COVID-19 Safety Plan – Department of Chemical Engineering

This document is a general guide to COVID-19 pandemic-related protocols and expectations for the people using areas of the QNC building under the control of the Department of Chemical Engineering, including students, visitors, faculty, and staff.

This document is part of the University of Waterloo’s overall efforts to safely restart campus activities, following public health advice and best practices. For more information, see the University’s comprehensive and regularly updated COVID-19 information page, which includes the following resources:

- Information for Students: [https://uwaterloo.ca/coronavirus/](https://uwaterloo.ca/coronavirus/)

For more information about this QNC safety plan, contact the department representatives below:

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Email</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interim Department Chair</td>
<td>Marc Aucoin</td>
<td><a href="mailto:marc.aucoin@uwaterloo.ca">marc.aucoin@uwaterloo.ca</a></td>
<td>x36084</td>
</tr>
<tr>
<td>Administrative Officer</td>
<td>Liz Bevan</td>
<td><a href="mailto:eabevan@uwaterloo.ca">eabevan@uwaterloo.ca</a></td>
<td>x32296</td>
</tr>
<tr>
<td>Director of Technical Operations</td>
<td>Tom Dean</td>
<td><a href="mailto:tjdean@uwaterloo.ca">tjdean@uwaterloo.ca</a></td>
<td>x31166</td>
</tr>
<tr>
<td>Safety Officer</td>
<td>Charles Dal Castel</td>
<td><a href="mailto:c2dalcas@uwaterloo.ca">c2dalcas@uwaterloo.ca</a></td>
<td>x33311</td>
</tr>
</tbody>
</table>

The Quantun Nano Centre (QNC) is open for approved researchers/students, faculty and staff to access without a key fob from Monday to Friday, 8am to 6pm. Students attending undergraduate labs can also access the building. You may enter only through the doors close to the ring road.
1. EMPLOYEE TRAINING
To ensure the safety of everyone on campus, we must all become aware of the new guidelines put in place to reduce the risk of community spread of COVID-19 on campus.

Before returning to campus and visiting QNC, all students, visitors, faculty and staff must

- Complete the mandatory “Return to Campus Safely during COVID-19” (SO 2036) online training, and
- Review with supervisor/instructor and acknowledge the safety practices outlined in this document (see section 6 for acknowledgment instructions).

2. RESPONSIBILITIES
Regardless of your role on campus, you have responsibilities with regards to maintaining a safe campus. Read on for the specific responsibilities of the department chair, supervisors, employees and students.

2.1 DEPARTMENT CHAIR

- Develop the overall departmental plan with input from management team/supervisors.
- Ensure this plan meets Health & Safety Guidance during COVID-19.
- Enforce all criteria within this plan.
- Ensure appropriate hand hygiene and surface disinfection supplies are provided for employees.
- Hold supervisors accountable for overseeing the implementation and monitoring of the plan.

2.2 SUPERVISOR

- Meet with employees remotely before they return to the workplace to review the plan and discuss individual aspects and employee concerns. Orientation shall cover all items within this plan.
- Ensure this plan meets Health & Safety Guidance during COVID-19.
- Enforce all criteria within this plan.
- Ensure appropriate hand hygiene and surface disinfection supplies are provided for employees.
- Physically visit and inspect the workplace on a monthly basis to:
  - Identify hazards as per the Occupational Health and Safety Act
  - Ensure the adequacy and adherence to this safety plan
2.3 EMPLOYEES AND STUDENTS

- Follow all guidance within this plan.
- Work from home as directed.
- Notify their supervisor if supplies are not sufficient to maintain hand hygiene and surface decontamination requirements.
- Notify their supervisor of any hazards that are discovered while working.
- Do not come to work if ill and report all illnesses to their supervisor using the process outlined in section 3.2 Illness and Absence Reporting.

3. HIERARCHY OF CONTROLS

This is a safety plan template based on the hierarchy of controls model of risk management. The premise is to prioritize and implement controls that are known to be most effective (removing/eliminating exposure vs using PPE). The image in Figure 1 depicts this model with COVID-19 specific controls.

