

**CALIFORNIA INSTITUTE OF TECHNOLOGY
COMMITTEE ON RECONSTITUTING ON-CAMPUS INSTRUCTION**

Recommendations for Reconstituting On-Campus Instruction for the Fall 2021 Term

2021-08-27 (Revised 2021-09-09)

The [Committee on Reconstituting On-Campus Instruction](#) (CRCI) was established by Provost David Tirrell in late April 2020, with the following charge:

“The committee will assess our physical facilities for on-campus instruction, determine the capacity of our facilities under alternative models of physical distancing, continue to evaluate and enhance our capabilities for online instruction, identify potential models for mixed in-person and online instruction, and consider the ancillary functions needed to support our on-campus educational enterprise.”

In June 2020, the [CRCI issued a set of recommendations](#) for the fall 2020 term which were for the most part incorporated in campus instruction for the remainder of the 2020-21 academic year. The following recommendations are based on updates to state and local COVID-19 guidelines for instruction in higher education, Institute policies related to COVID-19, educational technologies developed over the past year, and feedback from instructors and students collected by the CRCI throughout AY2020-21.

The sections that follow offer guidance for Divisions, units in Student Affairs conducting courses (Performing and Visual Arts, Physical Education, and Student Activities), and instructors as they plan for teaching during the fall 2021 term. Division Chairs and the Vice President of Student Affairs should inform the Provost and the Registrar if they anticipate any problems with offering specific courses in person or with remote components when necessary, as articulated below. Consideration should be given to lectures, labs, recitation sections, TA office hours, and other course sections, as well as to the overall workloads of instructional personnel, particularly TAs, when implementing recommendations.

Recommendation 1: Continue demonstrably effective practices developed during COVID-19

Since the pandemic began, Caltech has learned through multiple surveys and focus groups that certain practices are especially effective for student learning and accessibility, as well as to support continuity of instruction. CRCI recommends that faculty, options, and divisions continue to employ these practices:

1. Focus on engaging with students and building intentional, meaningful, challenging, and supportive interactions into classes, labs, and recitations.
2. Support students in returning to in-person learning by assisting with collaboration group formation, discussing the Honor Code, and discussing collaboration and study strategies.
3. Populate Canvas with minimum required course information for all courses, as was done during the 2020-21 academic year, including:
 - a. syllabus with course policies
 - b. course schedule with due dates (may be part of the syllabus)
 - c. links to other websites or resources students will need to use
4. Continue to use Canvas tools, digital course reserves, and other online applications, as appropriate for each course, that improve teaching and learning and help ensure instructional continuity. For

example, students find that lecture notes and/or presentation slides in Canvas are helpful and many courses benefitted from using specialized tools like Gradescope and Piazza where suitable.

5. Whenever possible, record synchronous class meetings, in support of student learning, accessibility, and contingency plans. Recording options include audio plus lecture slides or notes, or video and audio together. Further information about recording options can be found [here](#).
6. Have CRCI continue to send regular updates to all professorial faculty and current term instructors about teaching formats and resources, coordinated by CTLO, and archived at <http://teach.caltech.edu>.
7. Continue the iPad/Apple Pencil loaner program, coordinated by the Library, which was very successful during the 2020-21 academic year in accommodating remote course access and collaborations for students.

Recommendation 2: Conduct instruction in person whenever possible

In May 2021, the Institute announced plans to resume in-person instruction for the fall 2021 term for fully vaccinated undergraduates and graduate students. The latest [vaccination policies](#) require that all faculty, staff, postdoctoral researchers, and students confirm their full vaccination status or have an approved exemption by October 15, 2021. The CRCI endorses this policy and further recommends that any faculty, TAs, and students who have not yet met the Institute requirement between the start of fall instruction and October 15 refrain from participating in any in-person classroom or lab instruction, and instead make alternate arrangements. **The CRCI recommends that in-person instruction occur in as many circumstances as possible, while following additional precautions articulated in Recommendation 4 regarding social distancing, masking, minimum air exchange, and cleaning.**

Due to the continuing uncertainty about the effects of the COVID-19 virus and its variants on the local community, **the Institute, instructors, and TAs should remain poised to implement fully online, remote instruction at any time during the academic year.** In general, the CRCI's original recommendations for the fall 2020 term and updates provided on the <http://teach.caltech.edu> website may be used as a guide to online instruction. The Institute's accrediting agency, the WASC Senior College and University Commission (WSCUC), has granted permission for Caltech to conduct online instruction through calendar year 2021. If instruction needs to move online, courses should continue to include approximately the same amount of opportunity for synchronous interaction, exchange, and collaboration as they would in person (this is the same expectation as was in place during the 2020-21 academic year).

