Message from the President

Sacramento State is poised to become a premier university for the 21st century, and the College of Engineering and Computer Science is at the forefront of our efforts.

We have always felt that the future of the Sacramento region and the future of our University go hand-in-hand. That is why we are doing everything we can to increase Sacramento State’s status as an engine of economic growth – and educated graduates from the College are among our best assets.

Throughout the Sacramento region, businesses, government agencies and educational leaders are working together to re-energize the local economy. We want to foster high-paying, high-demand jobs that are sparked by innovation and created by new industry sectors.

The College’s focus on advanced, practical learning and its partnerships with area employers are vital to this goal. We are also looking at ways that we can further strengthen the education we offer in the areas of science and mathematics, which will directly support engineering and computer science students.

All of us at Sacramento State are proud that our graduates are ready to succeed on Day 1 of their careers. Thanks to your support, the College of Engineering and Computer Science will continue to prepare students to thrive on the leading edge of the innovation economy.

Alexander Gonzalez
President
Message from Dean Macari

Setting the Foundation for a Better Tomorrow

The headlines remind us every day that these are challenging financial times, as they focus on budget cuts and unemployment statistics. With higher student fees and less financial support from the policy makers in Sacramento, the challenges are as great in higher education as any other segment of our economy.

While those headlines are true, they don’t tell the whole story. Behind those dramatic stories, there is, as they say in the news business, a back story. Underneath the economic turmoil of today, we are building a solid foundation for a different day. As we have learned through history, times will get better. Better times will create a stronger economy by building products. The engineers we are training today are already in demand to do just that.

Even in today’s sluggish economy, Sacramento State engineering graduates are being employed at a higher rate than professionals in many other segments of the economy. From Sacramento to Silicon Valley, companies are meeting their budget goals by reducing the ranks of middle managers. Many of them, at the same time, are hiring engineers.

That is especially good news for the Sacramento regional economy. Studies show that 85 percent of our graduates choose to remain in Sacramento to work locally after they complete their education. The demand for their talent is in every segment of the economy. Energy suppliers, including manufacturers of solar power and electric utilities, are calling for engineers. So, too, are companies involved in high technology and data management, water and manufacturing. Companies as diverse as Aerojet, Intel, HP, Chevron, PG&E, SMUD, as well as state and local governments, are all calling for engineers to meet the demands of today, despite the overall economic climate.

That is an investment in the economic growth of the future. Our challenge at Sacramento State is to prepare our engineering students for an economy that will be driven by technology and computer science. As the country rebuilds its economy, there will be a surging demand for engineers of all types.

The engineers we are training today at Sacramento State are the foundation for that economic reconstruction that will create a better tomorrow.

Emir José Macari
Dean

“… Sacramento State engineering graduates are being employed at a higher rate than professionals in many other segments of the economy.”
Ralph Torres just might have disco music to thank for his engineering career. If life had taken some different turns, the '79 Civil Engineering graduate from Sacramento State might not have traded his saxophone for a slide rule.

That he even used a slide rule is an indication of how engineering has changed since Torres began his career at the state Department of Water Resources (DWR) as a student assistant. “There were rows of drafting tables and men in short-sleeved white shirts,” Torres recalled. “Everybody smoked at their desks in a room with 200 engineers and two computers, many of the engineers still used slide rules.” Soon after, there were more computers. He continued, “I remember that the department had to put out a memo to tell them they had to leave their slide rules at home.”

Torres also recalls that, at the time, there were no women in DWR’s Civil Engineering Office. Now, there are women in top leadership positions in the department, some of whom are also Sacramento State grads. Since the day he graduated with 29 other engineers in his class, Torres has spent more than 30 years in the DWR and steadily climbed through the ranks.

Among hundreds of assignments, he has managed the design, construction, operations, maintenance, energy and financing of the state’s massive State Water Project, one of the world’s most complex water delivery systems. In September 2011, Torres voluntarily stepped down after six years as DWR’s Deputy Director, appointed by Gov. Arnold Schwarzenegger.

“For me personally, it was time to do something different,” said Torres, who is still a full-time DWR employee and works on special projects. As Deputy Director, Torres led a staff of 1,600 engineers and analysts, introduced new management strategies, and looked over dozens of major construction projects. He is quick to say...
that the job “is the most rewarding experience you can have as an engineer.”

The DWR is best known for its massive State Water Project, which distributes water from a part of the state that can receive up to 100 inches of rain each winter to the desert-like thirsty areas that may not see more than two inches of precipitation. The 51-year-old system is enshrined in an engineering hall of fame, joining the Golden Gate Bridge as one of only two “Projects of the Millennium” in California, as named by the American Society of Civil Engineers.

In addition to hundreds of miles of canals and a system of nine hydroelectric plants, the system includes the tallest dam in the U.S., the 700-foot Oroville Dam. It also includes a station of 14 pumps, each powered by an 80,000 horsepower motor, that push water 1,926 feet over the Tehachapi Mountains, the highest single pump lift in the country. “What has kept me [at DWR] is working on the State Water Project,” said Torres. “It’s a rare opportunity to work on some very technically challenging projects.”

It may be engineering nirvana that keeps Torres at DWR, but it was disco music that got him there in the first place. After graduating from high school a year early “because there weren’t any more classes for me to take,” Torres went to college with dreams of a music career. As a 17-year-old with a penchant for jazz, Torres was soon jamming with some of the area’s best players and also playing in a rock band. It was an exciting time musically but with irregular hours and even more irregular income, “I soon learned that it was a rough life,” Torres recalled.