![Hierarchy of Controls Diagram](image-url)

**Figure 1: Hierarchy of controls as it applies to COVID-19**
3.1. ELIMINATION OF HAZARD - CONTINUING WORK FROM HOME

Eliminating the hazard is the best way to minimize risk. Determine what work should be performed remotely and what work must be done on campus.

All work that can be done remotely should be done remotely.

Table 1: Examples of remote work and on-campus work

<table>
<thead>
<tr>
<th>Remote work</th>
<th>On-Campus work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emails, Phone Calls (i.e: communications)</td>
<td>Research in labs</td>
</tr>
<tr>
<td>Lecture preparation and online delivery as much as possible</td>
<td>In-class lectures (where approved)</td>
</tr>
<tr>
<td></td>
<td>UG Lab instruction (where approved)</td>
</tr>
<tr>
<td>Attending meetings – Teams, Zoom</td>
<td>Analytical Lab research activities</td>
</tr>
<tr>
<td>Paper writing / Theses writing</td>
<td>Admin/tech support as requested by students/researchers</td>
</tr>
</tbody>
</table>

Those performing critical functions and requiring access to Chemical Engineering buildings, including QNC, must receive formal approval prior to entry. Having a key/fob issued in the past does not mean that you are permitted to access the building or your office. Approvals must be requested to your supervisor, this includes access to laboratories and office spaces. Acknowledgment of all approved individuals will be forwarded to the Director of Technical Operations (Tom Dean) and Safety Officer (Charles Dal Castel).

3.2. ENGINEERING CONTROLS - RE-DESIGN OR MODIFY THE WORKPLACE

Next to working from home, physical distancing is the best way to reduce risk. To ensure that all occupants of QNC can maintain the recommended 2m of physical distance from each other, we will use these main tools:

- Occupancy limits
- Traffic flow restrictions
- Work scheduling
3.2.1 OCCUPANCY LIMITS AND TRAFFIC FLOW

- To help facilitate physical distancing, the Department of Chemical Engineering has set occupancy limits to all common areas to help maintain protocol, as specified in table 2 below.

Table 2: Occupancy Limits for all rooms in QNC under the departmental control:

<table>
<thead>
<tr>
<th>Description</th>
<th>Room #</th>
<th>Occupancy Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevators</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Washrooms</td>
<td>Various</td>
<td>See Figures 2-7</td>
</tr>
<tr>
<td>Faculty/Staff Offices</td>
<td>Various</td>
<td>2 (1 occupant + 1 visitor for short period)</td>
</tr>
<tr>
<td>Grad Offices</td>
<td>Various</td>
<td>See specific safety plans</td>
</tr>
<tr>
<td>Admin Office</td>
<td>2603</td>
<td>2</td>
</tr>
<tr>
<td>Lounge Areas</td>
<td>3403, 4403, 5403</td>
<td>2</td>
</tr>
<tr>
<td>Analytical Lab</td>
<td>4503</td>
<td>See specific safety plan</td>
</tr>
<tr>
<td>UG Teaching Labs</td>
<td>2506/07/09 and 2611/12/13/14</td>
<td>See specific safety plans</td>
</tr>
<tr>
<td>4th Year Study Room</td>
<td>2401</td>
<td>Remain Closed</td>
</tr>
<tr>
<td>Lobby Study Areas</td>
<td>Basement/1st/2nd floors</td>
<td>Remain Closed</td>
</tr>
<tr>
<td>Meeting rooms</td>
<td>3402/4402/5402</td>
<td>Remain Closed</td>
</tr>
</tbody>
</table>

To help maintain proper occupancy limits within QNC, the following protocols are in place:

- Starting September 8, you must use Campus Check-In to record every visit to a campus building.
- You must either connect your mobile device to eduroam wifi or sign in to checkin.uwaterloo.ca
- Campus Check-In will help us monitor building occupancy and trace contacts if there is a positive COVID-19 case on campus.
3.2.2 TRAFFIC FLOW

