

**Research Operation Plan for the
Institute of Materials Science and Engineering (IMSE) User Facilities**
Lower Level, Rudolph Hall
Updated Scheduling Requirements and User Training
8/12/2020

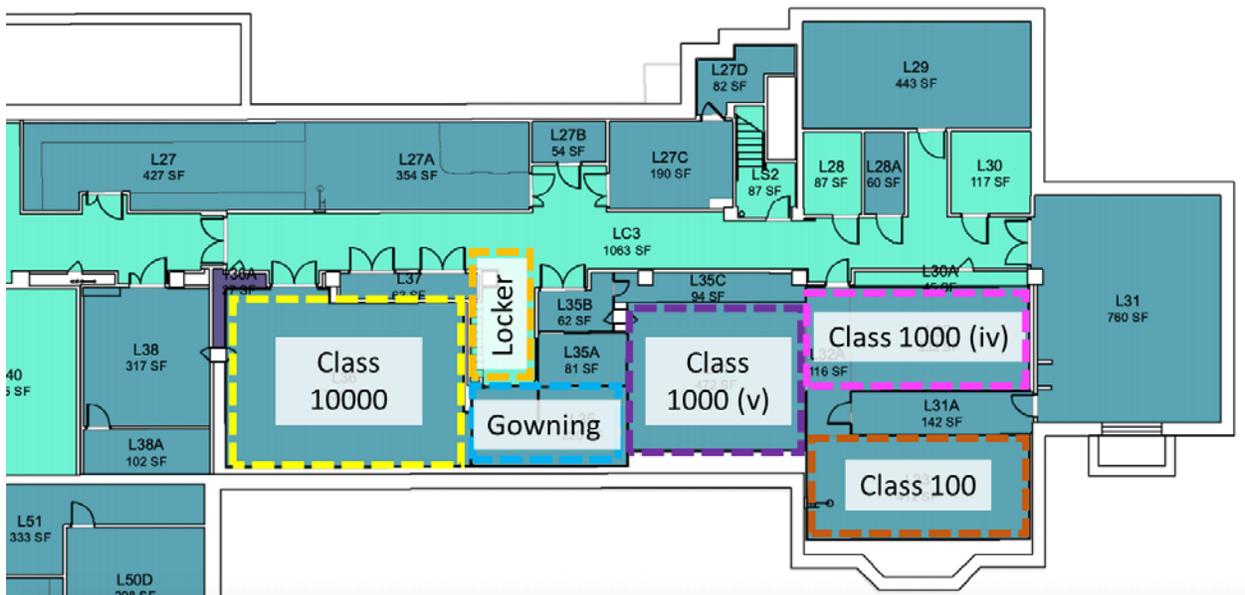
Since it appears that the coronavirus restrictions will remain in place for the foreseeable future, the IMSE has updated our operations plan to allow more flexibility in user scheduling and to restart training sessions. Max occupancy limits, hygiene plans, and housekeeping expectations remain unchanged. We plan to implement the following updates:

1. Occupancy:

a. Cleanroom (L35): The cleanroom is divided into 6 zones as shown in the figure below:

- i. Locker area: Max occupancy = 1
- ii. Gowning area: Max occupancy = 1
- iii. Class 100: Max occupancy = 2
- iv. Class 1000, RIE/PECVD area: Max occupancy = 2
- v. Class 1000, thermal evaporator/PVD area: Max occupancy = 2
- vi. Class 10000: Max occupancy = 2

These occupancy limits are unchanged. In the original reopening plan, all zones were limited to a single user at a time. We will now allow two simultaneous users in Zones iii-vi. The users will be expected to maintain 6 ft separation at all times.



b. Wet lab (L27): Max occupancy = 2

This occupancy limit is unchanged. In the original reopening plan, the wet lab was limited to a single user at a time. We will now allow two simultaneous users the wet lab. The users will be expected to maintain 6 ft separation at all times.

