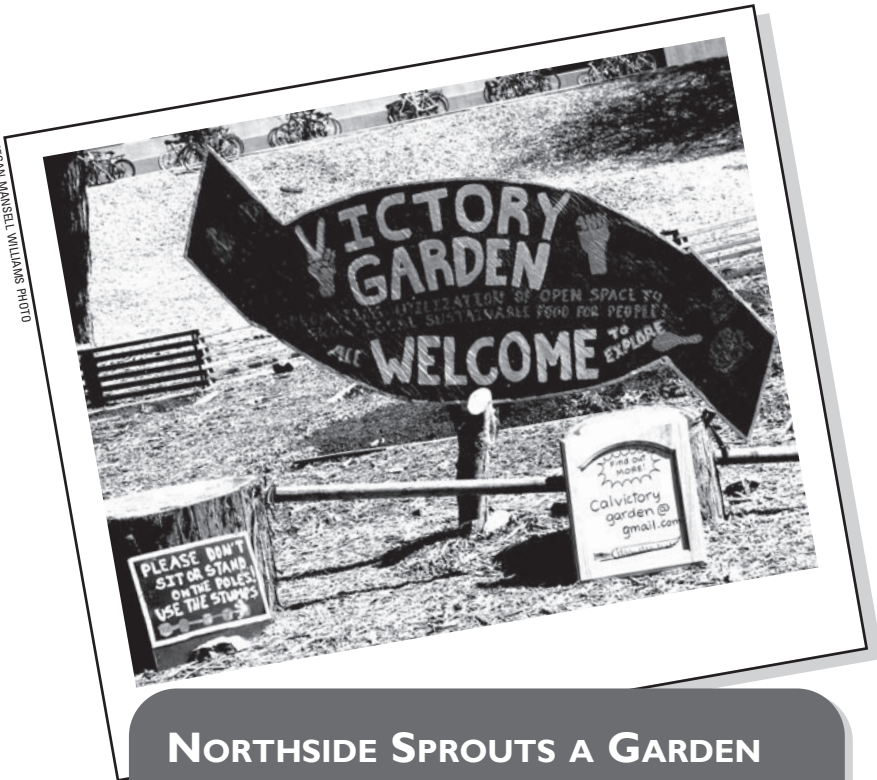


# engineeringNews

APRIL 9, 2009 VOL. 79, NO. 65

MEGAN MANSELL WILLIAMS PHOTO



## NORTHSIDE SPROUTS A GARDEN

**BREAKING GROUND:** Tomatoes, kale and lettuce will grow from the beds behind this sign in the Victory Garden, a new effort by students to grow food in the empty lot by McLaughlin and Evans Halls. Anyone can get involved in the garden, a brainchild of ASUC's Sustainability Team. E-mail the garden's organizers at [calvictorygarden@gmail.com](mailto:calvictorygarden@gmail.com).

## Reuse that water

Graywater gets a sunnier future in CEE senior project



RACHEL SHAFER PHOTO

**IMMERSED:** From left, CEE seniors Vu Le, Anthony Hoac, David Leung and Medford Xie.

**D**rought. We're facing one this summer, and wherever you'll be in California, you'll need to conserve water.

One way is to reuse indoor graywater. That's water you use to brush your teeth, wash your clothes or take a shower — anything but toilet and kitchen sink water. Instead of using it once, what if it

were automatically filtered and rerouted to toilets or your garden to be used again?

The concept isn't new, and here and there, people have cobbled together graywater systems. Studies suggest these could save 30 percent of a home or building's water usage. But, unlike recycling paper or aluminum cans, recycling indoor graywater remains uncommon because no regulations or codes exist for implementing a safe,

*Continued on page 2*

## POP QUIZ



What do you think of webcast classes?



**Nassim Farrokhzad, ChemE senior**

"I love them. I had Bio 1A, and at times I didn't understand the concepts. It was helpful to go back and watch the lecture again."



**Palash Agarwal, EECS freshman**

"I've never actually used it. The classes I've taken so far, you can just read the book if you miss lecture."



