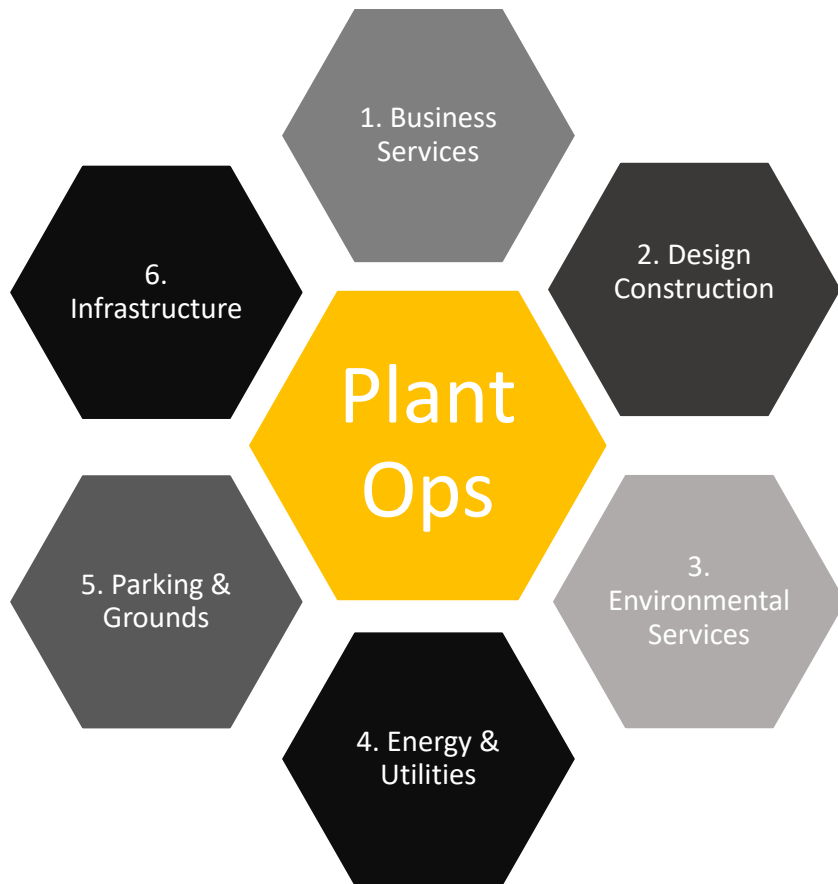
Multiple Layers Improve Success

The Swiss Cheese Respiratory Pandemic Defense recognizes that no single intervention is perfect at preventing the spread of the coronavirus. Each intervention (layer) has holes.



Source: Adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong

Plant Ops



Three campuses and several research areas (over 1,100 acres)

Nearly 9million gsf of space

Students 42,000

Employees 5,000




1. Business Services

- Client Services
- Central dispatch
- Tool Room
- Key Control
- Service Interruption Notification



We are available to assist 24 hours a day 7 days a week

Emergencies x 33793

 pltops.maintenance@uwaterloo.ca

The screenshot shows a web portal titled "Maintenance & Operations Work Requests". At the top, there is a search bar with the placeholder text "How can we help you?". Below the search bar, a breadcrumb trail reads "All Services > Maintenance & Operations Work Requests". The main content area is a grid of ten service categories, each with a representative image and a text label: HEATING VENTILATION & AC (thermostat), ELECTRICAL (circuit breakers), PLUMBING (plumber), LOCKSMITH (keys), BUILDINGS (worker), ELEVATOR (elevator interior), FIRE PROTECTION (fire alarm), CUSTODIAL (gloves), GROUNDS (tractor), and WASTE (trash bins).

1. Business Services

- Client Services
- Central dispatch
- Tool Room
- Key Control
- Service Interruption Notification

Tool Room

Open daily
(did not close during pandemic)

HVAC filters
Masks
Sanitizer
Tools
Repair parts
..
..

Managing supply chain issues

Key Control

Open daily
(did not close during pandemic)
Extra key distribution to access buildings when UW locked down



We are available to assist 24 hours a day 7 days a week

Emergencies x 33793

<https://uwaterloo.ca/plant-operations/materials-purchasing/covid-19-supplies>

Materials Purchasing

Plant Operations Tool Room offers a wide selection of materials for on-campus use. Please visit our [Materials Catalogue](#) to browse the current selection of materials offered. Any questions, concerns or requests can be emailed to pltops.toolcrib@uwaterloo.ca or by phone at extension 45657. Once you have selected the materials you need please fill out the [Product Order Form](#) linked below and fill out the necessary staff and Unit4 information.

