CEE@Berkeley Connections
CIVIL AND ENVIRONMENTAL ENGINEERING | UNIVERSITY OF CALIFORNIA, BERKELEY
Fall 2009

CHAIR'S MEMO:

Dear CEE Alumni and Friends,


Lisa Alvarez-Cohen

It's my pleasure to commence my third year as chair of this outstanding department!

This year promises to be one filled with both challenges and opportunities; as we pursue strategies to nurture and strengthen the department while dealing with significant budget issues. Fortunately, the department has fundamental strengths in terms of its outstanding faculty, committed staff, and talented students that will allow us to deal with these challenges and emerge an even stronger department.

Being Chair gives me a birds-eye view of our faculty and students as they pursue research and educational paths that aim to solve the most challenging problems of our day. As new challenges arise, CEE evolves to better serve society. Some of our most pressing challenges include: increasing energy efficiency of civil systems, building intelligent and sustainable infrastructure, designing civil systems for increased urbanization, improving water and air quality, mitigating effects of climate change, and designing structures to withstand hazards. Because of its extraordinary

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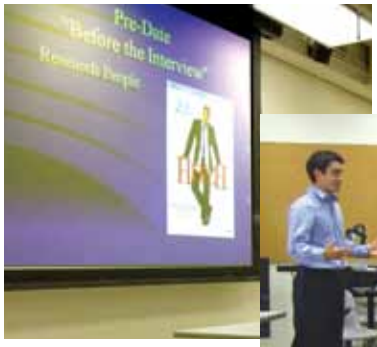
Inside

New Professional Development Program Teaches Students How to Lead, Manage, and Communicate

We're often told to "build a team," but how *exactly* do you "build a team?"

This question is typical of the questions undergraduates ask as they embark upon their first jobs in civil and environmental engineering. To help undergraduates learn the skills that might help them in their first jobs, such as how to manage, how to lead, how to interview/network/present effectively, and yes, how to *build a team*, CEE has launched a Professional Development Certificate Program.



Industry guest speaker Joseph McCue of RBF Consulting lectures students on "Presenting Yourself Professionally." The lecture was followed by an interview workshop.

Faculty, students, staff, CEE Advisory Council members, and department alumni came together to brainstorm what skills would help CEE students succeed in their first jobs. They devised a curriculum of electives, seminars, workshops, student organizations and competition team participation, and industry experience through externships and internships.

Advisory Council members Rudolph Bonaparte, Michael Kavanaugh, David Friedman, Susan Leal, Robert Wadell, and James van Hoften, along with CEE alumni Rula Deeb (CE MS '94, PhD '99) and Chris Hunt (CE BS '93, MS '95), participated in guest lectures and panel discussions in one of the course modules, *CE 198: Professional Development Leadership.* Lectures ranged from *The Importance of Teams: You may be on the 'pointy end of the spear' but you didn't get there alone,* to *Presentations: the Good, the Bad, and the Ugly.*

Although optional, the Certificate Program is already quite popular among CEE undergraduates.

"What is exciting is that we are seeing students that we tend to never see come forward to take these courses. This program resonates with them. It is very rewarding to see how we are better serving this segment of the student population," says Joan Chamberlain, the program's director. "And we are seeing students choose Cal for their undergraduate education because this program exists. Prospective students want hands-on experience, and this program offers both externships and internships, which gives them exactly the kind of exposure to the field that they seek."

"Coming from Cal, you know that you have an excellent academic education, and you know that you can figure a lot of things out when you get out there and start working," says Anu Sridharan, the CEE student organizer of the program. "But this program helps you take small steps. It helps you understand what is expected of you even before you set foot in the industry. Being able to anticipate these steps makes this transition infinitely easier.

"The department stepped in and brought together a lot of disparate professional development resources into one four-year Certificate Program so that its students would have easier access to all this information," she adds. "I think this is invaluable."

CEE needs more internship opportunities for its students. To help, contact Joan Chamberlain at joan@ce.berkeley.edu. For more information, see: www.ce.berkeley.edu/undergrad.pdc_index.php.

CHAIR'S MEMO

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intellectual depth, research and education within, the department continues to grow and adapt, while building upon the strong foundation of civil and environmental engineering principles.

This year, our undergraduates' participation in department activities is at an all time high, from our award-winning competition teams to our new Professional Development Certificate Program to networking with industry friends and engaged alumni. Distinct demonstrations of their enthusiasm can be seen in the first place win for the Concrete Canoe team at the ASCE National Competition, fifth place showing of the Steel Bridge team at Nationals, and first place honors for the Environmental Competition team at this year's regional competition. These brilliant and energetic students certainly show the department proud!

This year CEE launched a Professional Development Certificate Program, designed to provide our undergraduates with many of the practical skills that will serve them as they begin their careers. It is one of the few such programs in the country, designed to ensure that CEE undergraduates receive an elite experience at a public university. This program was the brainchild of our undergraduates working in conjunction with our Advisory Council and faculty – a shining example of what students, alumni, and faculty can achieve together.