**James Long, CEE senior**

"I've used it a couple of times for Chem 1A/1B. If you get into the habit of just looking at the webcasts, though, you can pretty easily stop paying attention in class."



**Nathan Koon, ME sophomore**

"All morning classes should be webcast."

## Reuse that graywater

Continued from page 1

proven system. A group of CEE seniors hopes to change that.

David Leung, Vu Le, Anthony Hoac and Medford Xie didn't know much about graywater before selecting their project for CEE professor Bob Bea's capstone course, CE 180, Engineering Systems. Now they're converts to the idea, even lowering their own water use to embrace the spirit of the project.

The group's goal by the end of the semester is to answer indoor graywater's most pressing questions: To what degree must the water be treated so it's safe for reuse in non-consumptive ways? What's the most cost-effective treatment and rerouting system that uses the least energy and is kindest to the Earth? What regulations are needed for new construction? How should the public be educated so graywater reuse becomes popular?

"We've opened a Pandora's box," says Le, "but in a good way. Once you start to research this, you realize there's so much potential."

The team is consulting with San Francisco's Transbay Terminal Redevelopment District project on whether a graywater system might work on new buildings there. The seniors have developed a design for a three-story office building that uses existing technologies and others under development to create a multiple-step system that captures, treats and reroutes water. Two of three filtering technologies are biological: a green "living" roof to capture and treat rainwater from the outside; and a vertical, hydroponic filtering system inside, where graywater flows down through walls filled with peat and dirt, a natural process to remove particles, to water plants growing out from the walls.

"These were the most practical measures in terms of cost," says Leung. "Believe it or not, the biological systems are pretty low maintenance, and of course they're more sustainable than traditional technologies."

The team is also writing a technical paper to submit to the American Society of Civil Engineers in hopes of promoting a regulatory discussion. Currently, the only proposed state regulation would make it illegal to route graywater to other indoor uses without treating it first.

Catch the team and other final presentations from CE 180 on Tuesday, May 12, from 8:30 to noon in 502 Davis Hall. ■



Learn more at [graywater.net](http://graywater.net).

### Brewed Awakening Coupon

Buy one drink & get a second drink half off (of equal or lesser value)

Please ask about our catering

Redeemable at 1807 Euclid Ave. Berkeley, CA 94709 Ph: (510) 540.8865

Courtesy of **engineeringNews**

Not valid with any other discount, coupon or offer Expires 5/31/2009

## Turn your chump change into real change

Donate now to the 2009 Engineering Senior Gift Campaign

This summer, Allison Hom will be backpacking in Europe — that classic rite of passage for college graduates — before starting her new job at Chevron in the fall as an optimization engineer. The Engineering Math and Statistics senior also participated in another classic — and classy — rite of passage for graduating students: Donating to her alma mater.

Hom gave \$35 to the Class of 2009 Senior Gift Campaign and pledged to give that same amount each year for the next two years. By participating at that level, she received a Berkeley Engineering Alumni license plate frame as a thank you gift.

"It's so important to give back," Hom explains, "because this money goes directly to the college, and everyone benefits."

The campaign's student leaders are asking every senior to make a donation, at whatever level is comfortable, with the goal of raising \$10,000 for the Berkeley Engineering Annual Fund. Senior donations will further the college's educational mission by supporting activities such as student clubs and undergraduate research.

When seniors give to the college, they honor their time here and express appreciation for the many benefits they receive and will receive from a Berkeley Engineering education.

"I'm thankful for the classes that have



RACHEL SHARER PHOTO

**BEARS WHO SHARE:** Allison Hom donated to the Class of 2009 Senior Gift Campaign.

given me a good start on my professional career," says Hom, who serves on the campaign's leadership committee. "I'm thankful for the professors and grad students who have inspired me. I appreciate the academic advisers I've had, the peers in my classes and the access to career fairs and job opportunities. I'm grateful for the opportunity to do research and discover what it's like to run machines and get hands-on experience in a lab. I've loved every single minute of it. So for me, giving back matters."