The following traffic flow guidelines have been instituted to help everyone maintain 2 m of physical distance between themselves and others:

- When entering and exiting QNC, use the designated entrance and exit doors, as marked in Figure 2 and 3 below. Use automatic door openers and sanitize hands upon entry and departure.
- When walking the hallways, maintain 2 meter distancing at all times. Keep right when passing others.
- When using the elevator, check occupancy for two-person limit. Enter if occupancy permits, and maintain 2 m distancing.
- When using a staircase, respect the staircase direction (i.e. UP or DOWN), as shown in Figures 2 to 7.
- When entering an office, check occupancy first, then enter and remove your face mask only if you are the sole occupant. If more than one person is in the office, everyone must wear a face mask.
- When entering and exiting a lab or workshop, check occupancy and follow the guidelines in the specific Safety Plan.
- When using a common facility (e.g. lounge), check occupancy, enter if space permits, wear a mask and maintain the 2 m distance. Face masks can be removed when eating at the lounge areas.

The traffic flow plans for the QNC building are illustrated in Figures 2 to 4 below.

Figure 2: Floor Plan – QNC First floor
Figure 3: Floor Plan – QNC Second floor

Figure 4: Floor Plan – QNC Third floor
Figure 5: Floor Plan – QNC Fourth floor

Figure 6: Floor Plan – QNC Fifth floor
3.3. ADMINISTRATIVE CONTROLS

3.3.1 CONTROLLED BUILDING ACCESS

You must access the building through the main entrances to QNC, which are the doors close to Ring Road and the bridge to the Biology building. The doors of QNC will remain locked with approved faculty, staff, and students having key access. These doors will be unlocked on those days when undergraduate labs and/or classes are taking place in the building.

You may exit the building through all the other access doors (see Figure 2 and 3). These exterior doors will remain locked at all times, allowing exit only.

Use automatic door openers to the maximum extent. Sanitize hands upon entry and exiting. Be as direct as possible getting to your work space or office, and limit your movement through the building. Conduct essential activities only.

Access to the building must be through the main entrance of the building (Lobby door West). The exterior doors of QNC will remain locked with approved faculty, staff, and students having FOB access. The main entrance door will remain unlocked on days that UG labs, or classes are taking place in the building. Exiting of the building will be through the other access doors in the first floor (see Figure 2). Use automatic door openers to the maximum extent. Sanitize
hands upon entry and exiting. It is recommended that one be as direct as possible getting to their personal work space or office and movement through the building be limited to essential activities.

**Admin Office QNC-2603**
There is an Occupancy Limit of two persons in this office, occupied by the Administrative Assistant and Undergraduate Coordinator, Nanotechnology. The use of email or MS Teams is preferred but Wendy Gauthier will be present on Tuesdays and Thursdays for meetings in-person.
Use of mask is mandatory and a Plexiglas shield is installed in this office to further reduce the risk of virus spread.

**Classrooms QNC-1502 and QNC-2502**
No in-person classes will take place in QNC and the classroom will remain closed.

**Undergrad Labs**
The undergraduate labs are operating under the regular safety rules and and the following additional Covid-19 guidelines:

- Instructors/TA are required to wear masks in all common indoor spaces, including classrooms and labs.
  Instructors may be asked to wear a face mask with a clear window as a way to accommodate students with disabilities. Should this be required, AccessAbility Services will notify the instructor of this need and make arrangements for them to receive a face mask with a clear window from the Safety Office. Alternatively, instructors may wear a face shield in place of a mask, which may impede communication while they are teaching.
- Students must not attend labs if they are ill or have been in close contact with someone who is ill, or if they have travelled outside of Canada within the past 14 days.
- Wearing a face-covering/mask is required in all common areas on campus, including labs. Students must also wear regular lab attire, such as lab coats, safety glasses, long pants, and closed toes shoes. No food or beverages may be consumed during the lab. Students must also maintain physical distancing while entering and exiting the lab, as well as when performing experiments.
- Each lab has a detailed Covid-19 Safety Plan that describes occupancy limits, the location of workstations, sanitizing/disinfecting protocols, and a detailed schedule.
- Students should leave the building immediately after class is over, except those allowed to be in their research labs in QNC.
3.3.2 SCHEDULING
Staff and faculty spaces do not require special scheduling to keep physical distancing in QNC.