Disco made it rougher. In short order, mirrored balls and DJ’s zoomed in popularity. “When disco came along, it had a great effect on live music,” said Torres, who found fewer gigs for sax players.

Coincidentally, Torres found that he also had a talent for science and math. “I took quite a few classes in geotechnical sciences,” he said. He discovered that trigonometry, calculus and algebra “were easier than music theory,” perhaps because they have a lot in common. “Music is very mathematical in its structure,” Torres said. “Some of the most outrageous musicians I know are engineers.”

Studying and working as a student assistant at DWR was the best of all worlds. “Going to school and working part time was a great way to learn the reality of engineering,” he said. Plus, it was steady work and a regular paycheck.

Although slide rules are now museum relics, Torres contends the biggest changes he has seen in engineering are not technical. “The science of engineering hasn’t changed as much as the social and political challenges,” he said. There are increasing demands for a limited supply. “As society changes, the beneficiaries change. The challenge is to balance all of society’s needs and be equitable to all the users.”

The solutions, he believes, are in conservation and technology. “Sooner or later, we have to address them.” Increasing the use of renewable energy to pump water is one of those special projects he now has time to focus on, “and, hopefully, mentor some of the younger engineers.”

“This is one of those careers you don’t retire from,” said Torres, 56 “You just change gears.”

Now that he’s stepped away from the demands of serving as Deputy Director, there is time again for the occasional gig. “Playing an instrument is addictive,” confessed Torres, who sits in occasionally with three bands. “I’m playing strictly jazz and having a lot of fun.”
As a civil engineer, Jay Halverson has spent most of his career building bridges and other large engineering projects, while he and his wife Karen followed the work from one spot to the next around the United States. The couple settled down in Sacramento almost three decades ago.

It’s been a while since Halverson has had to manage a construction site, but he is still building bridges, in a manner of speaking, on an international scale. His tools, however, are not steel and concrete. He is using words to build bridges between this country and others. For the last eight years, Halverson, a College of Engineering professor, has taught English to an international polyglot of immigrant middle school students. For many of them, it’s their first exposure to English as a second language.

Halverson calls his classes “a real melting pot,” with a cultural makeup that he thinks is surprising. Despite the proximity of Mexico and the state’s large Latino population, Spanish is not the most widely spoken first language among his students. In recent years, the largest contingent of Halverson’s students speak Russian, reflecting Sacramento’s long-held stature as a destination for immigrants from the Balkan countries.

Halverson’s classes have a United Nations feel to them. Students in the last academic year came from eight countries: Philippines, Mexico, Columbia, Marshall Islands, Ukraine, Moldova, Russia, and Armenia.

Any native American probably doesn’t remember learning English. Surrounded by words since birth, most people simply absorbed it. They initially recognized words. Eventually, when they began to recognize word patterns, people graduated to speaking in sentences. “Dog” and “run” grew into “See that dog run across the grass.”

Halverson believes that his students are most proficient in English when they repeat that natural pattern. “We can’t remember how we learned English, but we know it wasn’t by rote,” he said. Nonetheless, individual words are the foundation of the language. He uses a curriculum approved by the Cordova Unified School District and developed in part by National Geographic to get students grounded in the basics. “If they can learn 1,000 words, they know 60 percent of the English language,” Halverson said.

The complexity of English makes the first steps difficult. English sentence structure is different from many other languages. The English alphabet is starkly different from that used in the Far East. Many English words have more than one meaning but sound the same. Imagine learning the difference between “to,” “two” and “too.”

But Halverson contends that his students “have a great desire to learn.” Karen noted that, the students “pitch in and help each other” with English, even when they don’t share a native language.

“It’s like they have Velcro up there,” Halverson says of the brains’ ability to absorb information. “You think two brain cells aren’t even touching and then, all of a sudden, things click,” he said. “Suddenly, they put prepositions in place and things are no longer rote.”

“You know it when you look at the students. They go from being stoic to the beginning of a smile” as they gain confidence and start raising their hands to ask questions. “It’s fun to watch the growth in that.”

In the nine years he has conducted the twice-weekly sessions, Halverson has had many successes. An Armenian student grew from not knowing a word of English to reading at the sixth-grade level in one school year. Another English Learner student went on to become valedictorian at Cordova High School.

“My whole career was sitting around boardroom tables, and I had enough of that,” said Halverson. He uses words such as “euphoric” and “proud” to describe how he feels as he watches his students move on to high school, proficient in English. Volunteering, he said, “makes me feel like I’ve contributed and really accomplished something.”
Redefining the Possible

For Javier Gonzalez-Rocha and Ariana Castillo, Leadership Began at Sacramento State

Javier and Ariana are the Undergraduate and Graduate Student Representative for SHPE

When I left my home in Watsonville to enroll at Sacramento State as a mechanical engineering undergraduate student in the fall of 2004, I discovered that the University was a breeding ground for leadership.

As the first person in my family to go to college, I had a strong sense of determination to excel academically, said Javier Gonzalez-Rocha. I also wanted to give back to my community, which is truly the best way to make a difference and give others the opportunity to pursue a higher education.

