Summer Science Program for High School Students Expands Enrollment at UCSD

March 16 Deadline for COSMOS @ UCSD

March 9, 2006

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COSMOS350: Engineering Dean Frieder Seible (far left) and former California First Lady Gayle Wilson visit a team of high school students as they put finishing touches to their final COSMOS project last summer at UCSD

For the second year in a row, the Jacobs School of Engineering is administering at UCSD a widely-praised state program that gives talented high school students a taste of college life. Applications for the 2006 California State Summer School for Mathematics and Science (COSMOS) are due March 16 for the month-long program that kicks off July 9.

UCSD is the fourth UC campus to participate in COSMOS, which originated on the UC Irvine campus, and later expanded to Davis and Santa Cruz. In its inaugural summer last year, the UCSD program enrolled more than 80 students. "This year we have room for 120 students, and next year that number will jump to 150," said Susan Kelly, director and organizer of COSMOS at UCSD. "In order to accommodate the larger enrollment without jeopardizing our twelve-to-one student-teacher radio, we are also boosting the number of clusters around which the academic and research experience is built."

Each cluster is based on a theme, and the five clusters that debuted in 2005 are available again this year [click on names for full descriptions]: Adventures in Media Computing, Kinetic Sculpture & Clocks, Living Oceans & the Impacts of Climate Change, Earthquakes in Action, and the Molecular Biology Revolution. For summer 2006, the two new clusters are Physics of Waves & Stars, and Bioengineering and Modeling of the Red Blood Cell Membrane. Because the COSMOS program is open to students as early as those completing eighth grade this year, the clusters have varying entry requirements. The computing cluster requires that students have completed Algebra II, while the physics group requires Algebra I (but recommends trigonometry). The 'kinetic sculpture' cluster for students interested in mechanical engineering requires one year of physics, while the biology and bioengineering clusters both require one year of high-school biology. And the oceans-and-climate cluster organized by Scripps Institution of Oceanography professors Kathy Barbeau and Andrew Dickson has a non-academic requirement: students must know how to swim!

Five of the seven clusters are organized and taught by Jacobs School faculty and graduate students. Computer Science and Engineering professor Joseph Pasquale is back for a second year as principal advisor to students enrolled in the 'media computing' cluster (with support from CSE lecturers Beth Simon and Paul Kube). Electrical and Computer Engineering emeritus professor Barney Rickett plays the same role for the physics cluster along with two research scientists from UCSD's Center for Astrophysics and Space Sciences.

Structural Engineering professor P. Benson Shing will oversee the earthquake engineering group (with the "geophysics of earthquakes" component led by Scripps postdoctoral researcher Bridget Smith). Mechanical and Aerospace Engineering (MAE) professor Raymond de Callafon will conduct the kinetic-sculpture cluster,

while MAE professor Robert Skelton and Bioengineering professor Amy Sung share responsibility for the bioengineering group.

Tuition for 2006 is $2,000 for California residents, which includes housing in new dorms at Eleanor Roosevelt College, transportation, field trips, classroom materials and meals on campus. (Out-of-state student pay $6,200.) Last summer approximately one-third of the students who attended the program received full financial aid, thanks to financial support from sponsors including QUALCOMM Corporation, Toyota USA Foundation, Legler Benbough Foundation, John Moores Foundation, SAIC, and the California Institute for Telecommunications and Information Technology.

"One of the primary missions of COSMOS is to create a community of student scholars and a climate that fosters analytical thinking and experimentation," said organizer Kelly, noting that all students are required to do research and complete a team project related to their cluster theme. "We also want to expose these talented teenagers to the rich culture of learning on the campus and, hopefully, give them an extra reason to come back to UCSD and the Jacobs School when it comes time to apply for college."

Apart from the intensive classroom work and field trips related to each cluster's theme, COSMOS students as a group will hear from renowned scientists and engineers on a wide range of research topics. The talks are designed to expand students' learning outside of their cluster topics. Organizers also plan a series of workshops on related topics, including UC admissions, financial aid, and careers in science.

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Applying to COSMOS

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