All work that can be performed from home should continue to be performed from home. If it can be done in the office, it can be done at home. Office usage should be kept to a minimum, and only lab work should be done on campus.

Grad/visitors offices must follow the occupancy limits described in the Lab Operation Safety Plan (these are Safety Plans made for each individual laboratory space).

Make sure to follow Working Alone guidelines at all times

3.3.3 HAND HYGIENE
Hand hygiene should be performed regularly throughout the day. At minimum, you should wash your hands or perform hand sanitization at the following times:

- When entering or leaving a new space
- When removing your gloves
- After using shared equipment

Hand washing is the preferred method of hand hygiene at UWaterloo. Hand sanitizers will be ineffective if hands are soiled with dirt, debris, oils, grease, and other contaminants. Use soap and warm water in these cases.

When washing your hands, follow these simple instructions:

1. Wet your hands with water and apply soap
2. Rub your hands together until the soap forms a lather
3. Rub the top of your hands, between your fingers and under your fingernails
4. Do this for about 20 seconds
5. Rinse your hands under running water
6. Dry your hands with a clean towel or paper towel
3.3.4 SURFACE DECONTAMINATION
The department will maintain cleaning kits and cleaning stations with the supplies needed to clean and disinfect your work areas and shared equipment when necessary. You will be responsible for wiping down your own areas. These cleaning kits are appropriate for general office environments and kitchenettes.

The kits will include:
- Disposable nitrile gloves
- Surface sanitizer spray
- Antibacterial disinfectant spray for hard non-porous surfaces
- Disposable disinfectant wipes for hard non-porous materials
- Disposable paper cloth towels

Remember that surface decontamination involves two stages: cleaning and then disinfection.

CLEANING
Cleaning involves the physical removal of visible dirt (e.g. dust, soil, blood, mucus). Cleaning removes, rather than kills, viruses and bacteria. Cleaning is the necessary first step because organic substances inhibit the effectiveness of disinfectants. Cleaning, which is done with water, detergents, and steady friction from a cleaning cloth, requires the following steps:
- Wear nitrile or other similar gloves.
- Remove organic materials with a disposable towel and discard.
- Use a cloth and warm soapy water to wipe down surfaces.
- Allow the surface to dry.

DISINFECTION
Disinfection is where the killing of viruses and bacteria occurs. Apply disinfectant to objects only – never apply it on the human body.

When disinfecting a surface, consider these important factors:
- Is the disinfectant effective against whatever you are trying to kill?
- Is the disinfectant appropriate for the surface being disinfected?
- Is the concentration of the disinfectant strong enough to be effective?
- How much contact time is required for the disinfectant to perform its action? Contact time refers to the amount of time that the disinfecting agent is required to be in wet contact with the surface/object to appropriately disinfect.

The disinfection kits provided are effective against COVID-19, appropriate for most surfaces, and concentrated enough to be effective. The table below indicates how much contact time is required for the disinfectant to kill the virus on shared equipment.
SHARED EQUIPMENT DECONTAMINATION

Table 3: Shared equipment disinfection details (note, drying times will depend on humidity but typically take between 5 and 10 min which should be better than sanitization but below complete disinfection).

<table>
<thead>
<tr>
<th>Equipment/surface identifier</th>
<th>Disinfectant</th>
<th>Contact time</th>
<th>Frequency of disinfection</th>
<th>Person responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer, Microwave, coffee maker (2604)</td>
<td>70% isopropyl alcohol / Lysol wipes/ Clorox wipes</td>
<td>2 min</td>
<td>Before and after each use</td>
<td>User</td>
</tr>
<tr>
<td>Meeting room (2604)</td>
<td>70% isopropyl alcohol / Lysol wipes/ Clorox wipes</td>
<td>2 min</td>
<td>Before and after each use</td>
<td>User</td>
</tr>
<tr>
<td>Lounges (3rd, 4th, and 5th floor)</td>
<td>70% isopropyl alcohol / Lysol wipes/ Clorox wipes</td>
<td>2 min</td>
<td>Before and after each use</td>
<td>User</td>
</tr>
<tr>
<td>Lab Equipment (UG labs)</td>
<td>See specific Covid-19 Safety Plans</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HIGH-TOUCH AREA DECONTAMINATION