**Materials
Catalogue**

COVID-19 Supplies

**PRODUCT
Order Form**

Managers currently working on-campus, or who have employees currently working on-campus, can order non-medical, cloth face [masks](#) [online from Central Stores](#) at no charge.

1. Business Services

- Client Services
- Central dispatch
- Tool Room
- Key Control
- Service Interruption Notification

<https://uwaterloo.ca/plant-operations/service-interruptions>

Plant Operations

Service Interruption Notice

FROM: Rob Hunsperger, Director, Design and Construction Services
DATE: January 10, 2022

What is happening?
Interruption to perimeter heating at B1

When is this happening?
January 19th between approximately 8:00am-12:00pm

Where is this happening?
B1 (07)

How does this affect the UW community?
There may be some building heat loss during this time.

Who to contact for more information?
Rob Smith (r54smith@uwaterloo.ca)

This work must be performed at this time, and cannot be rescheduled.



We are available to assist 24 hours a day 7 days a week

Emergencies x 33793

Buildings Subscribed

Services Subscribed

Buildings Subscribed

I want to subscribe to notifications for: *

- all buildings
- only the buildings selected below

<input type="checkbox"/>	68 Victoria Street South - VSS (139)
<input type="checkbox"/>	Aberfoyle Building - AB (129)
<input type="checkbox"/>	Architecture Annex Rome - AAR (140)
<input type="checkbox"/>	Arts Building - ART (59)
<input type="checkbox"/>	Arts Lecture Hall - AL (9)
<input type="checkbox"/>	AVRIL - AVR (72)
<input type="checkbox"/>	R.C. Matthews Hall - RMH (32)

Buildings Subscribed

Services Subscribed

Services Subscribed

I want to subscribe to notifications for: *

- all services
- only the services selected below

<input type="checkbox"/>	Accessibility
<input type="checkbox"/>	Building Access
<input type="checkbox"/>	Custodial/Environmental
<input type="checkbox"/>	Electrical
<input type="checkbox"/>	Elevators
<input type="checkbox"/>	Fire Systems

2. Design & Construction

Construction and renovation work continues

COVID related precautions

- Strict requirements for contractors and consultants
- Attestations
- Vaccinations
- COVID safety compliance

<https://uwaterloo.ca/safety-office/contractor-and-service-provider-requirements>

<https://uwaterloo.ca/plant-operations/contractors-consultants/contractor-covid-19-update>



Many projects in progress to support teaching and research

3. Environmental Services

Custodial Services

All staff working

Additional staff were approved, and recruitment is in progress

- COVID related training
- SOPs to improve consistency
- Cleaning updates to comply with Public Health
- COVID cleans

People wonder

“when will my building be clean?”

“it is clean - we never stopped cleaning”



UNIVERSITY OF
WATERLOO

3. Environmental Services

<https://uwaterloo.ca/plant-operations/covid-19-cleaning-schedule>

Building Occupancy by Users by Building from Tuesday, October 12, 2021 to Friday, October 15, 2021

Building Name	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Arts Lecture Hall	5	5					2	3	4	7	5	6	8	7	8	3	1	2	3	4	3	2	3	3
AVRIL										1	4	4	6	5	5	4	2				1			
Carl A. Pollock Hall	5	7	2	1	1	1	1	6	24	74	107	116	133	115	159	146	143	107	74	45	35	26	14	10
Columbia Icefield	19	5	5	5	5	9	77	113	128	144	156	162	203	167	168	220	384	378	392	399	365	301	226	173
Commissary	2	2					1	3	13	15	14	14	12	18	19	14	12	3						2
Dana Porter Arts Library	9	12	1	1	2	1	4	17	57	75	115	125	143	151	158	148	128	50	23	15	15	14	13	11
Douglas Wright Engineering Building	11	12	6	5	5	3	5	14	44	69	87	92	92	114	122	110	83	59	30	19	13	16	10	12
Earth Sciences & Chemistry	12	13	10	6	4	4	7	16	51	84	117	109	117	114	113	102	92	74	58	42	28	21	19	12
Energy Research Centre	6	6	4	4	4	4	4	4	8	16	20	18	22	28	29	26	22	19	15	15	14	20	12	6
Engineering 2	16	14	7	5	4	4	5	21	77	119	165	168	194	217	225	221	190	131	81	55	31	24	23	21
Engineering 3	11	11	7	7	7	7	10	69	124	157	160	172	175	173	163	144	115	83	55	35	24	21	11	
Engineering 5	1	1	1	1	1	1	1	1	3	6	7	7	10	9	14	11	6	6	2	2	2	2	2	
Federation Hall	3	1	1	1	1	1	2	5	8	12	10	10	10	15	17	16	8	3	2	1	3	3	5	3
Graduate House											4	10	13	9	8	8	23	24	5					



