CLAIRE SUN/DAILY BRUIN STAFF

CLASS SIZES

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enrollment capacity.

"We're 419 acres. We have the largest student enrollment on the smallest campus," he said. "If we just simply continue to add students without adding capacity, then you're sort of shoehorning more into the campus."

A Digital Solution

In 2016, External Vice Chancellor and Provost Scott Waugh told members of the newly formed Classroom Advisory Committee that the campus is teeming with students, and the committee must find ways to alleviate the crisis of limited space, according to notes from the first meeting.

"One of the issues that just kept coming up again and again from students and departments was that there's not enough classrooms," said Jan Reiff, a member of the committee and the special assistant to the executive vice chancellor for online teaching and learning. "The seats aren't there to deal with all the students."

There are many classes whose enrollments could be bigger to help students get through their degrees faster, but there's no place for such classes, Reiff said. Building more classrooms is a possibility, but also raises the question of where to place a new large classroom.

"We're probably not going to tear up the sculpture garden for it," she said.

Reiff said one area the committee is currently looking into is technology that would open up the possibility for learning outside the physical classroom. This would enable UCLA to offer more classes in the same amount of building space.

Prerecorded lecture videos could enable students to stream their lectures on their computers, she said. Online course materials could also allow students to learn outside the classroom, she added.

"If in fact there's truly no advantage to being in the classroom, then everything could be the model of watching your college professor giving a lecture on bad TV," Reiff said. "It's a question of where learning takes place on campus. Where and how is it best for students to learn?"

Divya Devineni sat with hundreds of other students in crowded lecture halls for Chemistry 14A: "Atomic and Molecular Structure, Equilibria, Acids, and Bases" and Chemistry 14B: "Thermodynamics, Electrochemistry, Kinetics, and Organic Chemistry" in her first two quarters at UCLA. The third-year anthropology student said she would squeeze through a long row of students and their backpacks to reach the single, unoccupied seat in the middle of the classroom.

"I could feel the body heat of everyone around me," Devineni said.

The next two courses in the series, Chemistry 14C: "Structure of Organic Molecules" and Chemistry 14D: "Organic Reactions and Pharmaceuticals," were completely different for Devineni. She decided to watch online recordings of the lectures on BruinCast.

BruinCast is UCLA's lecture recording service. Recorded video or audio of classes are uploaded online, enabling students to review their lectures.

When it debuted in fall 2005, four classes were BruinCasted. From 2012 to 2017, more than 300 lectures were BruinCasted each academic year, according to UCLA.

With access to online lecture videos and course materials, some students say they would rather learn outside the classroom and avoid crowded lectures altogether.

"I did not go to a single lecture, did not enter that classroom," Devineni said. "I would rather just watch the lecture in my pajamas at home."

In his sophomore year, third-year biology student Austin Gee rushed to his class, Physics 6C: "Physics for Life Sciences Majors: Light, Fluids, Thermodynamics, Modern Physics," with about five minutes to spare. He entered into the lecture hall and sat down on the floor with several other students in the very back. In front of him, students filled every single seat.

"It was a crazy visceral experience," Gee said.

Gee added that the discussion-based lecture amplified the effects of overcrowding. To see the professor's questions on the lecture slides, Gee and other students on the floor repeatedly stood up to read and sat back down to discuss with each other.

Stand up, read, sit down and talk. That was his class routine for the quarter.

Gee said he thinks if his crowded physics class had been BruinCasted, he would have gotten more out of watching the recorded lecture than showing up in person because he was never able to find a seat.

"Sitting on the floor in the back and using my lap as a desk and standing up to look at the slides, it's not an ideal learning environment," Gee said. "If I were to watch it at home, sure I wouldn't be able to engage with other students, but at least I have a clear idea of what's going on."

Christian Hardoy, a third-year microbiology, immunology and molecular genetics student, enrolled in an 8 a.m. lecture for Chemistry 14D knowing he would not attend most of the lectures and would instead watch them on BruinCast.

