

General Guidelines for using the Electron Microscopes in 4D LABS

1. Potential users of the 4D LABS facilities are encouraged to contact our staff at info@4dlabs.ca to assess which tool best fits the user's needs. This discussion can take place with our staff during a tour of the facility, via teleconference, or by email. Once that determination has been made, then the user can proceed to register with the facility for tool charges and training. Users should contact the admin assistant (info@4dlabs.ca) to have their 4D LABS account username and password ready before starting the training.
2. New users are required to take 4D LABS Safety Quizzes and Facility Orientation before obtaining training on any of our tools by the respective tool owners. Our tool owners will suggest an estimated training schedule for new users. However, depending on the tool complexity, user's needs, and user's background, the actual training time could vary considerably.
3. New users are required to be qualified prior to operating any instrument independently. New users, to become qualified users, are trained on each tool using a three-phase approach which leads to independent and unsupervised operation of an electron microscope. Phase 1 is an explanation/observation step wherein the tool owner demonstrates operations on the process tool and explains the theory of operation. Any applicable safety protocol, as well as user online ticketing procedure, with regards to tool usage, staff training time, and billable materials, will be also trained. Phase 2 is a dependent step where the new user conducts tool operations with assistance from the tool owner. Phase 3 is a more independent step where the new user conducts tool operations under direct supervision of the tool owner. Completion of Phase 3 implies that the new user has demonstrated independent operation of the tool to the tool owner. Any phase may be repeated or lengthened at the discretion of the tool owner, who, to be clear, determines when a user is fully certified to operate the tool independently. After successfully completing all three training phases, a user can independently operate the tool without direct supervision during regular business hours

(9 am-5 pm). Additional experience is required before the tool owner can authorize the user to operate the tool after-hours.

4. Billing for training consist of both staff time charges and tool charges. The tool owner may determine that it is best to use a standard sample during training to optimize the training process. In Phase 1, up to 3 trainees can attend the training, billing charges will be shared equally between all trainees, or on one specified trainee if agreed. Please ask the tool owner for permission if additional trainees, or any observers, are to be included in the training session. In training Phase 2 and 3, only one trainee, and up to 2 observers with tool owner's permission, can attend.
5. Users are required to do online ticketing immediately following the end of their tool sessions.
6. After a user is qualified to use a tool, our staff is still available during regular hours for additional assistance using the tools. Assistance lasting longer than 15 minutes will be charged at our standard training rates. Unless these sessions are scheduled in advance, there is no guarantee of staff availability. Please note that troubleshooting a problem with the tool will not be charged.
7. Some tools have multiple options (e.g., SEM, SEM with retractable detectors, SEM/EDX, SEM/FIB, SEM/FIB/EasyLift, cryo-SEM, and cryo-SEM/FIB). Users should discuss with the appropriate tool owner which functions to learn first. Inexperienced users must start with the basic functions. Users will **NOT** get trained on advanced functions until sufficient tool experience has been recognized by the tool owner. Training on advanced functions will be charged, and divided to multiple phases as needed. Users are **NOT** allowed to try/run advanced functions without qualification by the appropriate tool owner.
8. Users are **NOT** allowed to train new users. All users should ask the tool owner for permission if any observer(s) is (are) to be included in the tool session, including supervisors and family members. We discourage observers for new users. An observer is **NOT** allowed to operate the tool without formal training from the tool owner.
9. Qualified and experienced users are encouraged to work together to get the most out of the tools. However, functions that have not been demonstrated on the specific tool should only be tested in the presence of and with the permission of the relevant tool owner.

10. Food or drinks are **NOT** allowed in the working area of our facilities. They can be kept in our lockers located by the entrance to the 4D LABS 6000 level. Users can rent locks/keys from the front desk (info@4dlabs.ca). Users must remove their items and personal locks from the lockers after their tool usage.
11. Any samples that might have magnetic properties should be brought to the attention of the tool owners before samples are placed in the tools. Screening of those samples is needed to avoid potential contamination or damage to our tools.
12. Users are **NOT** allowed to take phone calls or check messages when actively using our tools (e.g., hands on the tool). Serious mistakes could happen when a user, even an experienced user, is distracted. If you must take a call or check a message, ensure the tool is in a safe state and step away from the tool to take the call.
13. Should any incident occur during a session that makes the tool unavailable, the user should make sure that the tool owner is notified immediately and write down what happened in the logbook. If the tool owner is not available at the moment, the user should send an email/phone message immediately to the tool owner and info@4dlabs.ca, and write a sign by the tool indicating that the tool is down. Incoming users should not use the tool when such a condition exists.
14. Users are **NOT** permitted to perform any maintenance or repairs on the tools. Any problems must be reported to the tool owner. Users are also not allowed to access the support chases for the tools (rooms 6110 and 6130). Users are ok to handle software and Windows issues if trained by a tool owner, but still need to record the issues on each tool logbook.
15. For any of the tools available, any after-hours qualified user who has not used the tool for more than a month will be restricted to accessing the tool during regular business hours (9 am-5 pm) and should ensure that the relevant tool owner is available for assistance. Any qualified user who has not used the tool for more than 3 months will be disqualified from online booking and will require a Phase 3 training session to re-qualify as an independent tool user.
16. User fees must be paid up-to-date. Industrial users should contact the admin assistant (info@4dlabs.ca) to have their Purchase Order ready before accessing any of the tools.

17. Users are required to remove their data after each session. We are not responsible for the confidentiality and security of users' data. We will also perform hard drive clean up from time to time. Therefore, we require users to bring their own storage devices, and **NOT** to keep their data on our microscope computers. Users are required to scan their storage devices using the antivirus software installed on our computers before copying any data. We supply writable CDs or DVDs for a reasonable price if users forget to bring their own storage devices.
18. When there are users on different tools in relatively close proximity, ensure that the volume of discussion does not interfere with other users; otherwise, moving to the hallway will avoid distracting other users. If available, close doors to isolate discussions.
19. Please knock gently on the door and ask for permission if you intend to visit a tool suite where someone might be working.
20. Work with electron microscopes is very vibration-sensitive. Therefore, please open and close doors gently.
21. Please ask for permission if you intend to take photos when someone is working on a tool.
22. Users must take SFU safety training if handling liquid nitrogen and/or gas cylinders is needed for accessing electron microscopes, and obtain training and permission from the relevant tool owner for detailed applications. Users who haven't received SFU safety training should always ask for assistance from the tool owner for handling liquid nitrogen and/or gas cylinders.