Plant Operations »

COVID-19 Cleaning Schedule

Due to COVID-19, we have altered the cleaning frequency of many space types across campus.

EXPAND ALL	COLLAPSE ALL
DAY SHIFT COVID-19 CLEANING SERVICES	▼
NIGHT SHIFT COVID-19 CLEANING SERVICES	▼
WEEKEND COVID-19 CLEANING SERVICES	▼
CLEANING ON SNOWDAYS	▼

NIGHT SHIFT COVID-19 CLEANING SERVICES

Space Type	Inclusions/ Exclusions	Minimum Frequency	Other information
Offices	Includes: Interior and exterior door handle, desks and horizontal surfaces and ledges IF CLEARED, telephone, chair arm rests, light switch, meeting table, glass, spot cleaning on walls, garbage removal as required, cleansing of garbage can Serviced by others: all electronic equipment computer, printer, photocopier, keyboards, personal belongings	Weekly	Supplies for supplementary cleaning available through Materials Purchasing
Registrar owned classrooms	Includes: All horizontal surfaces, blackboard/ white board, chairs, high touch surfaces, replenishing of chalk, replenishing of plant ops owned disinfectant wipe dispensers, garbage collection Serviced by others: all electronic equipment	Unlocked – Daily Locked – Biweekly	

3. Environmental Services – COVID clean

General areas/offices/classrooms

- someone attends the space immediately
- disinfect high touch surface with hospital grade hydrogen peroxide
- use the electrostatic sprayer to spray charged disinfectant particles onto all surfaces
the particles cling to soft surfaces and hard surfaces
this leaves surfaces wet and a strong chemical smell
(we advise that the space can be left unoccupied for an hour)
- the entire process is complete within an hour of being notified

Laboratories (chemicals being present, sensitive equipment used, etc.)

1. we either bag the sensitive equipment first & then do the procedure, OR
2. modify the disinfectants used so that there is no chemical interaction, OR
3. if disinfectants can't be used - no cleaning is done and the space is left vacant for several days then cleaned by the usual

IMPORTANT – include info about sensitive equipment or chemical safety issues when a request for a covid clean is made



