

# Bruin engineering students aim to build earthquake-proof building model

**Brianna Campbell, Daily Bruin News, 3-2-16**

A team of civil engineering students will have seven minutes to place metal rods into an intricate, wooden structure. When they finish, the building must withstand an earthquake simulated by a shake table.

For months, the Seismic Design team, which is part of the UCLA chapter of the American Society of Civil Engineers, has worked to present a project at the Earthquake Engineering Research Institute's annual competition in April. The student group, founded in 2006, has regularly updated its technological approach and structural design, said Victoria Lam, the group's project manager and fourth-year civil engineering student.

The group entered in its first seismic design competition in 2010 with a team of about six students, said Jian Zhang, a civil engineering professor and the group's faculty adviser. This year, up to 30 students will participate in each competition.

Team members have won two national championships since 2010 and placed second in 2015, Zhang said. They are preparing to reclaim their title as the reigning Seismic Design world champions in this year's competition, she said.

Participating teams design, construct and analyze a 5-foot tall balsa wood model skyscraper that must withstand simulated competition ground motions, Lam said. Judges evaluate how well models respond to earthquake-like motions.

Members use a computer software called SAP2000 that helps predict the behavior of the structure when subjected to ground motions, said Suraj Patel, assistant project manager of the group.

Once they draft a design, the software highlights potential errors. Members then adjust their design based on the software feedback, and begin to build individual levels of the structure.

Last year, the team did not score well because judges said the design was boxy and lacked architectural creativity and design, Lam said. The team is now working to design a more aesthetically pleasing structure.

She added she likes that the team adopted a more modern approach because it reflects the real-life process of designing a building.

Competition judges evaluate every aspect of designs based on the amount of revenue the structure would generate in reality, Lam said. The weight of a structure equates to a certain building cost, and floors must be designed in a way that would appeal to a potential renter.

Kylie Williams, a third-year architectural studies student, and other students from the School of Arts and Architecture help team members finalize the design for the competition. They work to

ensure the team is following the competition guidelines, such as dimension specifications, to the best of their ability.

“Our team further develops the design proposal based upon the assigned location,” Williams said. “Since this year’s competition is in San Francisco, we want to include prominent structures like the Transamerica Pyramid and Golden Gate Bridge.”

Lam said she thinks being involved in the Seismic Design team has helped students who plan to explore structural earthquake engineering as a career path by giving them real-world experience in the field and teaching techniques that supplement course material.

Patel said he thinks the challenging project requires immense dedication to its design and quality.

“The project requires a large amount of labor,” Patel said. “(Members must also) strive to maintain quality throughout construction.”

Zhang said the project becomes more competitive and demands a greater level of innovation and creativity every year, as more schools compete with varied designs.

“The ultimate goal is to fit the reality we’re trying to mimic,” Zhang said.