Return to in-person instruction should be accomplished to the fullest extent possible. Division Chairs, Executive Officers, and Options Representatives should discuss teaching plans with instructors and TAs well before the start of the fall term. The Registrar must be kept informed of any changes in course instructors, locations, and remote teaching plans.

The CRCI notes that solutions for all students, instructors, and academic staff to access any buildings with classrooms, as well as buildings with academic and co-curricular support services, will be necessary, whether via key card or other means. Because classes and support services are not limited to specific divisions or options, broad access for these populations is required, but could be limited to certain hours.

Recommendation 3: Articulate clear cases for teaching that is not in-person

Under certain circumstances, components of courses may need to be conducted remotely at the start of or throughout the fall term. For example, in some cases, Divisions may find that the social distancing, minimum air exchange, or other aspects of Recommendation 4 (below) make teaching the lecture components of large enrollment courses impossible in existing spaces and may decide to hold the lecture components of those courses via remote/online instruction. CRCI recommends that even in such cases, the Divisions ensure that in-person recitations and office hours are available. **It should be rare and unlikely that any course be planned for fully online/remote instruction for the full fall 2021 term.**

CRCI recommends against synchronous dual delivery instruction. Challenges with synchronous dual-delivery instruction, in which some students participate live and in person, and others participate live and online, are now well documented, particularly for equitable participation by students in both formats. This format also requires careful installation and testing of equipment, and Caltech does not have teaching spaces equipped for this format of instruction. Furthermore, this format typically requires extensive practice and training for instructors and TAs, along with additional technical and teaching personnel.

It is expected that some students may need to begin the fall term in quarantine or will not yet have documented their fully vaccinated status; others may need to be in quarantine at times during the fall term due to symptoms or positive tests for COVID-19. **CRCI recommends that instructors plan ahead for how students who are not able to come to class in person will be able to participate.** Students who go into quarantine or otherwise are not able to come to class should work closely with the Dean's Office and Student Wellness Services for any extended absences, as they normally would. The Institute should develop a protocol by which instructors are informed when one or more students (who are able to continue their studies) are moved into quarantine.

CRCI offers the following suggestions for how courses with different formats could plan for student access in case of quarantine or illness. (1) In some cases, for short periods of less than two weeks, access to course recordings and remote office hours and/or recitations may be sufficient for students, along with other online materials. (2) For courses with extensive discussion and in-class collaboration, instructors may prefer to temporarily move to a remote/online synchronous class meeting format for all students and can inform students of that change via email or Canvas (recommended notice of at least one day in advance). (3) Lab and highly experiential courses may in some cases use remote activities and assignments developed and employed during COVID-19 to make up for missed in-person components, or allow students to schedule and make up lab/experiential work following an absence.

CRCI recommends that instructors and TAs retain latitude in scheduling office hours and individual meetings via online interaction or in person and consider offering a combination of formats during the fall.

Recommendation 4: Implement social distancing, masking, minimum air exchange, and cleaning for in-person teaching

The following recommendations assume that all in-person class participants will be fully vaccinated against COVID-19. However, due to the reduced effectiveness of the Moderna and Pfizer vaccines in preventing infection and hospitalization by the Delta variant of SARS-CoV-2, distancing, masking, and air

handling are critical components of a multi-pronged COVID-safety approach. **The CRCI recommends that the Institute require all students participating in in-person classes to wear NIOSH-approved N95 masks and to maintain a minimum of 3 ft. social distancing in classrooms, labs, and other instructional spaces.** We further recommend that NIOSH-approved N95 masks be made readily available to all students, instructors, and TAs, with clear instructions about expected use and fit. Use of N95 masks by all class participants will ensure that everyone in the room wears a mask made of high-performance materials and designed to enable a high-performance fit. For classrooms with fixed seating for which 3 ft. distancing would greatly reduce the usefulness of the space for teaching, the CRCI recommends reducing capacity to 50% with students sitting in every other seat and using all rows in checkerboard fashion. All students, instructors, and TAs must adhere to the Institute's COVID-19 policies (<https://together.caltech.edu>).

Social distancing should not be interpreted to mean that students cannot collaborate in class or in recitation sections; as discussed in Recommendation 1, interaction and collaboration tend to support student learning and the CRCI recommends that interaction be prioritized. For example, students in rooms with moveable seating can discuss in small groups of 3-4 students at a 3 ft. distance, take turns using a whiteboard or chalkboard with verbal input from others in a small group, or use electronic collaboration tools enhanced by in-person discussion. In rooms with fixed seating, students can discuss or collaborate with their nearest neighbor, while taking care not to lean in toward one another.