Hardoy said he BruinCasted his developmental biology course at double speed because he thought it was much more efficient than going to a 90-minute lecture. He added that the ability to rewind confusing parts gave him more control over the information he had to learn.

Nonacs said class websites enable instructors to easily distribute their materials. Students have the freedom and responsibility to access and download material at any time.

Only 10 or 15 years ago, instructors could not be certain if all of their students would have access to the internet, or even to a computer, he added.

"That is a big difference in technology," Nonacs said. "It's what you can expect the students to do outside the classroom."

Video lectures could lead to some lower-division classes becoming entirely online-based, he added.

"Why fill up rooms if you're having the same, more or less, set of information going out?" Nonacs said. "Calculus is going to be the same now as in a hundred years. We're not going to discover that DNA is not where the genes are."

Reiff said BruinCast could help alleviate classroom shortages. A class could purposely overenroll a large number of students and have them watch the BruinCasted lecture in the library.

However, Reiff said the committee has experimented with this method, and students reported they did not feel the experience was the same.

"The overflowed people, if they're not fitting in the classroom, feel really cheated," Reiff said.

Another way to use BruinCast to deal with classroom size limits would be to divide a large lecture into halves, she said. On one day, half of the students would attend the lecture while the other half would watch the BruinCast lecture, and on another day the two groups would switch, she said.

However, some professors said they think students who do not physically attend class and instead use BruinCast miss out on important class discussions.

Shoko Sakai, an assistant researcher in physics and astronomy, does not record her lectures even if her classroom is equipped for BruinCast. Previously, Sakai taught an Astronomy 3: "Nature of Universe" class that was BruinCasted, which she thinks caused student attendance to drop.

"You know when you walk into a lecture and only 10% of the seats are filled?" Sakai said. "From a professor's point of view, it's not a good feeling."

Students have little to gain from watching a video of a lecture compared to actually being present in class, Sakai said. In class, students are able to interact with one another and ask questions.

Randall Rojas, an adjunct associate professor of economics, said he often tells his students that listening to lectures online cannot substitute for attending class because he thinks being in the classroom allows them to learn from their peers.

He added he does not BruinCast his Economics 1: "Principles of Economics" class.

"I did it on purpose, not that I want to be mean," Rojas said. "They learn so much not just from the lecture itself, but from the questions that other classmates ask. Those lead to other questions and that really enriches the classroom experience."

Reiff added that BruinCast functions in many ways like lecture notes. Students can review them to accurately take notes, but they do not have a chance to interact with the faculty and ask questions.

She said she hopes to improve BruinCast so that professors can involve students who are outside of the classroom. For example, if BruinCast were a livestream instead of a recording, students could press buttons on their computer to participate or tell the professor when they are confused, she said.

"What I'm doing is to raise the question of how can we use this technology to the best advantage," Reiff said. "The notion of space is so critical in so many places – there's just not enough money to keep building."

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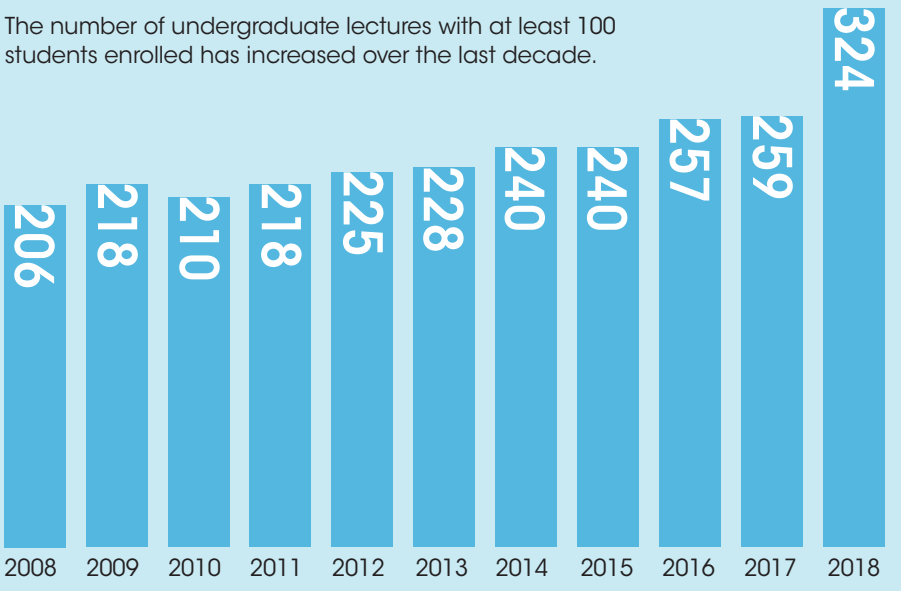
UNDERGRADUATE COURSES WITH OVER 100 STUDENTS