Further indication of the fundamental strength of the department is reflected in Berkeley's sweep of the No. 1 spots in *U.S. News and World Report*'s annual graduate program rankings. Our graduate programs in civil engineering and in environmental engineering were both ranked #1 in the country. This year our undergraduate programs were also ranked very highly, with civil at #1 and environmental at #2. We are immensely proud of this achievement!

Even in a difficult budget climate, the quality of the teaching, research, and support within Berkeley's CEE has not wavered. We are using this as an opportunity to think strategically about our core strengths here at Berkeley and to determine our future path. As always, we stand committed to serve as the world's academic leader in civil and environmental engineering. We welcome you to join us in this lofty endeavor.

As ever, Go Bears!

Lisa Alvarez-Cohen

Fred and Claire Sauer Professor of Engineering and Chair
Civil and Environmental Engineering

Interdisciplinary Team of CEE Faculty and Students Investigate "Green Urban Logistics" Policies

CEE faculty members are collaborating across domains to address the many important societal-scale research problems that fall at the intersections of disciplines. One example is the collaboration between Professors Samer Madanat (a transportation expert), Arpad Horvath (an expert in life-cycle assessment) and Robert Harley (an expert in air quality), with PhD student Nakul Sathaye.

In recent years, the reduction of environmental impacts of freight transportation in cities has been a policy goal around the world. Various policies have been justified by studies which have found them to produce beneficial environmental impacts. However, some of the policies that have been implemented may have unintended environmental impacts. Two "green logistics" policies are commonly used in cities around the world: those aimed at reducing the number of road freight trips through load consolidation and those aimed at reducing the number of peak-hour trips.

An increase of vehicle weight is well-known to cause exponential deterioration to roadway infrastructure, leading to an increase in the frequency of pavement rehabilitation activities. Although the policy of reducing truck trips through load consolidation reduces tailpipe emissions, the CEE researchers found that supply-chain emissions (especially sulfur dioxide and particulate matter) associated with pavement maintenance and rehabilitation can significantly offset those from the tailpipe.

The researchers also investigated policies aimed at shifting urban freight movements to off-peak hours. The surface layer of the atmosphere is generally more stable during the night than the day. The research team found that shifting logistics operations to off-peak night hours leads to increasing the daily human intake of diesel exhaust pollutants in many locations. The CEE researchers also showed that, while the off-peak policy may initially be environmentally beneficial, it leads to the opposite effects if too many freight trips are shifted.

Above: Moving trucks from the congested period to off-peak hours is one of the policies that were analyzed by the research team. (Photo: Source nathangibbs via Flickr) Below from left: Arpad Horvath, Samer Madanat, Robert Harley, Nakul Sathaye

Joan Walker Receives PECASE Award at White House Ceremony

Joan Walker

Joan Walker was awarded the Presidential Early Career Award for Scientists and Engineers (PECASE) at a White House ceremony in December, 2008. The PECASE is the highest honor bestowed by the US government on scientists and engineers beginning their independent careers.

Nine federal departments and agencies annually nominate scientists and engineers whose work shows exceptional promise for leadership at the frontiers of scientific knowledge.

Joan was recognized for her research on behavioral models of transport and land use and how they are used to inform planning and policy making and forecast future scenarios. Her research also includes an important educational module which uses the domain of attitudes and behavior as the focus of hands-on group research activities conducted by graduate, undergraduate, and secondary school students. The education program will contribute to the development of students excited about scientific exploration and with skills in the scientific method, thereby increasing their probability of careers in science and engineering.

James Hunt and Water Resources Engineering

"The science of hydrology was formerly driven by the practical needs of the engineering profession, where floods, droughts, and water quality were estimated from prior but limited environmental data collected by various agencies," says James Hunt, the Lawrence E. Pierano Professor of Environmental Engineering.

"Today, the increased availability of hydrologic data from new ground and satellite-based sensors, population growth, and the uncertainties of climate change are all forcing new developments in the science of hydrology and its engineering applications," says Jim.

When Jim was hired to join the CEE faculty in 1980, it was partially because of his prior experience as a hydrologic engineer. He has returned to those roots both in the classroom and in his research program over the past two years.

Jim has assumed the teaching of the upper division hydrology course while the department recruits a new faculty member in the area of surface hydrology.

He is also participating in a major research project sponsored by Microsoft Research that was initiated through the Berkeley Water Center when CEE Professor Yoram Rubin was the co-director. This research effort is developing new tools to manage hydrologic data and to demonstrate their use.