My aspirations compelled me to become a member of one of the leading Latino student organizations on the West Coast, Gamma Zeta Alpha Fraternity, Inc. (ΓZA), during my first semester at Sacramento State. It fosters academic excellence, community service and strengthens the Latino culture through the bonds of brotherhood. After serving as the Community Service Chair, Academic Excellence Chair and Vice President within my fraternity, I gained the confidence to pursue other leadership roles in the field of Science, Technology, Engineering and Mathematics (STEM).

In 2007, I joined the Society of Hispanic Professional Engineers (SHPE) Sacramento Professional Chapter, which is an organization committed to empowering Hispanic students and professionals in the engineering industry. I took on various roles, such as the SHPE Outreach Chair, President and Senior Student Advisor, and each position pushed me to become a better leader and academic student. Now, I am the SHPE’s Region 1 Graduate Representative and collaborate with the Graduate Ambassadors to plan and execute academic programs for graduate students in Northern California, eastern Nevada, Oregon, Washington and Alaska. I perform graduate school and research advocacy, mentor undergraduates and facilitate networking among graduate students, as well.

I am also pursuing a Master of Science in Mechanical Engineering with a research focus on suppressing spacecraft vibrations by inducing thermal bending moments as a form of passive damping. When I graduate in December 2012, I plan to enroll in a PhD in Engineering program. Ultimately, I envision myself working in academia, a national laboratory or a federal agency as a cutting-edge researcher of advance flight and space exploration.

My tremendous accomplishments demonstrate that anyone can become a leader. I always knew I’d be the first in my family to earn a college degree, because I was determined to succeed. However, my most important goal in life is to inspire others. “Empowering people to achieve their dreams provides me with a sense of purpose and others with hope.”—Javier Gonzalez-Rocha.

As an incoming freshman Civil Engineering student at Sacramento State, I could hardly have wrapped my head around the things that I would learn, not just about engineering, but about myself. Within my first few weeks on campus, I joined the Society of Hispanic Professional Engineers (SHPE), along with many of my peers. I soon found that I enjoyed the tremendous variety of opportunities that SHPE had to offer. I did my best to gain as much as possible from SHPE’s academic support, networking opportunities, professional and leadership development and opportunities to give back to my community.

I quickly realized that the more I learned about this organization, the more I wanted to help push it forward, so that future students could grow the way that I had and have continued to. I attended (and later planned) the annual Regional Leadership Development Conference. I was selected to attend the exclusive National Institute for Leadership Advancement twice. I attended the SHPE National Conference and was one of a four-member Academic Olympiad team that won first place overall. Through these experiences, I gained not only the knowledge but the confidence to continue to grow as a leader.

After being elected to serve a one-year term as SHPE Chapter President, I put my skills to the test as a leader, co-founder, and manager of a student-run summer math program called the Principle Review for Incoming Students in Mathematics (PRISM). With the help of many volunteers, I led a group to prepare and execute a 5-week, 4-hour-per-day program that included two hours of interactive lecture and two hours of focused group work each day. This program helped prepare incoming freshmen for their mandatory diagnostic exams, offered them the chance to learn to form study groups and to interact with their peers.

Today, as a senior Civil Engineering student and Mathematics minor, I look back at my experiences at Sacramento State with pride. All of my accomplishments were made possible by the school that offered me the chance to grow as a leader and as an individual. For me, leadership began at Sacramento State.—Ariana Castillo
With fewer teachers and budget dollars available, it seemed as though a decade-long and successful summertime math program for incoming freshmen could no longer be offered. But students in the MESA Engineering and Computer Science program remembered how much that class helped them get a successful start in their engineering curriculum. They stepped up and voluntarily created their own program to fill the void, sacrificing potential summer jobs in the process.

The dedication of the upperclassmen resulted in the Principle Review for Incoming Students in Mathematics (PRISM) program. Like the class that preceded it, PRISM gives students the foundation they need to pass the math diagnostic tests that are a prerequisite to enrolling in pre-calculus or calculus. "It’s the first time that a group of students did this themselves," said Jaime White, administrator of the MESA program. "The students took ownership of this project and developed their own curriculum," he added, noting that most of the students who created the PRISM program had taken the previous class and were able to recreate the study material from that experience.

Ariana Castillo, president of the Society of Hispanic Professional Engineers (SHPE) and Josh Iniquez, past president, began developing the program while they were studying for spring, 2011 final exams. With such short notice and a deadline only a few weeks away, developing and organizing the classes was as frenetic as the boot camp pace they were going to teach. But the five-week class began as scheduled on July 22, as Castillo, Iniquez and a dozen other student volunteers recruited by the pair began teaching various levels of math, from basic arithmetic and geometry to trigonometry, to 16 incoming freshmen.

"We pre-tested everyone to determine their skill level," said Iniquez. This enabled the volunteer student/teachers to tailor their classes to strengthen each student’s weaknesses. The students were tested each week to measure their progress. "Our goal was to get everyone to pass the diagnostic test that qualified them for the math class they needed."

The teaching team certainly had the credentials to earn the students’ respect, as they were national champions at the SHPE Academic Olympiad last year, beating teams from such prestigious programs as Cal, Stanford and MIT. Castillo believes, however, that the incoming freshmen’s willingness to listen to other students who had knowledge in mathematics and experience in navigating college life contributed to the group’s success. "We stressed good math habits and how to work with their peers," she said.

But beyond their ability, White said that the volunteers also stood out for their attitude and dedication to the project. "They were driven by public service. They didn’t ask for wages, and they said they would do this with or without getting paid." White, who subsequently raised sponsorship funds from AT&T and Northrup Grumann to pay the volunteers, making up for potential internships the students passed up.

The class is critical to giving freshmen the foundation skills they need to keep up in the engineering curriculum, which enables them to stay on track to graduate on time with their classmates. "Half of all incoming freshmen are not prepared for college level math, which could delay their graduation by a year or two while they start their college career with remedial classes," said White. "If they can be prepared in math in their first semester, it really speeds things up so they can graduate in a reasonable amount of time."

That timely graduation benefits Sacramento State as much as it does the students, White said. "When we have a limited number of spots, we want to get students graduated to make room for those coming behind them, but we also want them to do well."
Enhancing the Spinal Mobilization Process for Both Patients and Physical Therapists

When a patient visits a physical therapist to address painful joint dysfunction in his spine, overwhelming muscle spasms and several other uncomfortable symptoms make him focused only on his own physical condition. We consider physical therapists to be responsible for providing appropriate care to their patients, which often involves restoring normal joint function with hands-on manual therapy. However, many physical therapists (PT’s) also experience discomfort in their fingers and thumbs along with fatigue from the spinal mobilization process, so the length of application is limited as well as the outcome of the intervention. Moreover, both PT’s and their patients are at risk for developing more chronic musculoskeletal health conditions that could easily spiral out of control if left untreated. A few professors from the Physical Therapy, Electrical Engineering and Mechanical Engineering Departments have identified this reoccurring issue and are in the process of creating a spinal mobilization prototype tool to allow physical therapists to help others more effectively.

“The traditional method of joint mobilization has been found to be uncomfortable for many operators and there is evidence of arthritis in the carpometacarpal joint – the attachment point between a bone in the thumb and a bone in the wrist – from performing the technique with the thumbs over time,” said Clare Lewis who is a Professor in the Physical Therapy Department.

Professors Clare Lewis, Warren Smith and Akihiko Kumagai, along with engineering graduate students Michael Bell and Shuifen Li, are developing and testing a unique, hands-saving device for joint mobilization of the spine. Nine physical therapists with at least 15 years of experience and 21 physical therapy students in their second year of the physical therapy graduate program tested the prototype tool and provided feedback about its use and possible improvements. The prototype tool body includes a force applicator with an attached digital readout, which instantly displays the amount of force applied. The handle of the tool was designed to be ergonomically compliant by allowing both hands to comfortably apply pressure to the patient’s joints, which in turn prevents the physical therapist from straining their thumbs. The pilot study successfully demonstrated the tremendous value this tool has and how much it will benefit both the patient and physical therapist.

“A prototype tool that was designed for spinal joint mobilization was found to be more comfortable than the traditional method of applying joint mobilization with the thumbs,” said Professor Lewis, “The tested tool has since been modified based on feedback from experienced physical therapists and students and is now ready to be tested on a spine model and ultimately on human subjects next semester.”

The prototype tool will allow longer treatment applications per session, which will result in fewer needed visits for the patient and faster results. Now both the patient and physical therapist can have a more satisfying, effective experience.

— Alexandra Greene
Dream on Rails

Love of Trains Takes Grad to Hawaii

Most people go to Hawaii for the sandy beaches and cooling tropical breezes. But the siren song that lured Rod Baybayan to the land of catamarans sounds more like the "ding, ding, ding," of a trolley. He went for the train.

Baybayan, a Mechanical Engineering ('09) Sacramento State graduate, jumped at a unique opportunity that many engineers wish for: to work on a major transit project before the first rail is laid. "It was the opportunity of the project, not living in Hawaii, that motivated me to move," he said. "It's a new-start project in its infancy," added Baybayan, who briefly worked on extensions to the established Sonoma/Marin transit line soon after graduation. "To be a part of a project through every stage of design and construction and see the progress, that's rare."

Despite picturesque images of open spaces and lush landscape, metropolitan Honolulu has more in common with Los Angeles than palm trees. It may not have the smog, but it does have the traffic. Morning commute traffic moves in a wave from the city's west side to the east and reverses direction in the evening. "All that traffic and there is only one way for people to go, and that is the H1 Freeway," Baybayan said.

To unsnarl traffic and offer commuters an option, Honolulu is in the early stages of building a rapid transit system. The 20-mile system will run from East Kapolei to the Ala Moana Center in the west and include connections to downtown and Honolulu International Airport, essentially encircling Pearl Harbor. An estimated 116,300 weekday riders are expected to use the system by 2030.

There is a lot to be done before then. No construction of the 21 stations and support structures has begun and no track has yet been laid. "We're just relocating utilities now," said Baybayan. The first 10 miles of track, from the west to Aloha Stadium, is scheduled to open in 2015 and the second half in 2019. "We're starting with the area that has the least impact before we move into the more densely populated areas," he said.

As a Rail Systems Engineer, Baybayan leads a team that reviews the work of consulting contractors and designers. For now, the team is focused on grade separations and track alignment. "When the train vehicles arrive, I'll be involved as part of the team that tests them, too," Baybayan said.

For Baybayan, the move was partially a homecoming. Although he lived in Elk Grove during his college years, he spent four years "as a Navy brat" on the island, graduating from high school in Hawaii before returning to the mainland with his parents and enrolling at Sacramento State.