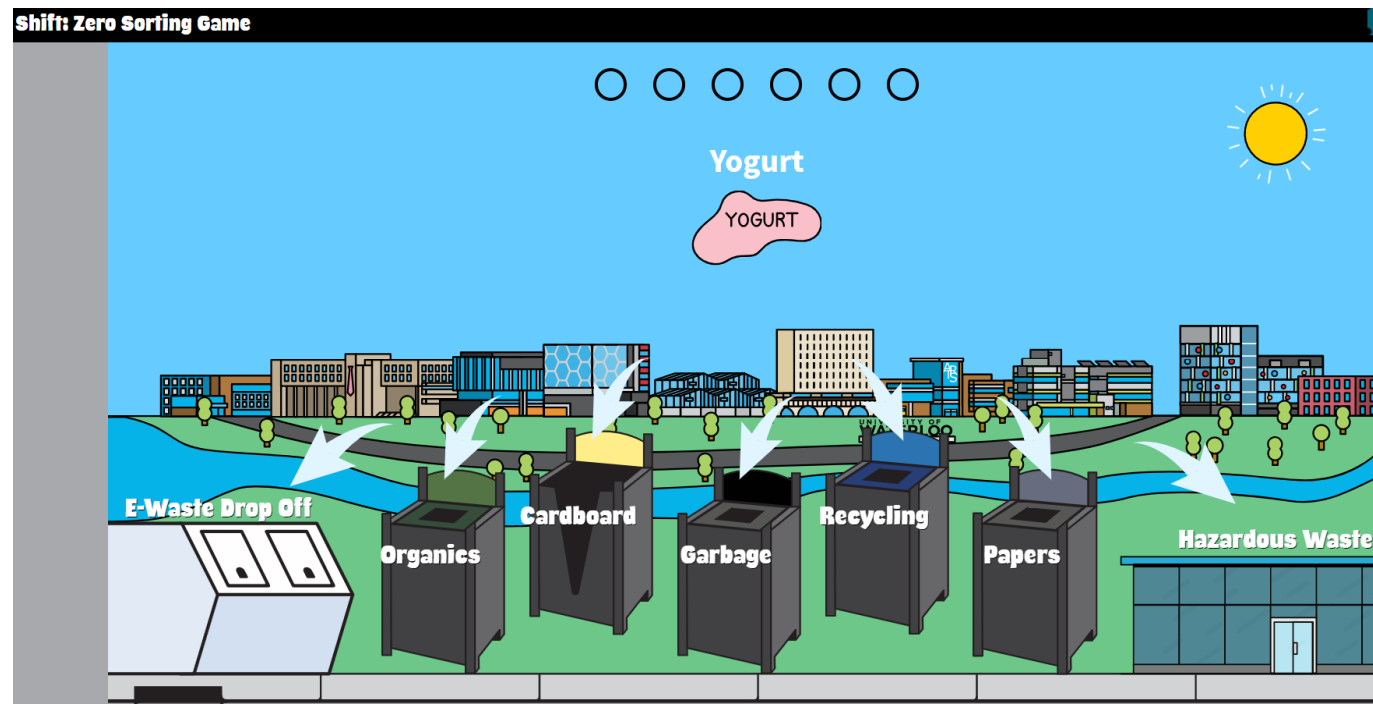
3. Environmental Services

Waste Management

- Promotion of recycling
- New streamlined receptacles
- PPE pilot recycling program

<https://uwaterloo.ca/plant-operations/services/environmental-services/shift-zero-waste-management/shift-zero-sorting-guide>

<https://uwaterloo.ca/sustainability/sort>

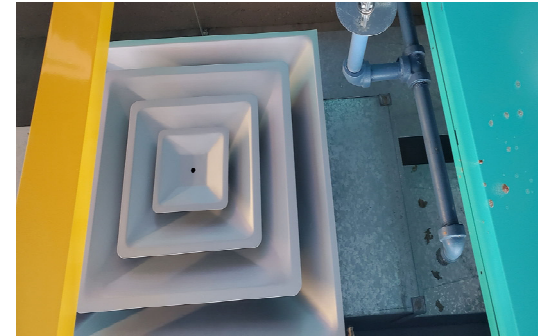


4. Energy & Utilities

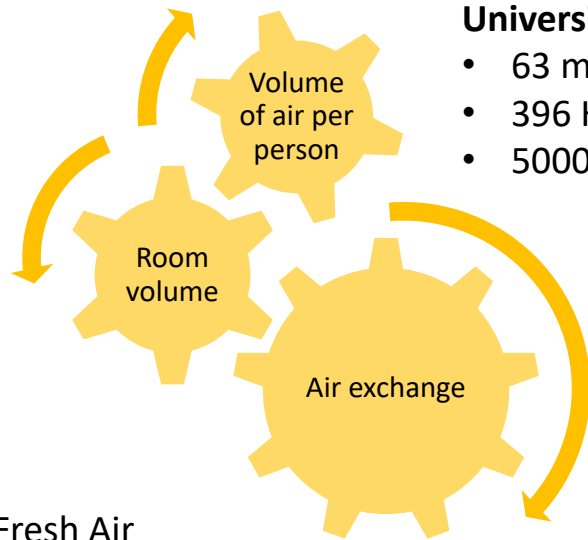
- Preventative maintenance
 - Heating and cooling
 - Domestic and processed water
 - Sanitary and storm sewers
 - Electrical
 - Building automation
 - Fire alarm systems
- Inspections
- COVID related changes
 - HVAC modifications
 - Filter replacements
 - BAS programming
 - Air exchange calculations
 - Water fountain maintenance & line flushing
- Emergency response



COVID related improvements were done in **all** UW buildings
Small exceptions - Bauer warehouse



