



## Windows to the world of engineering

*Young students get lively view of the basics in technology, research, higher education and college life through summer courses, orientation programs*

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*Ken Sweat*

A junior high school student operates a launch controller for the model rockets that students built as part of the Youth Engineering Summer Program.

Robots, rockets, computer video games, Lego building blocks and water-balloon launchers were among the tools used to open windows to the world of engineering for young students who joined in the Ira A. Fulton School of Engineering's special 2008 summer education and orientation programs.

Dozens of junior high and high school students got hands-on experience in basic engineering concepts, while new and expanded programs gave incoming freshman engineering majors a lively introduction to university life, college-level studies and career opportunities.

### **Nurturing future engineers**

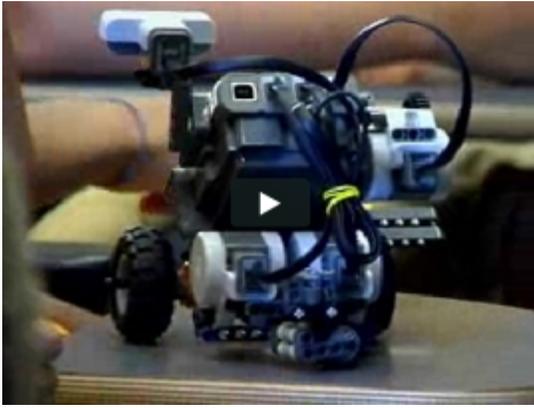
The engineering school's efforts in support of the National Science Foundation's goal of sparking youngsters' interest in science, technology, engineering and mathematics were highlighted by a robotics programming camp and a computer game camp for high schoolers.

The Robotics Camp gave students a chance to join in hands-on robot construction and programming, providing them instruction in modern engineering design concepts and computing

technologies.

See the video imbedded on this page for a look at the robotics competition, and to hear students and teachers talk about their experiences in the program.

In its third year, the Robotics Camp drew 51 students, up from 32 in 2007 and 16 in 2006.



“The numbers tell the success story. The feedback is very positive,” said Robotics Camp coordinator Yinong Chen, a lecturer in the School of Computing and Informatics. “I have already received parents’ queries for the 2009 program, and there is also a request to admit younger students from grades 6, 7 and 8.”

Due to the camp’s growing popularity, Chen plans to organize two robotics camps for summer 2009. In addition to the program on the Tempe campus, a second will be offered at the ASU Downtown Phoenix Campus to accommodate students in that area.

“I think the program gave me a unique insight into how one can apply programming to the real world, and it kind of sparked my interest in what I could do with that [knowledge],” said Alex Slaughter, a junior at Tempe’s Corona Del Sol High School, who participated in the Robotics Camp.

Fifteen high school students joined CampGame, a six-week experience in computer video game development, aided by the latest development tools and an industry-experienced faculty.

“The camp exposes students to technology in a way they have never before visualized,” said program coordinator Ashish Amresh, a lecturer in the Department of Computer Science and Engineering.

CampGame students learned skills in programming, design and digital art, while also learning to work in teams and meet the challenges of production deadlines.

### **Exploring opportunities**

The Youth Engineering Summer Program (YES) gave about 120 junior high and high school students a chance to explore the opportunities in various areas of engineering through attending lectures and participating in research laboratory activities.

They had hands-on lessons in designing, building and launching rockets, designing and building motorized toy cars, and a competition with Lego Mindstorms (building-block sets combining programmable bricks with electric motors, sensors, Lego bricks, and Lego Technic pieces, such as gears, axles and beams).

Summer programs included a two-week residential program for 40 high school students, with an emphasis on young men and women from groups historically underrepresented in the engineering field. In addition, a one-week commuter program drew 80 junior high students.

“The goal of our middle school and high school programs is to introduce students to engineering and encourage them to take an interest in their math and science courses,” explained program coordinator

Katrina Vance.

“It’s essential to get these young students in the pipeline at an early age so they are better prepared for the engineering curriculum when they arrive at college,” she said.

### **Acclimation process**

The Success in Engineering Education (SEE) Summer Bridge Program focused on acclimating 34 incoming engineering freshman to college life, providing experience with university-level courses and various on-campus resources.

A five-week residential program consisted of a three-credit English course, as well as week-long review courses in math, physics and chemistry.

Participants also completed a variety of hands-on projects and got a chance to interact with the faculty members, university staff and student organizations.

“The Summer Bridge Program was a success for me, and the best decision I made all year because I made lot of friends and learned a lot from it,” said Jered Jim, whose home is the Native American Indian community of Shiprock, New Mexico.

“The Bridge Program helped me a lot my first week with finding classes easily and already having a good base of friends,” said Ronald Hardin, a civil engineering major from Gilbert, Arizona.

### **Energizing experiences**

New programs that debuted in summer 2008 were the Fulton Undergraduate Research Initiative (FURI) Honors Summer Institute and the E2 Camp.

The FURI program provided 17 incoming freshman honors students the opportunity to participate in a two-week commuter program to acclimate them to both the Ira A. Fulton School of Engineering and Barrett, The Honors College.

Students attended an introductory honors class, The Human Event (an course in the humanities and critical thinking), met with leaders of the academic departments in which they will study, worked on a robotics project and interacted with current engineering honors students.

They also participated in workshops on presentation skills, research methods and intellectual property, and learned about campus resources and the culture of Arizona State University.

Students in the FURI Honors Summer Institute will participate in the FURI Research Symposium on Nov. 21. They will join groups of their peers to present robotics projects that employ research methods they learned in the summer program.

The E2 Camp gave more than 700 incoming engineering freshman a chance to network with school leaders – and with each other – during a 3-day/2-night orientation in a scenic, wooded camp in Prescott.

Faculty, staff and other engineering students were on hand to mentor the new university students.

Camp activities included team projects in which students were challenged to design water-balloon launchers using limited resources. They competed against each other for the design of their launchers, as

well as the distance and accuracy with which the devices could propel water balloons.

“E2 camp really helped in fostering a bonding atmosphere for me and my cabin mates,” said camp participant Joy Wang, a freshman who will study electrical engineering.

There also were physical challenges – competitions on high- and low-rope obstacle courses.

Students participated in workshops on communication skills and group dynamics, and heard about the vision and global mission of the Ira A. Fulton School of Engineering.

“I thought the camp was amazing,” said student mentor Ryan Wheelock, a senior studying computer science. “It made me realize how much I love helping and leading people. I definitely can’t wait to volunteer next year.”

“Students arrived at the camp as strangers,” said Deirdre Meldrum, dean engineering school, “and left energized and engaged.”

To see an E2 Camp photo album click here [E2 Photos](#)

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