- c. Large instrument labs:
 - i. JEOL 7001 SEM (L38): Max occupancy = 2
 - ii. JEOL 2000 TEM (L50A): Max occupancy = 2
 - iii. Scios 2 FIB (L50D): Max occupancy = 2
 - iv. Quattro S ESEM (L50E): Max occupancy = 2
 - v. TEM specimen prep lab (L50G): Max occupancy = 2
 - vi. JEOL 2100F TEM (L50N): Max occupancy = 2
 - vii. Rigaku XRD (L64): Max occupancy = 2
 - viii. PHI Versa Probe 5000 XPS (L71): Max occupancy = 2
 - ix. Bruker AFM (L77): Max occupancy = 1

These occupancy limits are unchanged, and during user sessions, occupancy in each of these labs will continue to be limited to one user at a time. However, we will now permit a staff member to join users in the labs (except L77) for training purposes. The user and staff member will maintain 6 ft separation except when absolutely necessary, as outlined below.

2. Scheduling

- a. Instrument time will be scheduled using the iLab scheduling interface. Pls must continue to email Beth Gartin (bgartin@wustl.edu) to confirm which of their users have been cleared to return to campus. Users should continue to send Ms. Gartin their “EHS – Return to Campus” Certificate of Completion (Learn@Work) and daily health screening results prior to coming to the IMSE.
- b. Cleanroom and wet lab: iLab will be configured to require a 15 min buffer time between user sessions. This automatic buffer time eliminates the need for staff to confirm reservations. However, prior to scheduling time on any instrument, users must consult iLab for the scheduled use in the relevant zone, and only sign up for time on an instrument when doing so does not exceed the zone occupancy limit. Ms. Gartin and Dr. Gupta will routinely monitor the zone schedules and notify users to reschedule if they have exceeded the occupancy limit.
- c. Large instrument labs: Users must schedule their session at least 4 hours in advance. iLab will be configured to require a 30 min buffer time between user sessions. This automatic buffer time eliminates the need for staff to confirm reservations. The staff (Dr. Daulton and Dr. Li) will review the schedule each morning and throughout the day, and will regularly check in with users to ensure that masking requirements and cleaning procedures are being followed.

3. Training procedures

- a. Cleanroom and Wet Lab: At the transition to Yellow stage, Dr. Gupta was able to successfully begin training established cleanroom users on new instruments while maintaining the minimum 6 ft distance between participants. These

protocols will now be expanded to include new cleanroom users. Additional reading assignments and training videos will be developed as required. (Many of these videos are in development for MEMS 5801, a course which makes significant use of the cleanroom.)

b. Large instrument labs:

- i. Pre-training: Dr. Daulton and Dr. Li will develop training videos and assign reading to familiarize the trainee with the instrument remotely and asynchronously.
- ii. Stage 1 training: Dr. Daulton or Dr. Li will schedule a Zoom session with the trainee (potentially a small group of trainees) to review user policies, general procedures, lab-specific safety training, etc.
- iii. Stage 2 training: Dr. Daulton or Dr. Li will sit at the instrument to demonstrate its operation, while the trainee (potentially a small group of trainees) watches and asks questions remotely via Zoom. These demonstrations may be recorded for future viewing.
- iv. Stage 3 training (except Bruker AFM in L77): Dr. Daulton or Dr. Li will meet with one trainee in the lab, and oversee the trainee loading the sample and starting up the instrument. The trainer will then leave the room, and continue to monitor the trainee remotely via Zoom. The trainer will return at the end of the session to oversee the trainee unloading the sample and shutting down the instrument.

During Stage 3 training, a 6 ft distance between the trainer and trainee will be maintained to the extent possible. However, due to the detailed nature of some of the procedures, the trainer and trainee may need to briefly approach within 6 ft of each other. The cumulative time spent within 6 ft will be kept below 15 min for the entire session. Both trainer and trainee will wear eye protection (safety glasses or face shield) in addition to masks during interactions at less than 6 ft separation. Users are encouraged to provide their own eye protection; IMSE-provided eye protection must be cleaned with 70% alcohol at the end of the session.

- v. Stage 3 training (Bruker AFM in L77): Since this space is too small to accommodate both trainer and trainee, only the trainee will work in the lab, while the trainer monitors the entire training session remotely via Zoom. Only staff members will be permitted to change AFM tips for users who have not already been trained on this procedure.