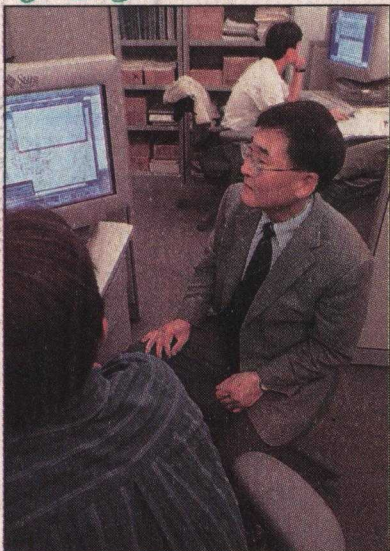# Foundation for Greatness

Head of UCSC's engineering school aims to build a top-rated program

Shmuel Thaler/Sentinel photos

Berkeley High School junior Lauren Tom gets some assistance in her robot construction from UC Santa Cruz engineering school lecturer Cyrus Bazeghi during a lab session at the University's Cosmos Program for high school students.

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7-22-02

Dean Steve Kang works with graduate engineering student David Axelrad in one of the department's labs.

The is the second of a two-part series on the startup engineering school at UC Santa Cruz, which aims to grow dramatically by 2010. The new dean at the school faces challenges not only in recruiting faculty and students, especially women and minorities, but also selling the rest of the campus on the idea that engineering is an important part of UCSC's future.

By JONDI GUMZ
SENTINEL STAFF WRITER

SANTA CRUZ — Steve Kang, the new dean of the UC Santa Cruz Baskin School of Engineering, has only been on campus 18 months but he already has built a bridge to Silicon Valley.

In June, he was elected president of the Silicon Valley Engineering Council, an umbrella organization for more than 60,000 engineers — the first time someone from UCSC has taken the high-profile position. Joel Ferguson, UCSC's associate dean of engineering,

is one of the four directors.

The council includes heavy hitters such as Intel co-founder Gordon Moore, and Stanford University president and former engineering Dean John Hennessy. It promotes programs that encourage young people to consider engineering as a career.

"We're closer to Silicon Valley than UC Berkeley, but some people in Silicon Valley don't know we have an engineering school," said Kang, who is sometimes up at 3 a.m. calling colleagues. "It means I have to sleep less."

Sam David Haddad, a consulting engineer in San Jose who pushed for Kang's election, believes he can sell industry leaders on the advantages of working with UCSC's engineering school.

"They haven't seen someone like Steve who is willing to go the extra mile," Haddad said.

That's not all.

This month, UCSC opened a

research center at NASA in Mountain View. Director William Berry is reviewing proposals for collaboration between campus researchers and NASA as well as Silicon Valley companies. He expects 20 people on staff by Labor Day.

Finding faculty

Although UCSC computer scientist Robert Haussler is recognized internationally and UCSC graduates have been hired by Silicon Valley companies, the engineering school as a whole is not well-known.

To raise the school's profile, Kang is recruiting top-notch faculty in cutting-edge fields, such as research into a human vision chip that could help a blind person see.

"Good people want to work with good people," Kang said.

He landed Martin Abadi, who holds patents for discoveries in computer

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Engineering

security, as a professor after his stellar career in industry.

Additions in electrical engineering include Hamid Sadjadpour, who left the East Coast to come to Santa Cruz because of the school's proximity to Silicon Valley, and Holger Schmidt, an up-and-coming researcher from MIT who wanted a chance to shape new programs.

Despite the developments in technology, Kang doesn't think computers will replace classroom interaction. The best professors are like coaches, he said, drawing inspiration from "Tuesdays with Morrie," the movie based on the book about a special mentor-student relationship.

Kang doesn't have the budget to bring in everyone he wants, but he has a creative solution: Split a position in two, and find two talented people to devote half their time to the campus.

Still, recruiting remains a challenge because of unusually high housing costs, and some positions remain open.

Lecturer Cyrus Bazeghi, 32, said the reason he could afford to return to campus and teach is because he spent seven years working in industry after getting his master's degree.

Campus concerns

Kang faces concerns from other parts of campus.

A key faculty committee, evaluating a proposal for an engineering school with 140 faculty members, worried that its demands for space and other resources could result in "undue stresses" on other divisions.

They said the emphasis on high-tech research could "change the intellectual tone of the campus."

Engineering faculty, for example, supported adding letter grades to the traditional narrative evaluation, so companies such as Hewlett-Packard would take their students seriously. Others, like politics Professor Peter Euben, didn't want to reduce the learning process to a grade.

Kang chuckled at the idea that UCSC would be filled with characters from "Dilbert," the comic strip satirizing the tech industry.

Compared to UC Berkeley, which has more than 200 faculty in engineering, UCSC and its faculty of 130 "will still be a small school," he said.