HVAC Air Exchange Rates



University of Waterloo

- 63 major buildings
- 396 HVAC units
- 5000+ filters

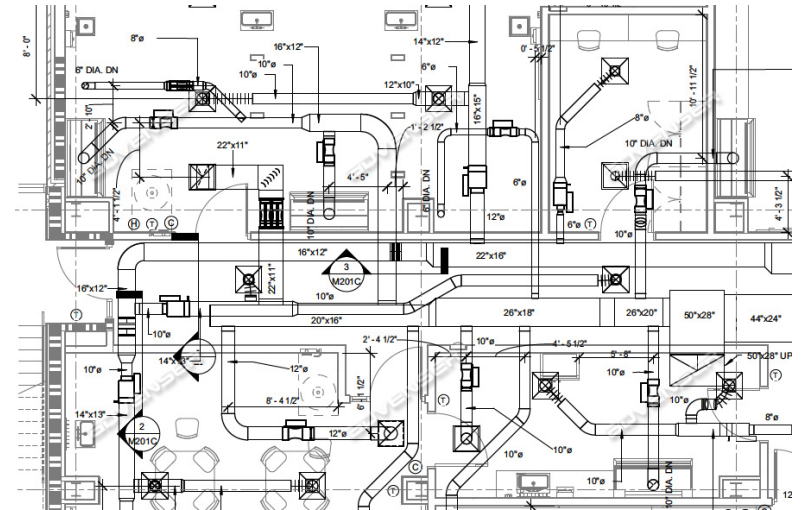
Fresh Air
Fresh Air equivalent



From mechanical drawings

- Air flow into the room cfm
- Volume of a room

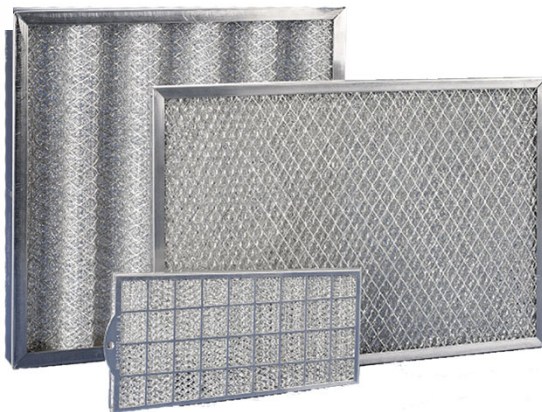
Flow/Volume = Air Exchange Rate



HVAC Filters



MERV VALUE	The filter will trap Average Particle Size Efficiency	The filter will trap Average Particle Size Efficiency	The filter will trap Average Particle Size Efficiency
	0.3 - 1.0 Micron	1.0 - 3.0 Micron	3.0 - 10.0 Micron
MERV 1	-	-	Less than 20%
MERV 2	-	-	Less than 20%
MERV 3	-	-	Less than 20%
MERV 4	-	-	Less than 20%
MERV 5	-	-	20% - 34%
MERV 6	-	-	35% - 49%
MERV 7	-	-	50% - 69%
MERV 8	-	-	70% - 85%
MERV 9	-	Less than 50%	85% or better
MERV 10	-	50% - 64%	85% or better
MERV 11	-	65% - 79%	85% or better
MERV 12	-	80% - 89%	90% or better
MERV 13	Less than 75%	90% or better	90% or better
MERV 14	75% - 84%	90% or better	90% or better



Filters

- MERV13 (all buildings*)
- Why this filter
- Can we use HEPA filter or Merv14?
- MERV80%
- Air supply 10 air exchanges per hour
- Air equivalent 80% of 10 = 8 equivalent



MERV14

Better performance than MERV13

The shape of filets is different

They will not fit

HEPA

Contaminant reduction by 99.9%

The high air flow resistance

Cannot be used. We would have very low air flow=exchange rates.

4. Energy & Utilities

Drinking fountains

- Turned off due to COVID in 2020
- Water fill station turned on in 2021
- Need for water fountains to support return of students

Starting to turn on in the older buildings

- Line flushing
- Water quality testing by external agency
- Slow process (be patient)