Surfaces that are touched by hands very frequently tend to be heavily contaminated and become a potential source of COVID-19 infection. As such, we require your involvement to help decontaminate high-touch areas such as desk-surfaces and edges, elevator buttons, door knobs/handles/push plates, light switches, taps, touch-pads/touch-screens, handrails, drawer-pulls, tool handles equipment start buttons and power switches.

Table 4: High tough area decontamination details.

<table>
<thead>
<tr>
<th>Item Identifier</th>
<th>Disinfectant</th>
<th>Responsible Person</th>
<th>Frequency of disinfection</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure high touch surfaces (door knobs, light switches, accessible door plates, etc)</td>
<td>quaternary ammonium solution/Peroxide solution</td>
<td>Plant-ops</td>
<td>Daily</td>
<td>Evenings</td>
</tr>
</tbody>
</table>

*Research labs, workshops, and shared office spaces, must follow their own safety plans regarding shared equipment and high-touch areas decontamination.

3.4. GROUP PROTECTIVE EQUIPMENT/PERSONAL PROTECTIVE EQUIPMENT

If physical distancing is practiced, additional group protective equipment (GPE)/ personal protective equipment (PPE) will not be required.
However, when physical distancing not be possible for specific tasks or specific situations, GPE such as cloth face coverings should be used.

3.4.1. FACE MASKS

Face coverings are required in all common use areas of University buildings. While in a common use area of a University building, everyone – including employees, students, visitors and contractors – must wear a face covering. Common use areas includes corridors, lobbies, washrooms, elevators, classrooms, teaching laboratories, classrooms and meeting rooms, as well as any area where physical distancing is not possible.

In employee-only areas, managers will set expectations regarding masks with their teams based on physical setup and work activities.

Using Face Masks

Everyone wearing a face mask must follow these standard face mask precautions:

- Maintain consistent and strict adherence to hand hygiene, physical distancing, and respiratory etiquette.
- Wash hands or use hand sanitizer immediately before putting on and after taking off masks.
- Cover your nose and mouth, making sure the mask fits snugly but comfortably against the side of your face.
- Do not share the mask with others.
- Avoid touching the mask while using it.
- Do not touch your eyes, nose and mouth when applying or removing the mask.
- Remove the mask by grasping the ties or ear loops, and avoid touching the front of the mask.

Managers and researchers can order cloth face masks from Central Stores using the on-line stores requisition form (item code 33-0989).

Compliance

To ensure users comply with the requirements and protocols outlined in this guide, consequences for non-compliance will be administered to those who fail to follow the expectations outlined.

Staff, faculty, and the Safety Officer will monitor activity and remind individuals of the requirements and protocols and their responsibilities. When breaches occur, they will be handled as follows:

- First offence: Offender will be reminded of the protocol with a verbal warning.
- Second offence: Offender will be reported to their PI/Supervisor for a formal warning.
- Third offence: Offender will be reported to the department Chair for appropriate action. (Students, post-docs, and visiting researchers will be suspended from campus for one
week; faculty will have their office privileges revoked for one week; staff will be written up, and a note will be placed in their HR files).

Repeat offenders will be suspended from campus (Students, post-docs, and visiting researchers will be suspended from campus for one term; faculty and staff will be suspended from campus for a duration determined at the discretion of the Chair.)

4. HEALTH PROTOCOLS
It is important for the health of everyone on campus that we all monitor our health and take action to limit the spread of COVID-19. This includes performing regular self-assessments, staying home when any signs of illness are present, and reporting our absences so that contact tracing can be conducted if necessary, as described below.