The Middle Reach of the Russian River has been subject to extensive gravel mining that leaves inundated pits separated from the river channel by narrow levees of aggregate of riparian. This photo shows the Benoist pit in the background and also the Kaiser Sand and Gravel plant. This photo by Martin Griffin is discussed in his book, *Saving the Marin Sonoma Coast* (Sweetwater Springs Press, Healdsburg, CA 1998). Left: James Hunt

The initial effort was focused on the Russian River watershed, which provided a test case for many of the water issues facing California as a whole. "The Russian River watershed is well-defined hydrologically," Jim explains, "with water conflicts arising from urbanization, the expansion of vineyards, impacts from prior land use practices such as gravel mining, and declining populations of migratory salmonid species."

The problem, says Jim, is that "data and models used for these important resource allocation questions are collected by different agencies, in different formats, with different intents and quality control methodologies. Collecting this data into a system that preserves the data histories and still permits analysis and synthesis has been the challenge."

This research is conducted in conjunction with Lawrence Berkeley National Laboratory, where there is expertise in data management and tools for visualization and analysis. "Our efforts are done in collaboration with the Sonoma County Water Agency, the National Marine Fisheries Service, and the US Bureau of Reclamation," says Jim.

The original emphasis on the Russian River has expanded to coastal California streams where there is a need for water resource engineers to address these conflicting issues. "Research students are applying these new approaches to sediment transport, water temperature modeling, flood risk assessment, and the dynamics of intermittently connected coastal lagoons along the California coastline," says Jim.

Jim's research has always incorporated aspects of data mining, and this latest research effort is permitting new approaches to data collection, analysis, and archiving at a much larger scale.

Alexandre Bayen Receives CAREER Award

Alexandre Bayen

Alexandre Bayen was the recipient of a CAREER Award from the National Science Foundation.

The award will support Alex's project, "Lagrangian Sensing in Large Scale Cyber-Physical Infrastructure Systems," which includes the development of theory and algorithms, the design of a system architecture, and the prototyping, testing and large scale deployment of two mobile sensing platforms.

The two applications are highway traffic estimation and river flow estimation using GPS-equipped smartphones. The algorithms run online, gather mobile data and send it to a server, which uses inverse modeling to estimate the state of the system. It broadcasts information back to the smartphones and to the internet. A field operational test, called Mobile Millennium is aimed at reaching thousands of users in California. The river flow monitoring project is aimed at deploying a hundred drifters in the Sacramento Delta.

The project investigates the question: how to reconstruct the state of a distributed system from mobile sensors that cannot control their motion?

In Memoriam: Tor L. Brekke

Tor L. Brekke, professor emeritus and world-renowned scholar in tunneling, died after several months of declining health on March 6, 2009. He was 75.

Tor's work was influential in leading important modifications and improvements in tunneling and underground construction and contracting.

During his career, Tor authored more than 85 publications and consulted on more than 200 projects, including hydroelectric power plants, dams, highways, railroads and mines around the world. His research interests included gas storage in excavated caverns, pressure tunnels and shafts, water and subway tunnels, and rock and soil tunneling.

After earning his doctorate in 1960, Tor worked at the Institute of Geological Engineering at the Norwegian Institute of Technology as a research fellow and a university lecturer. In 1967, he spent the year as a visiting research associate at UC Berkeley's Department of Civil and Environmental Engineering.

That year was a precursor to a longer career at Berkeley. In 1970, he returned to the campus as an acting associate professor of geological engineering. He became a full professor in 1976 and taught until his retirement in 1993.

Tor held numerous leadership positions throughout his career, including being chair of the US National Committee of Tunneling Technology, and a member of the Norwegian Academy of Technical Sciences and of the Royal Swedish Academy of Engineering Sciences.

To generations of students, Tor was an outgoing, sympathetic mentor on all aspects of their education and life in general. The Berkeley student chapters of the ASCE and Chi Epsilon named him Outstanding Faculty of the Year in 1971. In 2008, he was the recipient of the Outstanding Educator of the Year Award, presented by the US Underground Construction Industry.

Tor was a devoted Cal booster who never missed an opportunity to attend a football game.

Contributions may be sent to Tor L. Brekke Fellowship Award Fund, Department of Civil and Environmental Engineering, 760 Davis Hall, University of California, Berkeley, CA 94720-1710. This fund will provide financial support for students whose studies are most consistent with Tor's research and practice.

Bill MacCracken, CEE's Own Confucius, Retires

Bill MacCracken

After 23 years in the Department of Civil and Environmental Engineering, Principal Development Engineer Bill MacCracken retired in March 2009.

Over the years, faculty, staff, and students counted on Bill for his wise oversight and hands-on guidance in—well, just about everything. Bill guided staff on the oftentimes obscure operation and history of Davis, O'Brien, and McLaughlin Halls. He resolved daily problems that happened when the department surged out of Davis Hall during a construction phase that lasted two years. Every Cal Day, Bill gave popular demonstrations to scores of students and their parents who were checking out the undergraduate program.