Older units

Many not used for 2 years

Parts seized - many need repairs

Dealing with supply chain issues



UNIVERSITY OF
WATERLOO



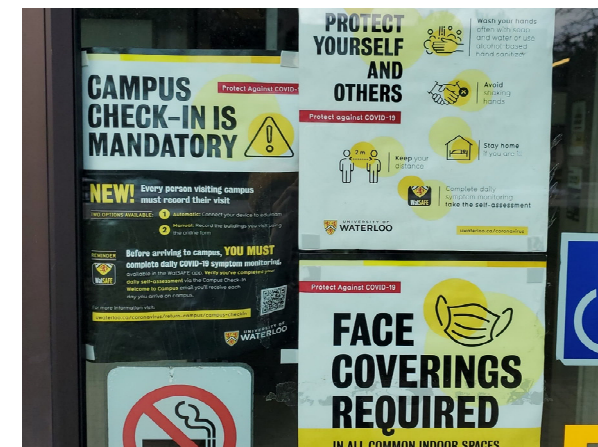
5. Parking & Grounds



- Grounds maintenance (grass, flowers, litter, snow, etc.)
- Parking (mask enforcement, COVID vaccination center support, fire watch, etc.)

6. Infrastructure & Maintenance

- Preventative maintenance
 - Roofing
 - Windows
 - Doors
 - Filter changes
- Inspections
- COVID related changes
 - Plexi installations
 - Dispenser installations
- Large campus wide project for infrastructure renewal
 - High voltage hydro
 - Roof repairs
 - Condenser water pipes
 -



Plant Ops staff never left the campus

- All CUPE on campus
- Supervisors/managers scheduling campus presence to ensure support for staff
- Admin functions scheduled on campus to provide required services

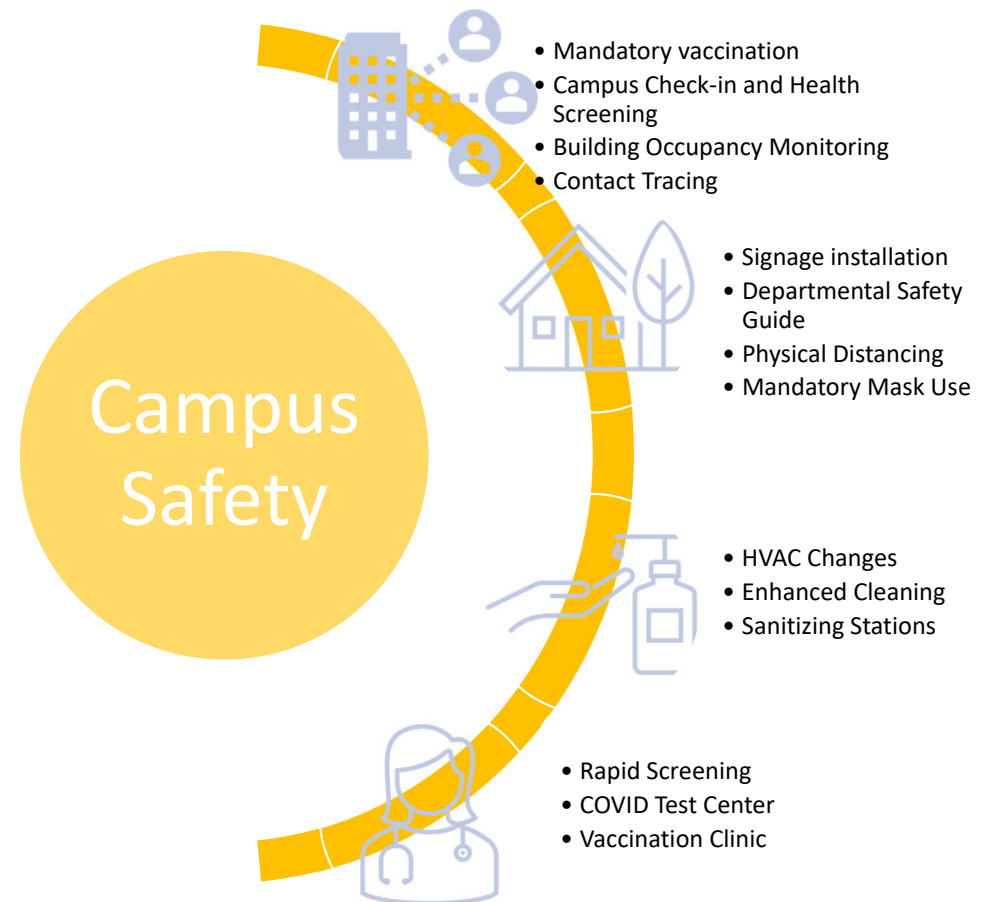
Recruitment challenges

Staff shortage

- Trades
- Custodial
- Project management
- Client support



Team effort of many departments on campus



Questions:

