COVID-19 Workspace Safety Plan – Lab Specific

Use of this template: All light italicized grey font are instructional and must be removed before final copy is approved.

This workspace safety plan will assist Principal Investigators who wish to continue or resume research activities in their lab. This plan will include a review of activities to be undertaken in the lab to ensure effective controls are in place to prevent the spread of COVID-19. Principal Investigators are responsible for ensuring this document reflects current government guidance and notices which can be found, along with information about UBC’s response to the pandemic at https://covid19.ubc.ca/.

This plan must be reviewed by your Local Safety Team, and signed by your Unit Head/Director. Once complete, the plan can be submitted with your online application to return to research.

Resources to Consult
The following guidance documents and resources were used in the development of this plan:

- Preventing Exposure
- Personal Protective Equipment
- Physical Distancing Guidelines
- Reporting COVID-19 Exposure
- Communications Resources
- UBC Research Resumption webpage
- WorksafeBC

Section #1: Lab information

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<thead>
<tr>
<th>Department</th>
<th>Mechanical Engineering</th>
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<tr>
<td>Faculty</td>
<td>APSC</td>
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<tr>
<td>Building(s)</td>
<td>ICICS</td>
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<tr>
<td>Lab(s)/workspace(s)</td>
<td>X015</td>
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Introduction to Your Lab

Provide a brief overview of your lab(s) and other used/shared facilities, current size of your group and your general research area (1-2 sentences).

ICICS X015 is a shared facility between Profs. Lyndia Wu and H.F. Machiel (Mike) Van der Loos. Prof. Van der Loos is the PI requesting graduate student employee access. This lab performs research in robotics, human-robot interaction and biomedical engineering experimentation. The lab includes robot arms and small mobile robots. In X015, there are approximately 12 graduate and undergraduates on average.

The following lab safety plan for X015 has been created in accordance with the ICICS Building Safety Plan published on June 16, 2020.

Section #2 - Risk Assessment
1. Lab/workspace Occupancy (under proposed COVID-19 operations)
List the number of people that will be present in your lab/workspace at the same time. List this by every room/lab/workspace you occupy.

In Phase 1, the PI is requesting that one graduate student employee be allowed access only to X015 for 5 days total, from 12:00 to 1600 over 2 weeks.

Confirm that you have discussed each employee’s comfort level with returning to work and have addressed any concerns, or will require further assistance in doing so. Any worker (staff, students, faculty, post docs, research associates, technicians and other research personnel) who has concerns about returning to work on campus can request an exemption to his/her supervisor.

The PI has discussed this with the one employee, and she is comfortable returning to the lab for the requested tasks.

- Provide actual numbers and percentage of previous i.e. 1/3 of ‘normal’ operations

One employee, [REDACTED], is requested to be able to access X015 for 5 days over 2 weeks at 4 hours per day as soon as possible. She will be the only person working in the lab during the work requested.

- Outline who remains working remotely and who you’ve requested back to work and why

One employee, [REDACTED], my PhD student, has requested access in Phase 1 to collect data from a specific robot in the lab. [REDACTED] has completed one year of her PhD work, has completed the departmental “Literature Review” stage, and now needs to advance to candidacy by completing the “Research Proposal Defence” (RPD) document and presentation in accordance with departmental guidelines and PhD program timetable. She is scheduled to complete her RPD by July 2020, so this need for access is urgent.

The robot in question is the “PR2”. Our lab owns the only academic PR2 in Canada, and it is being used in her research for its particular geometry and capabilities. She was able to collect an initial set of data before the mid-March research stoppage, and she now needs to complete this process for her proposal defence documentation. This work cannot be done in simulation because it depends on the interaction between the robot and its environment, and requires the human to be physically interacting with and guiding the movements of the robot arms. Once captured, the data can be analyzed remotely.

The other graduate students supervised by the PI and performing research in X015 are currently working remotely. These employees are: [REDACTED] Their research does not require them access to X015 in Phase 1.

2. Hazard Identification
Describe what hazards exist in your lab/workspace; both research-related (chemicals, heavy machinery) and COVID-19-related (areas that require closer personal interaction, equipment/instruments that cannot maintain social distancing i.e. that require >1 person to operate)
ICICS X015 contains a number of robot systems and prototype set-ups for human experimentation. The robot arms are bolted to tables; other robots are mobile and battery-powered. There are no chemicals or heavy equipment used by the employees. The labs’ electronics and mechanical assembly benches will not be used in the work requested.

3. Employee (HQP, research staff, other) Input/Involvement

Detail how you have involved frontline workers (HQP and research staff) and Joint Occupational Health and Safety Committees (JOHSC) and/or Local Safety Teams (LST) in identifying risks and protocols as part of this plan.

The PI is a member of the MECH LST and has discussed this access with the MECH Safety Officer. The PI has discussed this plan with the employee to make her aware of required safety regulations.

Describe how you will publish your plan (online, hardcopy) and otherwise communicate workplace health measures to employees. Guidelines from SRS are available here: https://srs.ubc.ca/covid-19/health-safety-covid-19/working-safely/

The employee will be working alone and is aware of distancing, hand washing and other required safety practices while entering, working in and exiting campus areas and buildings. The employee has been given the list in Section #3 below.

- Your plan must be approved by your Head/Director
- Final plans will be posted to UBC’s COVID-19 Safety Plan website. An alert noting the plan availability and link to this final posting must be included on the main root site of your department or faculty.

Section #3 – Hazard Elimination or Physical Distancing

The following general practices shall be applied for all UBC buildings and workspaces:

- Where possible, workers (HQP, research staff, others) are instructed to work from home.
- Anybody who has travelled internationally, been in contact with a clinically confirmed case of COVID-19 or is experiencing “flu like” symptoms must stay at home.
- All employees are aware that they must maintain a physical distance of at least 2 meters from each other at all times
- Do not touch your eyes/nose/mouth with unwashed hands
- When you sneeze or cough, cover your mouth and nose with a disposable tissue or the crease of your elbow, and then wash your hands
- All employees are aware of proper handwashing and sanitizing procedures for their workspace
- Supervisors must ensure large events/gatherings (> 50 people in a single space) are avoided
- Supervisors must ensure that all workers have access to dedicated onsite supervision at all times; via their own presence, members of safety committees, campus security or other. When working alone, HQP and staff must be aware of working alone procedures and how these have been adapted for COVID-19.
COVID-19 Safety Plan Template

- All staff wearing non-medical masks are aware of the risks and limitations of the face covering they have chosen to wear or have been provided to protect against the transmission of COVID-19. See SRS website for further information.
- Note transportation/vehicle guidelines if applicable: 1 Person per vehicle, unless the vehicle is large enough to maintain 2m between occupants.

4. Scheduling
For those required or wanting to resume work at UBC, detail how you are rescheduling employees (e.g. shifted start/end times) in order to limit contact intensity at any given time at UBC.

For Phase 1, the single employee is being requested access for 5 days as soon as possible. The PI will communicate with other PIs sharing this space to have only one employee in X015 at any one time.

Discuss your working alone procedures and how they will be adapted for this safety plan. Also describe how you will track those entering/leaving work i.e. sign in/sign out process

- At this time shift-work is not permitted
- Sign in/out processes can range from paper sign up sheets on lab door to ‘fob’ system with online tracking
- Coordinate starts/ends within shared labs (e.g. lab shared with two other research groups) to remain below the lab’s maximum occupancy

The employee will sign in and out via email to the PI and via physical sign-in and sign-out on the sheets posted on the “enter” door of the X015 lab.

The X015 lab safety procedures requires a “buddy system” when any of the robots are electrically activated and in use. The PR2 is designed for use around people and cannot physically harm anyone due to designed-in force limits and a rounded exterior to prevent injuries. In keeping with our safety procedures, we will implement a virtual buddy system for the time the employee is using the PR2. A camera will be live streaming the human-robot interaction via teleconferencing, using a program such as Zoom or Skype, to a remote colleague who will be in constant audio and video contact. In the event of a dangerous interaction, the “buddy” can call emergency services.

5. Occupancy limits, floor space, and traffic flows
APSC recognizes that labs are dynamic environments and it may be challenging to adhere to physical distancing guidelines. Nonetheless, controls must be in place to keep personnel spaced at least 2m apart at all times. Clear communication of this to employees, monitoring of implementation, in addition to physical controls (signage) are needed.

As such: Using floor plans and/or photographs of your lab/workspace:
1) Identify and list the rooms and maximum occupancy for each workspace/area;
2) Illustrate a 2 metre radius circle around stationary workspaces/benches/instruments and common areas or equivalent approach to social distancing; and
3) Illustrate one-way directional traffic flows

- Set up directional movements so people are moving in one direction of travel if possible
COVID-19 Safety Plan Template

- Where fire code and function allow, prop doors between communicating spaces open to limit the need to touch doorknobs. Alternatively, consider installing hands-free door foot openers, auto door sensors, or door openers that can be activated by elbow.
- How have you reduced occupancy in your workspace/lab, especially high-traffic areas such as hand-washing areas? Did you use the 25-33% range?
- Are you able to separate incoming and outgoing worker entry/exit?
- Consider changes to accommodate 2m distancing on shared instruments, frequently-used materials & reagents, common areas, offices

ICICS X015 is approximately 20 m x 30 m. One person will be allowed in this room at any one time. The lab has two doors, one of which is on a keycard. This door, designated the ‘entrance door”, leads from the basement lobby. The other door, designated the “exit” door, leads to the loading bay. Both doors have lever handles to operate. As can be seen from the map, there is a small section of the hallway that lab users entering and leaving X015 must both use, one at a time. They will have to signal to one another so that one waits while the other passes.

In X015, the employee will occupy only the area of the room in proximity of the mobile robot to be operated. Any other persons in the room could walk around to access other spaces. In Phase 1, no other users will be in the lab.

Section 4 – Engineering Controls

6. Cleaning and Hygiene
Detail the cleaning and hygiene regimen required to be completed by HQP, research staff and the PIs for common areas/surfaces (Custodial has limitations on cleaning frequency, etc.).

Outline specific cleaning processes and schedule for high-touch equipment, specialized/sensitive equipment or other unique circumstances to your lab/workspace. Detail how and what types of cleaning products and disposal options you will provide. If possible, include cleaning stations/infrastructure on your lab photos/plan.

- Cleaning and sanitization are crucial to maintain a safe lab/workspace. Provide as much detail as possible on your cleaning plans i.e. when, who, how, provide a checklist, etc. Identify and discuss what surfaces/areas need to be cleaned.
- Discuss how you plan on providing the required supplies and training (in addition to that provided by UBC SRS). Consider signage i.e. ‘ready for use’ vs ‘needs cleaning’, having ‘hot zones’ for smaller equipment/tools (bins to collect soiled equipment so others don’t use it).
- In dry labs and office areas where sinks are not available, place hand sanitizer stations adjacent to exit doors and signage suggesting the use of sanitizer after touching shared items such as knobs, printers, keyboards, etc.
- Discuss how you will ensure safe disposal of used cleaning supplies and if applicable, any hazardous waste needs (from previous operations or adapted to new plan).

A sanitation checklist will be available on the door of ICICS X015. The checklist will read as follows:
• Alcohol hand sanitizer (70+%) will be available in the lab at all times and placed on the sink counter. A paper towel dispenser is available at that location as well.
• Disposable gloves will be available at the sink area for all employees.
• There will be a distinction between what common spaces and individual spaces are. For the common spaces (such as the sink), signage will be placed to inform whether the area has been sanitized or not.
• The lab will have a checklist covering common areas/surfaces to be cleaned with disinfectant at the end of the employee’s presence in the lab, including:
  o Lab door doorknobs
  o Sink faucet handle and spout
  o Supply cabinet handles
  o Keyboard and mouse of common-use lab computers
• After a working day, employees will clean up their space and every common space they have used (if any) with the sanitizer.
• All tools will be cleaned before using them.
• All tools that are used will be cleaned before being returned to their original place.
• Used cleaning supplies will be gathered and disposed in designated refuse collection areas by the employees as they are leaving.
• A the end of the workday, the employee will email the PI that the lab has been cleaned as per this protocol.

Workers will be using gloves at all times when inside the lab. This should also prevent them from touching their face. Gloves should be disposed of before leaving the lab. Once out of the lab they will wash their hands with soap at a nearby washroom.

Additional, specific instructions for the employee using the PR2 robot: The employee will need to touch the robot and the robot’s workspace while working. There is a sink in X015, and the employee will be required to wash hands there before and after working. The employee will wear disposable gloves while working with the robot. As a general resource, a bottle of disinfectant will be supplied in X015 near the sink. The sink has a paper towel dispenser. These will be used to clean any surfaces that are touched while the robot was used, such as the tripod, camera, computer keyboard, robot parts, robot workspace, etc. A trashcan is available to discard wipes.

7. Equipment Removal/Sanitation
Detail your appropriate removal of unnecessary tools/equipment/access to areas and/or adequate sanitation for items that must be shared that may elevate risk of transmission, both research-related (i.e. instruments, tools) and general (i.e. coffee makers in break rooms)

• Consider assignment of key pieces of equipment and label with the name of the assigned employee. Consider especially larger pieces of equipment that require >1 person to operate.
• If equipment cannot be individually assigned, then consider and explain your sanitation regime (or reference it above)
• Consider closing breakrooms or limiting access via a sign-up sheet

No tools will be needed for the tasks to be performed. The robot is the only device that is multi-user and it will be wiped down after use.
8. Safety Infrastructure Requests (Partitions, Plexiglass Installation)
Describe any needs for safety infrastructure i.e. physical barriers, plexiglass installation required for your lab/workspace and if possible include them on your photos/room plan.

- Refer to Worksafe’s “Designing Effective Barriers” guidance

Only one employee will be in X015 during the access at any one time. No plexiglass shields or other barriers will be required.

Section 5 – Administrative Controls

9. Communication & Training Strategy for Employees
Describe how you (the PI) have or will communicate the risk of exposure to COVID-19 in the workplace to your HQP/research staff/other employees and the safety controls in place to reduce such risk.

Detail how you will ensure that all employees successfully complete the Preventing COVID-19 Infection in the Workplace online training and orientation to your specific safety plan

- Outline the expectations for all employees returning to the workplace and describe how an employee would raise concerns
- Clearly indicate that employees with symptoms MUST stay home
- How have you adapted to new risks in terms of training for existing and new staff
- All processes must be documented

The employee will take the required online training workshops. The employee has the email address and cellphone number of the PI to communicate any concerns, and they regularly communicate with email and phone on ongoing research matters. The employee is aware that it is required to stay home if any symptoms arise.

In the weekly lab meetings, the two MECH PIs of the lab spaces regularly relay the directives from UBC APSC and MECH to assure awareness and compliance. Prof. Wu lives close to campus and visits the lab spaces on an as-needed basis only. Prof. Van der Loos (age 66) is for personal safety concerns living away from Vancouver in a less-populated area (Whistler) and has not been to campus since mid-March. He communicates regularly with all supervised students and with colleagues on UBC matters via phone, email and teleconference. He has hired one new graduate student employee to start in September and will be involved in onboarding this student in accordance with UBC regulations at the appropriate time.

The employee requesting access has been to the lab once to pick up essential materials during the past month and in accordance with the established safety rules for such access needs. She is fully aware of the current safety requirements and is complying competently.

10. Signage
Detail the type of signage you will utilize and how it will be placed (e.g. floor decals denoting one-way walkways and doors, ‘cleanliness state’ of equipment/instruments, hand-washing guidance). See WorksafeBC for signage guidelines and templates.
• Use decals: In spaces where one direction of travel can be assigned, assign a clockwise direction of travel using tape on floors for people to move around safely, otherwise practice walking on the right and yielding to oncoming traffic.

If requested by ICICS, tape will be used on the floor of the X015 lab to indicate the path from entrance to lab, and from lab to the exit door.

11. Emergency Procedures & Reporting
PIs must ensure that all employees entering the lab should be aware of the Building Emergency Response Plan (BERP) and have access to it. If applicable, detail your strategy to amend your lab’s emergency response plan procedures during COVID-19.


The PI and the employee are aware through training of the BERP procedures. The link above will be added to the lab’s emergency response plan.

12. Monitoring
Describe how you will monitor your workplace (supervisor, departmental safety representative, other) and update your plans as needed; detail how employees can raise safety concerns (e.g. via the JOHSC or Supervisor).

• Identify the person(s) responsible for implementing and then monitoring compliance with the plan.

The lab PIs will monitor the workplace remotely when it is known an employee under their supervision is present. This monitoring will be by email or cellphone call at the start and the end of the 4-hour period the employee is in the lab. During actual robot use, one colleague of the employee will be in constant video and audio communication via webcam.

Section #6 – Personal Protective Equipment (PPE)

13. Personal Protective Equipment
UBC has a central process for purchasing PPE. Describe what PPE you will require for your lab.

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<th>#</th>
<th>Type of PPE</th>
<th>Activity and PPE Use Rationale</th>
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<tbody>
<tr>
<td>None</td>
<td>Since the employee will be working alone, no PPE will be required.</td>
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• If applicable list any other protective controls such as access to showers/laundering facilities

• Discuss how you will safely dispose of soiled PPE

There is no need for other protective controls for the tasks to be performed.
Acknowledgement
I confirm that this Safety Plan has been shared with all workers (HQ, research personnel, etc.) who will be accessing this space both through email and will be made available as a shared document. Workers can either provide a signature or email confirmation that they have received, read and understood the contents of the plan.

Date: June 3, 2020

Name (Manager or Supervisor): Hendrik F. Machiel (Mike) Van der Loos
Title: Assoc. Professor, Dept. Mechanical Engineering; Director, CARIS Lab

Department/School Head/Director Approval

Name, Title

Date

Signature

X
Appendix

Please attach any maps, pictures, departmental policies or risk assessments applicable UBC Guidance documents, where necessary, and other regulatory requirements referred to in document.

APSC specifically requests photographs of your current lab layout, as well as your proposed usage layout i.e. where HQP will work, what areas will be closed off, where signage will be placed, etc. If floor plans of your lab/shared workspace is available, please append these as well.

The floor plan of the ICICS lower floor attached, showing the X015 lab and adjacent hallways. The lab has a keycard-accessible entry door from the lobby. There are interior partition walls that create a hallway to get to the main parts of the lab. These are shown with arrows. The exit door leads to the interior loading area of the ICICS X-wing. Inside the lab, there are further partitions, indicated in red. The “robot island” contains a number of robot arms. The PR2 robot is parked by the robot island, where indicated, and near the room’s sink. The natural flow in the lab is around Robot Island in a counter-clockwise manner, as shown.

The yellow ovals are “yield” areas that do not allow 2 m distancing. If there are multiple occupants in the lab, they will have to make eye contact and establish who yields to the other. A “YIELD” sticker will be attached to the floor at the ends of the yield areas.