He credits his internships with uncovering his love for trains. "I had internships for all five years I was at school," said Baybayan, including stints at the state Energy Commission, the Fuel Cell Partnership and Sacramento Regional Transit. "Internships are the most valuable thing students can do," he said, because they expose career options that students otherwise might not consider. "When you go to school, you know what you want to do, but you don't know what you will get to do. I didn't know I wanted to play with trains until I went to Sacramento Regional Transit."

While Baybayan is living an engineer’s dream, he is also remaining true to his commitment for mass transit. "I take the bus to work every day," he said, although it adds two hours of commuting to his day. "I gotta practice what I preach."
Thank you to the Dean’s Leadership Circle!

John O. Abt  
Roberto E. Aragon  
Amanjot S. Bains  
Andrew R. Banta  
Julius D. Bautista  
Orin Neil Bennett  
William G. Blakley  
Alain D. Carey  
Daniel G. Cain  
Donald H. Chambers  
Matt P. Claiborne  
John Leland Clevenger  
Timothy Michael Crick  
Carole J. Dawson  
Chuyen Huu Do  
Swarn S. Dulai  
Ranny A. Eckstrom  
Jay L. Goldstein  
Don Gillott  
Hoeun Ham  
Leonard W. Hom  
Susan L. Holl  
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Daniel R. Kalal  
Eddie W. Kho  
John W. Leahigh  
Stephen Leonard  
Maclennan  
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Lester P. Meisenheimer  
Denise A. Miller  
Shashi Kumar Nanjaiah  
Thomas Nulton  
William J. O’Hair  
Lee W. Ritchey  
John Jackson Seabury  
Jon Sedmak  
Charles E. Sheidler  
Stanley Edward Shumaker  
Clark Edward Stanage  
Kenneth Allen Vernon  
Robert L. Vitale  
Larry Franklin Walker

Spring 2011, Swarn Dulai Alum BS ’68 Electrical and Electronic Engineering in town for a visit from Virginia
Top members of California’s High-Speed Rail Authority were guest speakers at the Sacramento State event “Engineers Investing in California’s Future: Elements of Building a California High-Speed Rail.”

This event was a unique opportunity for engineering students to gain insight into California’s High-Speed Rail project. Industry professionals shared their first-hand experiences and tremendous expertise to help students prepare for a career in engineering. It was organized by the College of Engineering and Computer Science and took place in February during National Engineers Week.

The host of the event was Roelof van Ark, High-Speed Rail Authority CEO. Van Ark is a senior executive with over 30 years of experience, an engineer. He managed some of the world’s leading transportation companies such as Alstom Transportation Inc., Invision Technologies Inc. and Siemens.

Also hosting was John Popoff, High Speed Rail Authority Program Manager. He performs high-level planning for construction of a high-speed rail connecting San Francisco and Los Angeles-Anaheim. He is also the Vice President of Parsons Brinckerhoff.

The California High-Speed Rail will cost $43 billion, making it one of the largest infrastructure projects in our country’s history. It will reduce air pollution, traffic congestion, provide a more convenient way to travel and spark economic growth by creating hundreds of thousands of jobs. It faces challenges with implementation ranging from high-level planning to connect San Francisco and Los Angeles in two hours. In addition, there are many detailed engineering aspects, including planning, aesthetic design, sustainability and stakeholder coordination.

—Alexandra Greene
If you’re using your smartphone to get a traffic update from the California Highway Patrol or find a camping spot in a state park, you can thank Robert Meza for the convenient service. The recent Sacramento State graduate is the guiding force behind the California Mobile Project, which puts information about more than 50 state government agencies in the palm of your hand.

Meza was among the first Sacramento State students to see the potential for mobile applications in an era when many computer science majors were still getting accustomed to the Internet. With six other seniors, Meza was the first to develop software for mobile phones, even before the huge success of the Apple iPhone and Google’s Android technology. “I like challenges, and I didn’t want just to do another web site as a senior project,” said Meza. “I wanted to do something innovative.”

After graduation, Meza worked as a consultant in the Bay area, specializing in mobile software development and then as a teaching assistant in computer science at John Hopkins University. Meza returned to Sacramento and was hired by the California Technology Agency to design and code the state government’s first official template to make information from agency web sites accessible on mobile phones. Collaborating with dozens of webmasters in Sacramento, Meza has integrated cloud computing and social networking to design applications that are now being incorporated by nearly every California state government agency.

Meza’s application is versatile enough to be used on any mobile phone from the simplest technology to the most sophisticated. “All of the code is ADA-compliant and there are text and touch versions, so it works on every phone,” he explained. “The look and feel is just like existing web sites.”

Meza’s applications represent a significant improvement to making government information more accessible in California. “All of this information is free for the public and we’re seeing that the public is using it,” he said. Analytical surveys show that 20 percent of all access requests to state agency websites are done by mobile phone. His work was part of an award-winning effort that earned California the “Best of the Web” honor at the 2010 Government Achievement Awards, presented by the Center for Digital Government. Meza, in turn, was honored by the state’s Chief Information Officer with the Outstanding IT Service and Support Award for 2010.

Meza’s success has attracted attention from many other states. He recently made a presentation of his technology to the National Association of Government Webmasters at their national conference in Ohio. “Every state is looking to do something like this,” said Meza. Because he is a state employee, his applications are in the public domain and not proprietary, which eliminates almost all development costs for the government. “California’s estimated savings has been about $20 million, which is why my applications are getting so much attention,” said Meza.

