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## Middle School Girls live at CSULB during Engineering Girls Internship program

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To broaden their knowledge of the various aspects of engineering, 10 high-achieving **middle school girls** lived last week at **Cal State Long Beach (CSULB)** in the student residence halls as the first cohort of the university's new **Engineering Girls Internship** program.

The Engineering Girls Internship program provides students with the opportunity to interface with engineering and human factors professors, professional engineers and managers. The program is designed to expand on the success of CSULB's Women Engineers @ the Beach program, now celebrating 10 years at the university.

Both programs encourage girls who are academically advanced to become more interested in math, science and engineering and to consider launching future college and professional careers in related fields.

"This is the first STEM-based 'residential' program for such young students. Many of those who applied had already completed algebra I and II, which means they were two years ahead in math and are expected to complete calculus or AP calculus by the 12th grade," said Lily Gossage, director of CSULB's College of Engineering Recruitment and Retention Center. "The average GPA of these girls was 3.83, and the average CST score was 438, which is well above the expected state proficiency level."

Paying particular interest to girls from underserved communities, the 10 selected (out of the 144 who applied) were three Latinos, two African Americans, two Asian Americans, two Caucasians and one Native American. This first cohort of students attend middle schools in the cities of Long Beach, Torrance, Gardena, South Gate, Huntington Beach, Lawndale and Downey.

Conforming to California's K-12 content standards, the internship program features an engineering-related curriculum that includes hands-on workshops, labs and projects as well as demonstrations and field trips. NASA educational content was also incorporated into the program to introduce students to the important work done by professional engineers and scientists who work in the fields of space exploration and scientific research.

Faculty involved in the program developed lesson plans that used eighth-grade mathematics content standards, such as learning about linear regression (in the "Human Factors" workshop) and rate of change (in the "Fluid Viscosity" workshop).

In addition to traditional classroom-style learning, the girls participated in a number of laboratory-based activities that featured engineering tools and software training, which was enhanced by field trips to

engineering industry locations. The field trips took the girls on a boat tour of the Port of Los Angeles and to the Long Beach Airport where they took a runway tour and learned about air-traffic safety and the noise abatement study.

Students who were selected for the internship program are also participating in an eight-year study that will track their academic progress. The girls' parents are encouraged to remain in close contact with *Cal State Long Beach* to access the various opportunities that are critical in supporting the academic growth and success of their children.

The Engineering Girls Internship program was sponsored by *CSULB's Center for Human Factors in Advanced Aeronautics Technologies (CHAAT)*. This center is funded by \$5 million (\$1 million a year) grant from NASA.

*CHAAT* contributes to the evaluation and design of air traffic management concepts and technologies necessary to achieve the goals of Next Generation Air Transportation System (NextGen). The center also advances and expands the NextGen-relevant human factors' and STEM training to students from underrepresented groups.

This summer's *Engineering Girls Internship* program was a pilot program. Engineering industry companies and professionals and those from other organizations are welcomed to sponsor future programs.