Bill supported faculty conducting teaching labs or research experiments, always ready with an excellent solution to an insurmountable challenge. He helped students with research projects until late into the night, after making sure there would be pizza, to see that their project was completed successfully. Every MS or PhD thesis written by students involved in experimental research mentions Bill McCracken. Often students put it bluntly: "Bill, I succeeded, thanks to you."

Bill began his career at Berkeley in 1980, working on research projects for Professors Vitelmo Bertero and Egor Popov. For the next five years, he worked with Professor Brady Williamson in the Fire Laboratory, until 1986, when he officially joined CEE staff.

Two sentiments that emerged during his retirement party were 1) Bill was respected by all, and 2) he was already missed.

Professor Boza Stojadinovic said, "When I was a student, Bill was the "cool" side of the department. Everyone else was always nervous about something or other. Bill always seemed to have everything under control. Later, I learned that took some extra special effort on his part."

Kejin Wang, (CEE PhD '94) and Jay Shen (CEE PhD '92) commented via e-mail, "Our appreciation for Bill's dedication has grown deeper since we left Berkeley. We often praise people who are willing to help others as Bill did, and we wish we had more people like Bill around us."

Nathaniel Wagner and Robert Zeller: Two Undergraduate Scholarship Winners Who Give Back

Each year several CEE undergraduates receive scholarships donated by friends of the department.

Two scholarship winners, Nathaniel Wagner (recipient of the Berkel Scholarship, established by the Deep Foundations Institute Education Trust) and Robert Zeller (recipient of the Jack Brown Endowment for Undergraduate Research) view their scholarships as a way to give back while they are still undergraduates.

Nathaniel sees his scholarship as a way to give back to his family. "My parents have been very generous in helping finance my education, but by applying for scholarships, I can reduce the burden placed on them," he says. "With an older brother in college and four younger brothers, I know their burden will be increasingly large as time goes on.

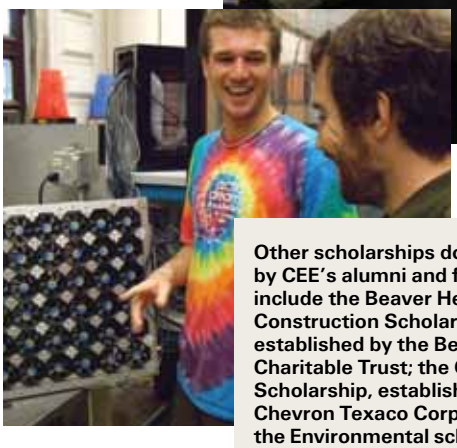
"Instead of opening doors for myself, I like to think that this scholarship has opened doors for my entire family," he adds. "I never dreamed that I could be in such a prestigious university as Cal, yet here I am. Striving for excellence is often brushed aside, but I want to set the example for my younger brothers. Receiving the Berkel Scholarship proves to them that working hard will be rewarded."

Robert sees his scholarship as a way to contribute to ongoing research at Cal. "The Jack Brown Endowment for Undergraduate Research made it possible for me not to have to get a job on top of school. This is crucial for being able to do research since I sometimes spend up to 20 hours a week in the lab," he says.

"I was fortunate to get involved with Professor Evan Variano's research on the wind-wave tank.

"Building the tank involves everything from making aluminum parts in the machine shop to putting together electronics. I love the problem solving and hands-on work and I find it exciting that at the end of the day, it is related to understanding how water moves.

"I find it fulfilling to know that I am making a contribution to fluid mechanics research at Berkeley."



Right: Nathaniel Wagner in the Cal Marching Band. Below: Robert Zeller and Professor Evan Variano discuss the Randomly Actuated Active Grid system they developed.

Other scholarships donated by CEE's alumni and friends include the Beaver Heavy Construction Scholarship, established by the Beavers Charitable Trust; the Chevron Scholarship, established by the Chevron Texaco Corporation; the Environmental scholarships, established by various donors to the department; the John C. Shimmick Scholarship, established in honor of alumnus John C. Shimmick (CE BS '59); and the Ulchi and Yoshida Sunada Scholarship, established by Daniel and Kristine Sunada.

Charles and Janet Seim Help Students Devote Themselves Full Time to their Dreams

Charles Seim owes his "glorious fifty-year career!" to CEE, as well as to the mentoring of CEE Professor T. Y. Lin.

To show their appreciation, Charles, and his wife of fifty-five years, Janet, made a generous donation in support of future engineering students at Berkeley.

"In my teens I dreamed of being a civil engineer and designing structures that serve society. At 16, I started working in the building trades to support myself and my widowed mother. After World War II, I continued my education while still working. Because of my need to work, I spent six years completing the four-year BS program."

Charles went on to distinguish himself in two careers. The first came about when California was employing young engineers to work on new toll bridges over the San Francisco Bay. For twenty-five years Charles worked on these bridges in what eventually became known as California Department of Transportation (Caltrans).