Social distancing and N95 masks may in some cases make it more difficult to hear and be heard. **If additional microphones and speakers are needed, CRCI recommends that Divisions obtain voice amplification equipment ahead of the beginning of the fall term.** A list of recommended audio amplification equipment can be found [here](#).

The mask requirement must be maintained during lunchtime courses and seminars. Food may be provided for student consumption after class, or the class may be conducted remotely to allow students to eat lunch during class.

CRCI recommends use of classrooms with a minimum of 4 air changes per hour (ACH) with *clean air* obtained via one of three methods or a combination thereof: (1) 4+ ACH with outdoor air, (2) 4+ ACH with MERV13 or higher filtration, (3) 4+ ACH with HEPA air purification. See Appendix B for examples.

The Institute should consider room occupancy and distancing requirements in non-instructional spaces to create a campus-wide standard. The Institute should also consider limiting access to indoor instructional spaces for non-instructional purposes and creating additional tented outdoor meeting spaces for small classes that do not require electronics, audio/visual technology, or network access. Potentially, cost-effective whiteboards could be made available for instructional use. Instruction in outdoor locations should be conducted with 3 ft. distancing and follow best practices and recommendations for masking consistent with Caltech's most current campus-wide guidance on outdoor gatherings, including updates as they emerge. Classes that are scheduled in an outdoor meeting space may have to return to remote instruction on days with inclement weather.

Current guidance from the Los Angeles County Department of Public Health states, "The principal mode by which people are infected with SARS-CoV-2...is through exposure to respiratory droplets carrying infectious virus. It is possible for people to be infected through contact with contaminate surfaces or objects (fomites), but the risk is generally considered to be low." Following the County guidelines, the **CRCI recommends routine cleaning of classrooms and teaching labs at least once per day, and cleaning**

of workspaces and equipment by users before and after each class. Disinfectant wipes should be placed at strategic locations in classrooms to facilitate use.

Students should be cautioned to not congregate in close proximity to one another while entering and exiting classrooms. Additional signage may be provided on classroom doors, and directional arrows may be used to control the flow of traffic entering and exiting classrooms with multiple doors.

If COVID-19 transmission rates and public health recommendations change substantially during the fall term, it is possible that some of these precautions could be revisited on an Institute-wide basis and updates shared with instructors, TAs, and students.

APPENDIX A
EXTERNAL RESOURCES

Los Angeles County Department of Public Health

Guidance for Institutions of Higher Education Requirements and Best Practices, Updated August 6, 2021

<http://publichealth.lacounty.gov/media/Coronavirus/docs/education/GuidanceHigherEducation.pdf>

California Occupational Safety and Health Standards Board (Cal/OSHA)

General Industry Safety Orders, Revised June 17, 2021

<https://www.dir.ca.gov/oshsb/documents/Jun172021-COVID-19-Prevention-Emergency-txtcourtesy-Readoption.pdf>

Los Angeles County Department of Public Health

Cleaning & Disinfection Matrix, Updated April 21, 2021

<http://publichealth.lacounty.gov/media/Coronavirus/docs/protection/CleaningMatrix.pdf>

**APPENDIX B
EXAMPLES OF CLASSROOM AIR HANDLING**

CRCI recommendation: use of **classrooms with a minimum of 4 air changes per hour (ACH) with *clean* air obtained via one of three methods or a combination thereof:**

1. **4+ ACH with outdoor air,**
2. **4+ ACH with MERV13 or higher filtration,**
3. **4+ ACH with HEPA air purification.**

Examples

Primary Air Handling	Auxiliary Air Handling	Total “clean” ACH	CRCI Recommendation
Outdoor tent with the sides open for at least half the perimeter to provide air flow	None	Undetermined	Use as classroom
Indoor classroom with 4 ACH with 100% recirculated indoor air using MERV 9 filter	None	0	Do not use as classroom
Indoor classroom with 4 ACH with 100% outdoor air	None	4	Use as classroom
Indoor classroom with 4 ACH with 50% outdoor air and 50% recirculated indoor air with MERV 13 filter	None	4	Use as classroom
Indoor classroom with 4 ACH with 50% outdoor air and 50% recirculated indoor air with MERV 12 filter	None	2 (Note: 2 “clean” ACH from outdoor air and 0 “clean” ACH from MERV 12 filter)	Do not use as classroom
Indoor classroom with 4 ACH with 50% outdoor air and 50% recirculated indoor air with MERV 12 filter	2 ACH with HEPA air purifiers	4 (Note: 2 “clean” ACH from outdoor air and 2 “clean” ACH from HEPA purifier)	Use as classroom
2 ACH with 100% recirculated indoor air with MERV 13 filter	2 ACH with HEPA air purifiers	4 (Note: 2 “clean” ACH from MERV 13 filter and 2 “clean” ACH from HEPA purifier)	Use as classroom