Donate now! ■

[www.coe.berkeley.edu/  
support-the-college/giving-  
opportunities/seniorgift](http://www.coe.berkeley.edu/support-the-college/giving-opportunities/seniorgift)



# < announcements >



Get the complete College calendar at [www.coe.berkeley.edu/events](http://www.coe.berkeley.edu/events).

## Here comes E-Week

The annual event is back — and bigger and better than ever. Engineers' Week will take place APRIL 13–17. In grand celebration of Berkeley Engineering-ness, it will feature day and night activities, so there's no excuse not to come out and mingle with your fellow engineers. Satisfy your hunger each day at noon at a club-sponsored BBQ by the North Gate. Compete for prizes in several competitions, including a quiz bowl and an engineering Olympics that pits major against major and will decide once and for all who is the best engineer! Make your plans now and get all the details at [ejc.berkeley.edu](http://ejc.berkeley.edu).

## Be a tour guide for the day

We need six College of Engineering students to lead tours of the college from 11 a.m. to 12 p.m. on Cal Day, SATURDAY, APRIL 18. Talk to prospective students and their parents about your experiences at Cal and your favorite spots on northside! In appreciation of your "tour duty," you'll get free lunch, our unbounded gratitude and a thank you gift! To volunteer, contact Dawn Kramer at [dkramer@berkeley.edu](mailto:dkramer@berkeley.edu).

## Commencement registration

Commencement 2009 will be a traditional all-college ceremony held on Saturday, May 23, from 8:30 a.m. to 12 p.m., at Hearst Greek Theatre. Departmental receptions will follow at various campus locations. Visit the official website [www.coe.berkeley.edu/commencement](http://www.coe.berkeley.edu/commencement) to register online to participate in Commencement and reserve your tickets. There is a six-ticket limit per graduating student. Registration deadline is MONDAY, APRIL 20. If you have questions, please contact Dawn Kramer at [dkramer@berkeley.edu](mailto:dkramer@berkeley.edu).

## Get the intel on Intel

On THURSDAY, APRIL 21, Intel chairman Craig Barrett will deliver the Dow Distinguished Lectureship in Materials Science and Engineering in Support of Society as part of the college's View from the Top lecture series. The event will begin at 4 p.m. in Sibley Auditorium and a reception will follow. [www.coe.berkeley.edu/events/view-from-the-top](http://www.coe.berkeley.edu/events/view-from-the-top)

## Graduating this semester?

In order to graduate, you must declare your candidacy, commonly called "placing yourself on the degree list." If you fail to officially place yourself on the degree list, you will not graduate this spring, whether you've completed all requirements or not. Graduate in this sense does not mean participating in the Commencement ceremony — it means earning a degree from Cal. Check Bear Facts today to verify if you are on the Spring 2009 degree list, which will say Bachelor of Science, Spring 2009. Questions? Contact the Student Affairs Office at 642-7594.

## Teach E 98

Want to share everything you wish you had known as a freshman engineer? We are looking for passionate instructors to teach E 98 in Fall 2009. E 98 is a fun DeCal class designed to help freshmen engineers get the most out of Berkeley. Each section meets one hour a week, with three instructors and 20 students. E 98 is an amazing opportunity to build teaching and communication skills, and it works around your schedule! Apply online at [e98.berkeley.edu](http://e98.berkeley.edu).



**Name:** Sheikh Rashid bin Saeed Crossing  
**The Challenge:** Construct the world's tallest

arch bridge on a bed of sand

**Where:** Dubai, United Arab Emirates

**Cost:** \$817 million

**Estimated Completion:** 2012

**Excerpt:** "Instead of installing the standard arch abutment, engineers will drill 200 holes — six and a half feet wide and 130 feet deep,

half vertical and half inclined — and fill them with steel-reinforced concrete. Spaced about 20 feet apart and topped off with a concrete cap, the enormous foundations can absorb and dissipate the full force of the bridge."