But Charles never lost contact with his Berkeley professor, T. Y. Lin. T. Y. Lin is the founder of the engineering firm, T. Y. Lin International, which specialized in bridge and building construction. Professor Lin offered Charles a position designing large bridges in the Western Hemisphere and China. Charles spent the next twenty-five years working for T. Y. Lin International, until he "retired," to start his own Bridge Engineering Office.

"My career was possible only because I was fortunate enough to graduate in civil engineering from the University of California. In return for our wonderful life, Janet and I want to assist students who have dreams, but little financial support, so they can devote full time to their studies."

New Faculty Strengthen Air and Water Quality Research

Two Berkeley faculty members, Ashok Gadgil and Allen Goldstein, have joined CEE in shared appointments that will strengthen the department's air and water quality research program, and add strategic leadership to the issue of improving energy efficiency in the built environment.

Ashok Gadgil

Allen Goldstein

Ashok Gadgil has been at Berkeley since 2005 as Adjunct Professor in the Energy and Resources Group. He is a Senior Scientist and serves as Deputy Director of the Environmental Energy Technologies Division of the Lawrence Berkeley National Laboratory, where he has conducted research since 1988.

His interests range from energy efficiency, technology and economic analyses, policies and projects to accelerate energy efficiency in the real world, computational fluid dynamics applied to indoor airflow and pollutant transport, and protecting building occupants from chemical and biological threats, to providing safe, affordable drinking water to developing countries.

Ashok teaches a popular graduate course, "Design for Sustainable Communities," in which student teams are sent on modest semester-long team projects that connect to the real world. He received his PhD in Physics from UC Berkeley in 1979.

Allen Goldstein has been at Berkeley since 1996 as a Professor of Biogeochemistry. He currently serves as Chair of the Department of Environmental Science, Policy, and Management. He is also a core member of the Berkeley Atmospheric Science Center, and a Faculty Chemist at Lawrence Berkeley National Laboratory.

Allen's research spans a broad range of air pollution engineering ranging from pollutants in urban airsheds, to global issues including the biogeochemistry of greenhouse gases and aerosols, long range transport of air pollutants, stratospheric ozone depletion, and natural induced changes to earth's climate system. He addresses these issues through novel field measurements in urban, rural and remote environments, controlled laboratory experiments, and the use of models and remote sensing data.

Allen has a passion for teaching Introduction to Environmental Science, and his classes in air pollution. He received his PhD from Harvard University in 1994.

New Council Members' Expertise Helps CEE Remain Number One

CEE welcomes two new members to its Advisory Council: Glenn Bell (CE MS '75) and Robert Wadell (CE BS '67, MS '68).

Glenn Bell

Robert Wadell

After obtaining his master's from CEE, Glenn Bell went to work for Simpson, Gumpertz and Heger as a junior engineer and drafting assistant. He worked on a number of noteworthy assignments, such as the design of the geodesic sphere at Epcot Center for Disney, analysis of the collapse of the Twin Towers in New York City, and earthquake risk analyses of structures worldwide. In 1995, he became the company's CEO.

"CEE provided me with a thorough grounding in the theory and the practice of structural engineering that allowed me to take on every challenge I have faced in the last 35 years. CEE's program is the perfect blend of teaching and research, and theory and practice." says Glenn.

Glenn intends to use his 35 years in structural engineering practice to provide input and perspective into the CEE curriculum, so that it remains number one.

After Robert Wadell earned his BS and his master's at CEE, he pursued his passion for airport planning and engineering. He started Wadell Engineering Corporation with a practice limited to airport planning and management consulting.

"CEE taught me how to think! With the ability to think, and armed with coursework and professors that had provided me with a strong knowledge base, I was prepared to enter the workforce and ultimately start my own consulting firm." says Robert. "CEE attracts the best faculty and the most eager and outstanding students. The type of education it provides is not just desired, but is mandatory for future success."

Robert will help develop funding programs and contributions by alumni and industry that is vital to Berkeley CEE remaining number one. He has also helped students gain a better understanding of how things work in the business environment. This knowledge, combined with their academic preparation, will allow students to become leaders in the field of civil and environmental engineering.

Meet New CEE Staff

Joel Carr joined CEE's technical staff as the Engineering Manager. He coordinates all the technical services in CEE's research and laboratory units in support of faculty, service-to-industry contracts, and sponsored research projects.

Joel has a BS in Applied Mechanics from UC San Diego, and an MS in Civil Engineering from UCLA. He has taught at the San Francisco Institute of Architecture as an Adjunct Professor in Structural Engineering.

Matt Cataleta, CEE's new Principal Laboratory Mechanician, handles all the welding, fabrication, machining, and design work in CEE's Machine Shop.

Matt has a BA in Organizational Studies from UC Davis, as well as a Certificate in Machine and Metals Technology from the College of Marin.