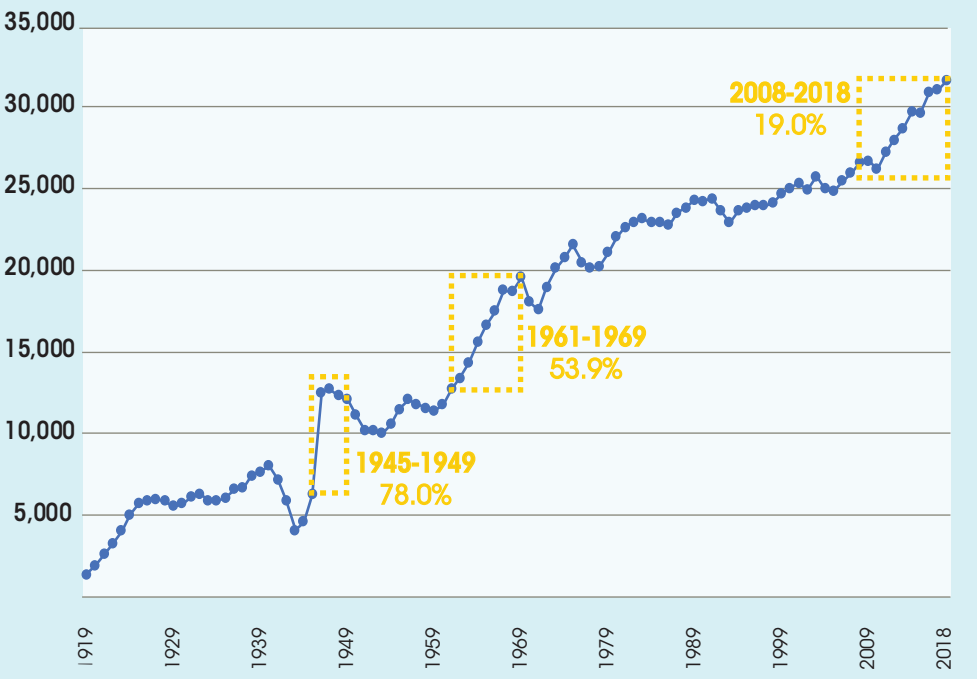
The number of undergraduate lectures with at least 100 students enrolled has increased over the last decade.



SOURCE: UCLA Academic Planning and Budget. Graphic reporting by Emi Nakahara and Stephen Liu, Daily Bruin staff. Graphic by David Gray, Daily Bruin senior staff.

UNDERGRADUATE ENROLLMENT OVER TIME

Undergratudate enrollment at UCLA has increased over 100 years, from roughly 1,300 students in 1919 to roughly 31,000 in 2018. Yellow boxes below indicate periods of a sharp increase in enrollment.



SOURCE: UCLA Academic Planning and Budget. Graphic reporting by Emi Nakahara and Stephen Liu, Daily Bruin staff.
Graphic by Pauline Ordonez, Graphics editor.