4.1 SELF-ASSESSMENT SCREENING
To minimize the risk of community spread, employees and students must not come to campus when ill.

The University requires that employees and students monitor themselves daily for symptoms of COVID-19. The COVID-19 self-assessment tool, found in the WatSAFE app and on the University’s Health Protocols site provides clear directions on how to self-assess.

Signage posted at building entrances will remind employees and students to conduct self-assessments.

4.2 ILLNESS AND ABSENCE REPORTING
Do not participate in work or allow a member of your team to participate if exhibiting COVID-19 symptoms. Review and follow the University’s Health Protocols at all times.

All employees must be aware of the symptoms and the importance of reporting symptoms and/or absences to their supervisors or delegates before the beginning of the first day absent.

Due to COVID-19, all absences should be reported to the supervisor. Confidentiality of personal information will be maintained at all times and subsequent actions will include:

- If the employee is ill, the supervisor is to report this directly to Occupational Health.
- The supervisor is to proceed with usual illness reporting procedures through Workday (Not applicable for CUPE employees)
- During the return to campus phase, Occupational Health will continue to monitor all absences

5. CONTINGENCY PLAN
The Department of Chemical Engineering has contingency plans to describe the actions that will be taken if someone has symptoms of COVID-19, tests positive for COVID-19, or is required to self-isolate. Contingency plans also address what will happen if it becomes necessary to
revert to a previous phase (e.g., fewer employees in the workplace) or for all non-essential employees to work from home, which may be directed by the University or provincial or public health authorities.

5.1 COVID-19 SYMPTOMS OR DIAGNOSIS

If an employee or grad student has symptoms of COVID-19, tests positive for COVID-19, or is required to self-isolate, that person must proceed directly home to self-isolate and contact their health care provider or a COVID-19 Assessment and Testing Centre directly. They must report this to their supervisor immediately, using the process outlined in section 4.2 Illness and Absence Reporting.

The supervisor will conduct a Contact Tracing review of all others that recently came into contact with that person and alert them of the situation for self-monitoring. The person’s workspace should be disinfected (Refer to section 3.3.4 Surface Decontamination in this safety plan).

If someone becomes ill in class, whether they report symptoms or simply display symptoms, the instructor will ask them to proceed directly home to self-isolate and contact their health care provider or a COVID-19 Assessment and Testing Centre directly. The surfaces that person touched and the area where that person had been, including a two-metre radius around it, should be cleaned and disinfected. (Refer to section 3.3.4 Surface Decontamination in this safety plan).

5.2 COVID-19 OUTBREAK

If an active outbreak of COVID-19 in the Department of Chemical Engineering presents significant hazard to students, faculty, and staff in QNC, and upon the recommendation from Ontario Public Health, the department will return to Phase 1 as follows:

- All Chemical Engineering spaces in QNC will be closed and sanitized.
- All but essential employees will work at home. Employees must not report to campus for work.
- Arrangements for full remote delivery of classes and/or exams will be implemented, or classes will be postponed and suspended where this is not possible.
- All international and domestic travel will be suspended.
- Visits from all domestic and international visitors will be canceled.
6. QNC SAFETY PLAN ACKNOWLEDGEMENTS

Acknowledgement can be done electronically by filling the acknowledgment form in the link below.

<table>
<thead>
<tr>
<th>Employee Name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marc Aucoin, Chair</td>
<td></td>
<td>December 18, 2020</td>
</tr>
<tr>
<td>Elizabeth Bevan, Admin Officer</td>
<td>Liz Bevan</td>
<td>January 27, 2021</td>
</tr>
<tr>
<td>Charles Dal Castel, Safety Officer</td>
<td></td>
<td>January 27, 2021</td>
</tr>
</tbody>
</table>

Department head acknowledgement:

I have implemented all procedures outlined in this document to reduce infection risk of COVID-19. Those found not following these directives will be subjected to corrective action up to and including disciplinary measures.

Name: ___________________________ Marc Aucoin, Chair

Signature: ______________________ Date: December 18, 2020