Paul Haller is CEE's Director of Facilities. Paul handles building coordinator issues, AV inspection and repair, and building access and security.

Paul has a BA in Experimental Psychology and a MS in Quantitative Psychology from San Francisco State University. He has extensive contractor experience in all residential building trades.

Andrea Tung is the new Human Resources Analyst. She coordinates all academic personnel cases, acts as administrator for faculty searches and awards, and serves as the department's benefits counselor.

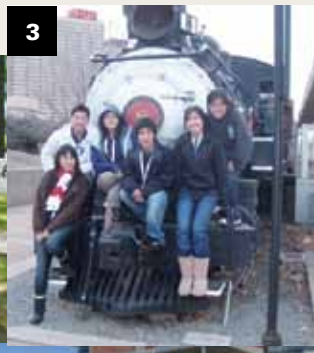
Andrea has a BA in psychology from UC Santa Cruz. She has been with the UC system since 2002. starting at the University of California of the President, and most recently working at the new UC Merced campus.

Phillip Wong is CEE's Electronics Shop Manager. He manages the data acquisition and control section of the Davis Hall Structures Laboratory.

Phil has a BS in Mechanical Engineering and a BS in Material Science and Engineering from UC Berkeley and an MS in Mechanical Engineering from UC Berkeley, and an MS in Mechanical Engineering, Control Systems and Robotics from UC Irvine.

Competition Teams Have a Banner Year

1 & 2: CEE Concrete Canoe Team and their entry, *Bear Area* **3:** Determining Project Risk Team: (L to R): Helen Chow, Aly Sato, Anthony Hoac, Winnie Chan, Justin Tsui, Sandy Do **4:** ITE Officers (L to R): Tin Nguyen, Gabriel Ho, Alyssa Reynolds, Kimberly Leung, and Sam Lam. **5:** CEE Steel Bridge Team and their entry, *RadiCAL* **6:** CEE Environmental Team and their Water Treatment System



First at Nationals!

CEE's concrete canoe, *Bear Area*, beat out 22 competing teams to win this year's ASCE National Concrete Canoe Competition in Tuscaloosa, Alabama. With this win, Berkeley became one of only three universities that has won Nationals five times in the history of the competition.

Hundreds of hours go into readying a canoe for competition—from research, to construction, to paddling. This year, *Bear Area*'s innovative concrete murals could not have been done without everyone putting in an enormous amount of hours.

CEE is competitive each year because the team is self-motivated to research new technologies. This year they introduced photocatalytic cement, which is not well known in the US. They also did scale model testing for the first time to consider hydrodynamic loading on the canoe.

Concrete canoe is always a showcase for engineering creativity. Already looking to the future, Will Nguyen, Materials Officer says, "Next year, the technical team is going to do some crazy things!"

Fifth at Nationals!

CEE's steel bridge, *RadiCAL*, placed fifth among 46 teams in a highly competitive national division held at the University of Las Vegas, Nevada, in May.

RadiCAL, was the only bridge to place consistently in the top five in the various categories. For the first time in its history at April's Mid-Pacific Regional Competition, CEE's steel bridge swept all six categories of construction speed, economy, lightness, stiffness, efficiency, and aesthetics.

The team practiced right up to the moment of competition at Nationals. "We got up at 6 a.m. and transformed into a carefully orchestrated army of builders. In the evening, we worked by the truck's headlights, constructing the bridge over and over again in the hotel parking lot," said Eric Michal, Project Manager. "But this is typical of the dedication of the bridge team members."

First at Mid-Pac!

The Environmental Team was one of seven universities that competed in the Water Treatment Competition at the Mid-Pacific Regional Competition. Each school was given the assignment to design a cheap, portable, and sustainable water treatment system as a response to a disaster scenario in which wastewater pipes had ruptured as a result of a Bay Area earthquake. The team built a simple wood frame to support several treatment layers and used salvaged materials whenever possible to reduce cost and improve sustainability. Ten gallons of wastewater went into the system as a murky, repulsive mix and left refreshingly clear and blue. Judges awarded points to teams based on system design, cost, ultimate water quality, and presentation. CEE won first place overall.

"Our win this year was truly a team effort. Everyone participated in brainstorming ideas for the system design, and everyone helped build the system," said Heidi Chou, Project Manager.

A Team to be Reckoned With

This year CEE sent four teams to the annual Associated Schools of Construction (ASC) Regional Competition in Sparks, Nevada. **The teams that competed were the Design Build team, the LEED team, the Determining Project Risk team, and the Graduate division team.**

"We've come so far from the six people that started the team three years ago! We are just beginning to represent our awesome CEE department," said Kristen Ray, a Project Manager. "Competing was so important for all of us. It gave us a preview of what it is like to go into construction management."

The competition involved teams proposing construction management solutions for real life problems that had been submitted by companies. On the following day, team members presented their solutions to a panel of industry judges.