Some veteran faculty members think fears about engineering dominating the campus are overblown.

Astronomers and marine scientists at UCSC are internationally known, and if engineers can do the same, "more power to them," said music Professor Fred Lieberman, who has been at UCSC since 1983 and is the campus expert on the Beatles.

"I don't see these things hurting other programs," said Lieberman. "Student numbers drive the budget."

Drawing students

UCSC's engineering school has been successful recruiting international students. Many of them discovered the program on the Web. The site was upgraded in February, prompting thousands of visitors to take a peek.

"China is sending their best and brightest abroad to be educated," said computer science professor Darrell Long, who has been at UCSC for 13 years.

Getting American students, especially women, Latinos, and African-Americans,

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Baskin School of Engineering: New kid on the block

The Baskin School of Engineering at UC Santa Cruz has grown to more than 1,000 students in five years. Steve Kang, dean of the new school of engineering, wants to add more master's and doctoral programs to bring the number of graduate student to 700 by 2010.

Here is how the new engineering school compares in size to three well-established programs serving Silicon Valley. These figures are from the 2001-02 school year.

UC Berkeley's engineering college dates to 1868. Stanford University, which is private, started its engineering school in 1926. San Jose State University, which is part of the CSU system, followed suit in 1946. San Jose State offers master's programs but no doctoral study.

	BERKELEY	STANFORD	SJSU	UCSC
Faculty FT	213	219	70	49
part time	—	—		48 FTE
Undergrad FT	2,678	1,458	2,587	1,131
part-time	—	—	—	948
Master's FT	402	1,558	297	54
part-time	—	—	767	60
PhDs FT	1,077	1,310	—	124
part-time	—	—	—	114

FT= full-time
FTE = full time equivalent

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to consider engineering and pursue advanced degrees is more of a challenge.

Kang has read how Carnegie Mellon University made changes that resulted in more women studying computer science. He insists that the field is open.

"People can be experts in software and not be a math genius," he said, touting the "Ph.D. Way." The letters stand for "persistently, honorably, and diligently" — in other words, more perspiration than inspiration.

The state has started summer programs for high school students to whet their appetite for computers and science. UCSC is one of the campuses where teen-agers are learning about robotics and game theory.

"Santa Cruz is definitely on the list," said Trung Nguyen, 17, of San Jose, who might be the first engineer in his family. But he's also considering UC Berkeley, UC Davis and UC Santa Barbara.

Students shouldn't be scared away by the downturn, said Felicita Saiez, a software engineering consultant who teaches at Ohlone Community College.

"Everything is cyclical," she said.

When she was in high school, people wondered why she wanted to study aerospace engineering. But by the time she got her bachelor's degree from Boston University in 1980, Ronald Reagan was president and the defense industry was booming.

"Everyone in my class got multiple offers," she said. "There were not that many people to hire."

A special niche

Women find UCSC's engineering school particularly attractive.

Kimmen Sjolander, 46, was a single parent with three children when she spurned an offer from UC Berkeley to study at UCSC.

She raved about the free after-school care for children, the family housing on campus and the support network it provided.

"That made all the difference in the world," she said.

At UCSC, she worked with Professor Robert Haussler to develop new methods in computational biology, an experience

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she described as "one of the highlights of my entire life." Some of those methods are being used identify genes and predict protein function and structure.

With her doctorate, Sjolander became chief scientist at a startup that was bought by Celera Genomics and ended up a co-author on the breakthrough genome paper. Now an assistant professor of bioengineering at UC Berkeley, she tries to offer her students the kind of attention she got from Haussler.

Asked about the pros and cons of a large institution such as Berkeley with a smaller one like Santa Cruz, she said, "Who you work with is more important than the pedigree. I wouldn't trade my training with a scientist of the stature of David Haussler for any school in the world. I was just lucky I could do that in Santa Cruz."

Alexandra Carey, 22, of Belmont, came to UCSC four years ago because she wanted to study computer engineering close to home. She found the professors accessible and an accepting atmosphere for women.

But the rapid growth has taken a toll on the school.

"I feel like it's losing its personal touch," said Carey, who will finish next year with a double major in math. "They can't know you by name in the advising office. It's more difficult to talk to professors. Classes are twice as large as when I was a freshmen."

Still, she likes Kang's idea to bring in undergraduate tutors to work with students. And she calls some of the faculty, like Wesley Mackey and Steve Petersen, "absolutely brilliant."

In her view, Kang must manage growth with care.

"Growing is good as long we don't lose the uniqueness the School of Engineering has right now," she said.

Kang, a soccer fan who traveled to Korea to watch his homeland play in the World Cup, compares UCSC's fledgling engineering school to an up-and-coming athlete at the Olympics.

"Just because you're new doesn't mean you can't be the best," he said.

Contact Jondi Gumz at jgumz@santa-cruz.com.