For him, the reward is performing a valuable public service. “The goal is to expand government resources,” said Meza. “It’s an open model and it works.”

Robert Meza is the recipient of Sacramento State’s 2012 Rising Star Award, part of the Distinguished Alumni Awards.
Sacramento State's Construction Management program officially became an independent academic department within the College of Engineering and Computer Science in August 2012.

Sacramento State has offered the program since 1972, under the Department of Civil Engineering, which makes it one of the oldest among California’s universities. Graduates have managed major construction projects on-campus as well as around the Sacramento area, ranging from the University's Hornet Bookstore to Sacramento International Airport’s Terminal B.

It offers a Bachelor of Science Degree in Construction Management with a minor in Business Administration and is accredited through the American Council for Construction Education. It has grown tremendously over the years with 200 students currently enrolled and an impressive job-placement rate.

“In May 2012 there were 24 graduates and 23 have confirmed employment, which means our program has a 96 percent employment rate,” said Mikael Anderson, the first Construction Management Department Chair.

Students become leaders in their communities and pursue a variety of career paths. A majority of recent graduates work for general contractors as project engineers or estimators and move their way up towards project managers or project superintendents. Another growing trend among graduates is to work for specialty contractors. Some alums even become entrepreneurs and launch their own companies. The options are limitless and they are in demand by major construction companies in the Commercial, Heavy Civil, Residential, Mixed Use, Industrial, Mechanical and Electrical fields. Their annual starting salaries range from $48,000 to $75,000.

Every year the Construction Management program competes in various competitions across the country. Construction Management students annually participate in the Associated Schools of Construction Annual Student Competition, where they compete in eight different mini-competitions. Over the last three years, their success has been astounding with a total of seven 1st place as well as five second place national and regional wins. Construction Management students also won second place out of 50 schools, along with $2,500, during the 2012 National Mechanical Contractor’s Association of America student competition in Orlando, Fla.

The non-profit Sacramento Construction Management Education Foundation is one of the organizations that support the department by providing academic scholarships and financial assistance to students who participate in national competitions.

The Construction Management program has consistently helped students reach their career goals and beyond. It is an academic department after 40 years of transforming students into inspirational leaders who are capable of great change.

“The alumni of the Construction Management program continue to amaze me with their level of involvement in giving back to the community in which they build projects. From their mentoring towards our undergraduate students, to the fundraising activities for the program, to their leadership roles on major construction projects, I am very proud to have played a role in their education,” said Anderson.

— Alexandra Greene
Students enrolled in my power system protection class (EEE 145) had a rare opportunity to learn about practical aspects of power system protection from the Omicron Tour Bus when it visited Sacramento State for the first time last month. Omicron demonstrated practical aspects of the theory by combining short lectures with stimulating visuals. They performed actual testing of protective equipment using computer programs and simulations. They also gave demonstrations about manual and computer aided testing and data acquisition for local and remotely located equipment. Students witnessed how protective equipment is tested and utilized for various power system equipments at particular settings. Practical presentations such as this one will help the students to better understand the theory and its implementation. Real life experiences like this help students become fully equipped to serve the community as professional engineers. They were grateful for the event and I am thankful to Omicron and our department for their cooperation to make it happen.

—Dr. Mohammad Vaziri, Electrical and Electronic Engineering Professor

I truly appreciate Dr. Vaziri’s efforts to arrange the Omicron’s visit to our campus. This was a great opportunity for students to receive hands-on experience with protective relays and their associated sensing equipment. Omicron instructed two Sacramento State students to demonstrate real life relay tests, which none of the students had previously witnessed. This visit also linked classroom materials to real life applications which helped many of us understand the importance of relay protection in power systems. I am very thankful for these educational events and believe they help students understand what they will be working with throughout their careers in the power engineering world.

—Ravneeta Singh, Electrical and Electronic Engineering Senior

I want to demonstrate my appreciation to the College of Engineering and Computer Science and Dr. Vaziri for bringing the Omicron’s tour bus to our campus. It was an unforgettable learning experience that bridged the gap between theoretical concepts presented in our relay protection course and their applications to real life scenarios. This experience gave students a sense of how much the power industry has grown over the years and its dependency on protective schemes. I am extremely proud to be a power engineering student at the same university where my father graduated from in 1980 and to participate in these memorable experiences.

—Rawad Waleedidine, Electrical and Electronic Engineering Senior
California State University, Sacramento (Sacramento State) Electrical and Electronic Engineering and Business students developed a biomedical technology that could improve stem cell therapy and patient survival rates. Their product won first place at the California State University Program for Education and Research in Biotechnology (CSUPERB) Idea to Product® (I2P) early-stage technology commercialization plan competition.

"Sacramento State engineering and business students and faculty collaborated on entrepreneurial biomedical technology development that can dramatically improve patients’ lives," said Dr. Warren Smith, an Electrical and Electronic Engineering professor. "Biomedical technology development collaborations like this will grow at Sacramento State, benefiting the University and the Sacramento region."

Six Sacramento State undergraduate students have tirelessly worked alongside two faculty mentors, including Adjunct Professor John Chapman, to produce a stem cell conditioning device. If a patient has poor limb circulation, the patient’s own stem cells can be re-injected into the limbs to grow new blood vessels and restore circulation. The conditioning device will prepare the stem cells to survive in the poorly oxygenated tissue.

Stem cell conditioning is not new, but it has never been performed in this way with two pre-manufactured saline solutions instead of traditional gas-to-liquid diffusion methods. As a result, this device will reduce the cell conditioning time from 18 hours to 2 hours and reduce hospital visits to a single appointment. Thus, stem cell therapy will be less expensive, safer and faster.

After 960 hours of dedicated work, the Sacramento State team members, who have no prior experience with technology commercialization, showed off their first working prototype device in January 2012, at the 24th annual CSU Biotechnology Symposium in Santa Clara. They made their presentation to 600 students, faculty and administrators from the 23 CSU campuses, as well as industry professionals. A two-person judging panel awarded them $4,000 in scholarships.

The Sacramento State team competed against other CSU teams from Santa Barbara, Channel Islands, East Bay and Fresno, which were also composed of Science or Engineering and Business students. Next year all of the CSU campuses will be invited to participate in the creation of biomedical technology breakthroughs.

The CSUPERB competition aimed to raise awareness of CSU biotechnologies, establish entrepreneurial student-faculty relationships and provide students with valuable real-world experience in the field of technology commercialization.

"The competition and process was a good bridge for engineers to interact with the business side," said Jose Camacho Jr., an engineering student on the Sacramento State team. "This can be applied to the real world where engineers and business people work hand-in-hand to produce a product or service."

Most of all, students gained the opportunity to contribute to needed medical research and make a difference in the lives of patients by developing biomedical technology ideas that are unique, feasible to implement and to satisfy a market need. They have proven themselves to be not only students, but young scientific leaders capable of tremendous change.

— Alexandra Greene

Left to right: Michael Hebert, business undergrad; Jose Camacho Jr., EEE undergrad; Rebecca Dalton, business undergrad; Neil Gee, EEE undergrad; Jakira Jekayinfa-Brown, EEE undergrad; Jeevan Bhungal, EEE undergrad

The official I2P competition team (I2P team requirement was two engineering students and two business students), plus the Dean. Left to right: Rebecca Dalton, business undergrad; Michael Hebert, business undergrad; Jose Camacho, Jr., EEE undergrad; Neil Gee, EEE undergrad; Emir Macari, ECS Dean
Sacramento State’s first-place finish in California State University’s CSUPERB I2P (Idea-to-Product) competition is the Hornets’ second title in as many years.

This year’s winning I2P team consisted of biology undergraduates Megan Showalter and Kayla Horton and business undergraduates Carlo Aristeo Dela Cruz and Igor Chouzhyk. They presented a novel handheld device for use in the operating room that quickly and safely produces thrombin, a substance for bone healing, from a small sample of the patient’s own blood.

The I2P contest is designed to broaden exposure to cutting-edge biotechnologies, product-focused innovation, and the spectrum of career paths available in the life sciences. It brings CSU students, faculty and administrators together, as well as biotech professionals working in academia, government and industry.

Bob Linscheid, chair of the CSU Board of Trustees, served as one of the three finalist judges. He was “blown away” by the exceptional quality of the student presentations, saying they were better than many business pitches to investors.

“Excellence in applied research is a hallmark of Sacramento State” says President Alexander Gonzalez, “and I congratulate the students and faculty who represented our campus with distinction at the CSUPERB competition.”

“We are so grateful for the support from Professors Warren Drew Smith and John Chapman. This has been a transforming educational experience,” Showalter says. She recalls her team getting precious little sleep preparing for the finals. But it paid off as the squad made a compelling case to the judges.

Smith correctly predicted the team would prevail for the second year in a row. The electrical and electronic engineering specialist had cause to be confident because he and his wife, Judy, spent day and night helping with the intense preparations of all three teams from the campus during their days in Sacramento and Anaheim.
Facility News 2011/2012

Outstanding Teaching Award:
Ben Fell, Professor of Civil Engineering;
Patrick Homen, Professor of Mechanical Engineering; Scott Gordon, Computer Science

Outstanding University Service:
Scott Gordon, Professor of Computer Science; Bob Buckley, Professor of Computer Science; Mary Jane Lee, Computer Science

Outstanding Scholarly & Creativity:
Du Zhang, Professor of Computer Science; Kevan Shafizadeh, Professor of Civil Engineering; Ben Fell, Civil Engineering

Outstanding Community Service:
Mikael Anderson, Director and Professor of Construction Management

Tenured and Promoted 2011–2012
Aki Kumagai, Professor, Mechanical Engineering
Ahmed Salem, Professor, Computer Science
Dongmei Zhou, Associate Professor, Mechanical Engineering
Ted Krovetz, Professor, CSC
Jinsong Ouyang, Professor, CSC
Perry Heedley, Professor, EEE
Milica Markovic, Professor, EEE
Ilhan Tuzcu, Associate Professor, ME

Mahyar Zarghami
Electrical and Electronic Engineering
Mahyar Zarghami received his Ph.D. in Electrical Engineering from Missouri University of Science & Technology in 2008. He has worked for more than 10 years in Research, Development and Consulting sectors inside and outside the U.S. His most recent experience before joining Sacramento State has been with U.S. Corporate Research Center, ABB Inc. He will be teaching Energy Systems Control and Optimization (EEE 142), and Introduction to Future Power Systems and Smart Grids (EEE 255) in the coming Fall 2011. His research interests include Power System Dynamics and Stability, FACTS & HVDC applications in power systems and Wide Area Control using synchronized measurements.