CEE's solutions won second place in the national problem statements for the Determining Project Risk and Graduate divisions. Mike Liu of the Graduate Team was awarded best presenter in his category.

Transportation Students Design Winning Game

CEE's student chapter of the Institute of Transportation Engineers won the James H. Kell Student Competition in July, 2009.

Competition Officers, Tin Nguyen, Gabriel Ho, Alyssa Reynolds, Kimberly Leung, and Sam Lam, designed a game which had as its purpose getting participants to think about real world problems in transportation engineering.

Their game consisted of a city with neighborhoods connected through links such as roads, bike lanes, sidewalks, and mass transit. Each mode of transportation had a team assigned to it. As the teams navigated the city, they learned how certain modes of transportation are more socially acceptable than others.

"Winning the Kell Competition was quite an achievement, since we just officially formed our chapter in September, 2008. Within a year, we went from nothing to winning the Kell RFP!" says Kimberly Leung, president and co-founder.

Recent CEE Faculty and Student Achievements

For more information on these achievements, and the achievements of others, visit News & Events on the CEE Web site, **www.ce.berkeley.edu**.

Faculty

Professor and Chair **Lisa Alvarez-Cohen** was one of six scientists on the cutting edge of energy and environmental research featured in *U.S. News and World Report*'s The Energy and Environment issue. She describes her technique called bioremediation, in which naturally occurring microorganisms living in the soil are manipulated so that they will organically degrade toxins building up in aquifers and other water supplies.

Professor **Robert Bea**'s paper, "Movement and Forces Developed by Wave Induced Slides in Soft Clay," was selected to receive the prestigious ASCE Offshore Technology Conference Hall of Fame Award.

The University of Washington College of Engineering awarded Professor Emeritus **Ray Clough** the annual Diamond Award for Distinguished Achievement in Academia. Ray is renowned for his pioneering work in the field of earthquake engineering, and credited with the development and application of a mathematical method, finite element analysis, that has revolutionized numerical modeling of the physical world.

Professors Emeriti **Ray Clough, Joseph Penzien,** and **H. Bolton Seed** were recognized as "Legends of Earthquake Engineering" during the 14th World Conference of Earthquake Engineering, in 2008.

Professors **Filip Filippou** and **Gregory Fenves** were awarded the ASCE 2009 J. James R. Croes Medal for their paper, "Software Patterns for Nonlinear Beam-Column Models," published in the *Journal of Structural Engineering*, April, 2008.

Professor **Steve Glaser** was featured in the Meet Cal Scientists section of the new Science@Cal Web site, a cross-disciplinary effort to inform the public about the diversity and depth of science research at Berkeley and the resulting contributions to society.

Professor **Allen Goldstein** was featured in a Scientific America Online article, "10 Important Atmospheric Science Experiments." Using a number of techniques, he aims to understand how plant-released VOCs might change with global warming.

Professor **Adib Kanafani** was named a lifetime National Associate of the National Research Council of the National Academies. He received this honor for his extraordinary service to the Council in its role as adviser to the nation in matters of science, engineering, and health.

Professor and Institute of Transportation Studies Director, **Samer Madanat**, received a major grant from the University of California Office of the President to create a new Program for Sustainable Transport. ITS-Berkeley received this grant along with ITS-Irvine and ITS-Davis. Funding will support cutting-edge research targeted at key state initiatives over the next few years.

Professor **Jack Moehle** and four former Berkeley students (**Ken Elwood,** University of British Columbia; **Laura Lowes** and **Dawn Lehman**, University of Washington; and **John Wallace,** UCLA) shared the Outstanding Paper Award for Earthquake Spectra for their paper "Update to ASCE/SEI 41 Concrete Provisions." Their paper was judged to be of exceptional technical quality with concise and informative illustrations, and be well written for a broad audience.

Professor **Khalid Mosalam** delivered one of two keynote lectures in the 11th Canadian Masonry Symposium. His lecture was titled "Seismic Evaluation of Reinforced Concrete Frames with Masonry Infill Walls: Experiments, Observations, and Simulations." He also received the R.G. Drysdale Best Paper Award for the paper: "Modeling of Unreinforced Masonry Infill Walls Considering In-Plane and Out-of-Plane Interaction," that he co-wrote with former student, Steve Kadysiewski.

Professor **William Nazaroff** was named "Outstanding Faculty of the Year 2008" by the Federal Aviation Administration's Centers of Excellence program for his leadership and contributions to the Center of Excellence for Research in the Intermodal Environment.

Bill was also appointed to the College of Engineering's Daniel M. Tellep Distinguished Professorship for a five-year term.

Professor **Evan Variano** was selected as a recipient of a Hellman Family Faculty Fund Award for his proposal, "Developing 3D Imaging and Velocimetry for Coastal and Riverine Sediment Motion." The Hellman Fund supports assistant professors who show evidence of promise for distinction in research.