**Name:** Alternative Multifunctional Underground Space

**The Challenge:** Hollow out 900 million cubic feet of earth to make a watertight underground urban oasis

**Where:** Amsterdam

**Cost:** \$14.4 billion

**Estimated Completion:** 2028

**Excerpt:** "The only way to create a stable construction site for the massive excavation on Amsterdam's marshy ground is to fill in the 17th-century canals with sand and dig down through them. The [underground] space will span 31 miles of canals and contain roads, malls, sports arenas and anything else you'd find above-ground — except, of course, sunlight."

Read more details and see illustrations at [www.popsci.com](http://www.popsci.com).

# < extreme engineering >

Futuristic, but real projects featured in *Popular Science*

# < of note >

## “Science is a lot cooler than they thought”



PEG SNOBRINSKI PHOTO

### White House honors two professors

In December, two engineering professors received the Presidential Early Career Award for Scientists and Engineers. EECS assistant professor Sanjit Seshia was honored for his research in

the fields of verification, learning and control for a new generation of survivable embedded systems. CEE assistant professor Joan Walker (pictured) was honored for her research in understanding the multi-contextual approach to behavioral modeling for improved transportation planning. They were among 67 people chosen by the White House for showing outstanding promise and leadership in their fields. ■

Who says engineers care only about their classes?

This year, a group of engineering students launched BEAM (Berkeley Engineers and Mentors), an outreach program run entirely by undergraduates that puts engineers in local schools to teach weekly science activities and spend one-on-one time with children. So far, 40 engineers have participated and mentored about 100 middle and high schoolers, many from disadvantaged backgrounds. The field work is supported by a Decal class, led by juniors and seniors, which helps mentors develop skills and strategies to teach science to younger kids.

“It really helps to relate science to what’s happening in these kids’ everyday lives,” explains ME senior Perry Johnson, a BEAM cofounder and facilitator. “Make it fun and don’t get hung up on terminology. The point is to show them science is a lot cooler than they thought.”

Each week BEAM mentors lead an activity such as making ice cream from liquid nitrogen and rock salt or building small rockets. One popular activity is teaching evolution with M&Ms: Each child is given a fork, a spoon, a pair of chopsticks and a pile of M&Ms. During every round, participants pick a utensil and gather as many M&Ms as they can in a certain amount of time, or they “die.” The survivors all end up using spoons, a *sweet* illustration of how nature selects for certain traits that best help members of a species survive.

“As engineers, there are things we can do in our free time that aren’t for ourselves,” says BioE senior Mike Lin, another cofounder and facilitator. “We’re so well off in getting a Berkeley education that we should divert some time and energy for others.”

Undergraduates can volunteer a whole semester or just a week or two, say organizers. Helping in the BEAM program also fulfills many clubs’ community service requirements. (Clubs that actively partner



RACHEL SHAFER PHOTO

**GIVING BACK:** Mike Lin (left) and Perry Johnson helped found Berkeley Engineers and Mentors.

with the BEAM program are: Society of Women Engineers, Hispanic Engineers and Scientists, Pi Tau Sigma, Bioengineering Honor Society and Biomedical Engineering Society.)

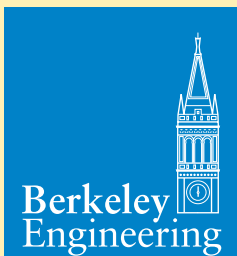
BEAM began as a way for community outreach officers in several engineering clubs to pool their resources and work together on a coordinated outreach effort. The end goal is not to recruit the next generation of engineers per se, but to foster a self-propelled desire to learn that will aid young students in whatever career they decide.

Already, BEAM has seen results. A middle schooler named Fred discovered a love of robots, thanks to one activity. Later, he took the initiative to seek out an internship in robotics as a high school student and even came to an ME 102 open house. When he saw the various robotic projects built by undergraduates, Fred told Johnson, “Yeah, that’s what I want to do.”

“You should do it,” Johnson replied. “And you *can* do it.”

The experience has changed BEAM mentors, too. Johnson always wanted to work in the aerospace industry. Now he’s going to graduate school. He wants to become a professor and teach. ■

## engineeringNews



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