Textbooks Published by ECS Faculty:
Civil Engineer’s Handbook of Professional Practice
Authors: Karen E. Hansen and Kent E. Zenobia

Retired:
Fall 2010–Fall 2012
John Clevenger, CSC
Steven DeHaas, EEE
Turam Gonen, EEE
Kwai-Ting Lan, CSC
Tein-I (Tom) Liu, ME
Rabindranath (Robin) Bandy, ME

Staff Service Recognition:
Sara Joslin
20 years of Service
Starting out as the key issue clerk in Facilities Services in August 1990, Joslin quickly advanced to an Accounting Technician I in Accounts Payable, and then went back to Facilities as its Accounting Technician II. She came to the college in November 1996 as administrative support for the Computer Science Department, spending three years answering questions from students about program requirements. She helped to develop the department website and compiled a student booklet that contained a lot of the knowledge she had acquired, including many University procedural requirements, so that she “wouldn’t have to keep popping up from my desk” to go to the department’s student counter. In early 2000 she was promoted to department secretary, working under four chairs at various times and supervising other support personnel. She became the college’s budget and personnel analyst in the summer of 2008.

Jaime White
Jaime White first grew fond of Sacramento State in 1976 when he transferred from Santa Rosa Community College. He became a member of the Hornet Cross-Country and Track teams while studying business administration. After graduation, Jaime managed medical offices in Southern California and then returned to Roseville to work for Hewlett-Packard Company for eight years. But he couldn’t stay away from Sacramento State much longer, so he earned an MBA and accepted a position in the MESA Engineering Program (MEP) in 1990 as coordinator of an honors program. In 2010, Jaime assumed the responsibilities of his long-time manager, Madeleine Fish, who retired. Jaime says he loves campus students, faculty and staff. “I had no idea that 35 years after starting as an undergraduate student at this University, I would not only...

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Stella Premo
Stella Premo has joined Sacramento State’s campus as the Director of Development. She is the liaison to the College of Engineering and Computer Science. In her role she will continue to forge relationships between the business community and College as well as strengthen personal relationships.

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Premo believes in being an active member of the community and gives to her local community. She is a graduate of Sacramento Magazine recognized Premo as one of Sacramento’s 30 Most Powerful Women. She has also been featured in several publications discussing diversity and the Hispanic business market. Premo was recognized by the Sacramento Hispanic Chamber of Commerce as one Sacramento’s Inspirational Latina Leaders.

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Alumni News
College of Engineering and Computer Science Receives Tailgate Award

For the first time, the Engineering and Computer Science (ECS) Alumni Chapter received the Community Tailgate Award last year. Recently, ECS Alumni Chapter President Max Parker presented the award to the College of ECS Dean Emir Macari to show him gratitude for his unconditional support for alumni.

Once a year a panel of judges from Sacramento State determine the winner of the Tailgate Community Award during the Tailgate Festival, which occurs before the Hornet Football Homecoming game. All of Sacramento State’s friends, alumni, faculty, and staff qualify for the award. A winner is selected based on his or her level of hospitality, food quality, participation in the community, school spirit and creativity.

The ECS Alumni Chapter proudly gave the award to Dean Macari in recognition of his high-level of involvement with current students and the alumni community.

“Not only does he care about providing a top quality engineering education, but he also cares about his students actually graduating,” said Mr. Parker.

The ECS Alumni Chapter is one of the largest affiliate chapters of the Sacramento State Alumni Association with hundreds of members who are engineering and computer science professionals. The Chapter encourages networking, provides annual student scholarships and organizes grand events such as homecoming and the upcoming “Hornet Car and Bike Show.”

One of its most important goals is to provide a place where people can stay connected after they graduate, and Dean Macari has consistently carried out this mission. “Dean Macari is there for students after graduation because he understands that the education we receive is life-long. It doesn’t just end when they are handed their diplomas,” said Mr. Parker.

— Alexandra Greene

WE WANT TO HEAR ABOUT YOU! If you would like to share news about important life changes and professional accomplishments in an upcoming issue of the ECS Emerging Horizons newsletter, e-mail Denise Anderson at denise@csus.edu.

In Memory of
Andrew David Perry

Andrew David Perry was born in Sacramento in April 1988, to David and Susan Perry. He graduated with Honors from Tracy High School, in Tracy, Calif., and attended the California Polytechnic State University in San Luis Obispo, and Las Positas College in Livermore before transferring to California State University, Sacramento as a Computer Science major. He passed away in Sacramento in September 2012. He is survived by his parents, his sister Molly Lewis, brother-in-law Matt Lewis, and brother Alex Perry.
join us!

Joining Sacramento State's Alumni Association gives you access to a wide range of benefits geared to career, home and recreation. You can receive discounts on continuing education courses, magazine subscriptions, movie passes, vacation travel, car purchases and rentals; use the Alumni Center, the Aquatic Center, the Career Center, and libraries; utilize student loan consolidation; shop at the Hornet Bookstore; purchase health and life insurance as well as auto/home/renter's insurance and much more.

The ECS chapter of the Sacramento State Alumni Association connects alumni and friends from all disciplines within the College of Engineering and Computer Science, bringing them back together on campus for events such as the Breakfast Club speaker series and technical talks. They also actively support future technical scientists through student organizations. For more information about the chapter, please visit the website at www.ecs.csus.edu/alumni/chapter.

For more information about the Sacramento State Alumni Association, please call (916) 278-6295 or (800) SAC-GRAD or log onto www.csus.edu/alum/.