Graduate Students

Beverly K. Coleman, PhD student in Environmental Engineering, was named "Outstanding Student of the Year 2008" by the Federal Aviation Administration's Centers of Excellence Program for her valuable insights into the significance of ozone interaction with human skin oils both as a sink for ozone in aircraft cabins and as a source of potentially irritating byproducts.

Abby Enscoe, SEMM graduate student, won the Skidmore, Owings, and Merrill LLP (SOM) Foundation's 2009 Structural Engineering Travel Fellowship. The fellowship aims to foster an appreciation of the aesthetic potential inherent in the structural design of both buildings and bridges.

Jeffrey Hunt, SEMM PhD student, was awarded one of the Hangai Prizes at the International Association for Shell and Spatial Structures (IASS) Symposium, given for the most innovative paper submitted by a young researcher. Jeff's paper, "Designing Adaptive Spatial Structures," summarizes a new design technique that creates adaptive structures which actively react to changing loads.

Diana Louie, CEE undergraduate senior, and **Timothy Racine,** E&PM masters student, received 2009 Scholarships from the Northern California Chapter of the Construction Management Association of America.

Nine CEE graduate students received 2009 Outstanding Graduate Student Instructor Awards, in recognition of their outstanding commitment to teaching. They are **Michelle Bensi**, **Sanza Rezaeian**, and **Gabriel Jen** (SEMM); **Patrick Ulrich** and **Benjamin Runkle** (Environmental Engineering); **Shideh Dashi (**Geoengineering); and **James Lew**, **Timmy Siauw**, and **Claire Saint-Pierre** (Civil Systems).

Timmy Siauw also won Berkeley's Teaching Effectiveness Award. Timmy is the first CEE student to win this award in five years. He won the award for creating a robot tournament as a way to motivate students to learn programming in the introductory programming course for engineers.

Undergraduate Students

Anu Sridharan, graduating senior, won the ASUC Oski Leadership Award in the category of Outstanding Student Leader. She was also awarded CEE's Clement T. Wiskocil Award, which recognizes the graduating CEE student who has demonstrated exceptional leadership. Anu was nominated for the many ways she has worked to improve opportunities available to undergraduates, as well as for her work implementing safe water conditions in urban slum communities in Mumbai.

Helen Chow was awarded CEE's Department Citation, which is given to the graduating senior with the highest GPA. Helen was active in Chi Epsilon, the honor society, and served as co-leader of the 2009 Determining Project Risk Construction Team.

CEE Alumni

Elizabeth Hausler (CEE PhD '02) has started a non-profit, **Build Change**, with the goal of designing and building earthquake-resistant, locally appropriate housing in developing countries with active fault zones. Elizabeth is profiled in UC Berkeley College of Engineering's *Forefront,* spring 2009.

Shaily Mahendra, (CEE PhD '07) was awarded the CH2M Hill/AEESP Outstanding Doctoral Dissertation Award for 2008 by the Association of Environmental Engineering and Science Professors. Her dissertation title was "Biodegradation of 1,4-Dioxane by Aerobic Bacteria: Experimental Studies and Modeling of Oxidation Kinetics, Co-contaminant Effects, and Biochemical Pathways."

CEE@Berkeley Connections

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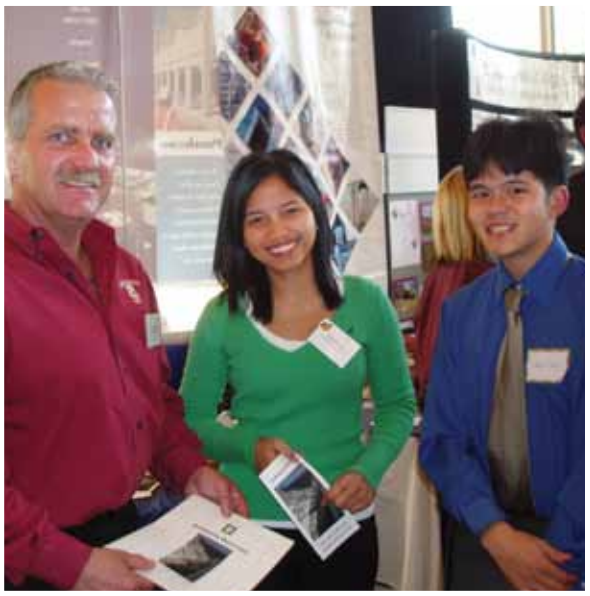
Fall 2009



Internships! Internships!

CEE has launched a new Professional Development Certificate Program for its undergraduates and it needs internship opportunities for students in the program. Alumni and friends in civil and environmental engineering industries are asked to provide internship and job shadowing opportunities for CEE freshmen and sophomore students. Contact Joan Chamberlain at joan@ce.berkeley.edu for more information.

www.ce.berkeley.edu

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