

Professor Zachary Peterson answers questions in the new Cal Poly-Northrop Grumman Cyber Lab.



TAKING ON CYBERSECURITY

With the establishment of a Cybersecurity Center, the opening of a new cyber lab and the development of cybersecurity curriculum, Cal Poly is poised to become a leading supplier of cyber-ready experts, professionals and innovators.

Spearheaded by the College of Engineering, the major new educational initiative encompasses a comprehensive and collaborative program that spans the polytechnic university and partners with public and private organizations. The goals of the program include educating thousands of students in cybersecurity awareness and readiness; producing experts in cyber technologies and systems, including many professionals who will serve the military and defense industry; and graduating cyber innovators, who are prepared for advanced study and applied research in emerging cyber issues.

The Cal Poly Cybersecurity Center serves as the nexus for a

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Eager to Begin: Cal Poly Scholars Program Soars



Cal Poly Scholars gathered for a reception hosted by Apple in October.

Last year, there were 14. This year, the College of Engineering welcomed 55 Cal Poly Scholars.

Initiated in 2012-13 by President **Jeffrey D. Armstrong**, the Cal Poly Scholars Program is aimed at students whose families earn less than \$80,000 annually. Many of the students come from Cal Poly's Partner Schools, a collection of California public high schools that serve a low-income population and that have low percentages of students advancing to college.

The scholarship program not only provides an iPad and a \$3,000 housing grant renewable for up to four years, but also offers programmatic aid. The Multicultural Engineering Program and the Engineering Advising Center offer academic services to the scholars that are specific to their engineering majors. The newly established Mustang Success Center, meanwhile, provides what Director **Shannon Stevens** calls, "Problem-Solving 101."

"We exist to help these and other students navigate the university system," said Stevens. "We want the Cal Poly Scholars to be challenged and successful — to do so, we know that

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Skyline's the limit for Cal Poly alum Reed Morse.

Inspired to Give Back to Cal Poly

Computer Science Professor **David Janzen's** Android development class catalyzed innovative ideas and entrepreneurial ventures, and launched a career for **Reed Morse** (B.S., Computer Science, 2010). The stunning results inspired Morse to give back by making a \$12,000 gift to Cal Poly.

As undergraduates in Janzen's class, Morse and **Grantland Chew** (B.S., Computer Science, 2010) developed an ingenious digital version of the ubiquitous buy-10-get-one-free retail loyalty cards. "We were just trying to solve a problem," said Morse. "I liked to use the cards, but kept losing them. I thought, why not use my phone? The app also allowed retailers to track their business and send messages to their customers."

The class project carried over into a senior project, then turned into a six-person business called Punchd. "We were talking to possible investors when Google called," recounted Morse. Google acquired the application for an estimated \$10 million.

Now on staff with Google, Morse took advantage of the company's matching gift program — Google's added contribution increased Morse's gift to \$18,000.

Morse made the donation because, as he said, "I would not be in the position to give without that Android class and the support of my Cal Poly professors. I just figured that I should give back because I believe it's important to show thanks and appreciation."

According to Computer Science Chair **Ignatios Vakalis**, Morse's generous gift has contributed to the acquisition of new computational infrastructure, including storage and servers, to support the College of Engineering's multi-disciplinary strategic initiative on Big Data.

"Reed was an extraordinary student with an unquenchable passion for creativity and innovation," noted Vakalis. "His advice, and out-of-the-box ideas continue to help shape the strategic priorities of our department. Moreover, Reed's high desire to help others and give back deeply touched our hearts." ■

Hannah-Forbes Fund Supports Senior Projects

77 Cal Poly Engineering students have received mini-grants from fund

Senior projects represent Cal Poly's Learn by Doing heartbeat, and the Hannah-Forbes Fund is a measure of the Biomedical Engineering Department's healthy pulse. In just three years, the fund has supported 50 projects and 77 students with a series of mini-grants.

"One of Cal Poly's real strengths is its senior projects program," said **Jo Ellen Hose**, who together with her husband **Jim Hannah** and their neighbor **Bert Forbes**, established the fund in 2010.

"I teach engineering physiology and cardiovascular pathology in the department," said Hose. "In addition, I have a 'non-majors' biology class in the College of Science & Mathematics, where, consistently, my best students are biomedical engineering students. I really enjoy them because they're thinkers. They try to understand things. Memorizing facts is not the way they learn, and I appreciate their learning style."

"A little over two years ago quite a few biomedical students went through my biology class, and I heard they didn't have enough funding to do a senior project. That's when I saw the need. I thought, 'They're engineers, and a paper project isn't what an engineer should be doing.' When I told Jim about the situation he said, 'Guess it's time to invest in people' — that's what he likes to do — and we soon found that Bert felt the same way."

"Bert is such a can-do engineer. He manages to do things on every level from fix-it stuff to the grand visionary level. It's not just his own business that he's made into a real success — he wants others to succeed, too. He likes to provide seed money, then have a project take on a life of its own."

"Another reason that I wanted to support senior projects is my experience as a faculty advisor for the diabetes club on campus. Its members are mostly students with Type 1 diabetes, and they're ready for a cure. The science is so close to either having a great mechanical solution in the form of an insulin pump, or, in 10 years or so, to replace pancreatic cells to totally cure diabetes. These members' dedication to finding a cure is unstoppable. They love to fundraise, but not for national organizations — they want to see what it's being used for. That's why I've required a portion of the Hannah-Forbes Fund be used for diabetes-related projects."

Hose was delighted with a diabetes-related project presented at the collegewide Project Expo. "The students — **Victoria Lim** and **Graham Witherby** — developed an anesthetic-tipped needle device for children, who typically get multiple shots a day as part of receiving insulin injections or checking their blood sugar," noted Hose. "Fear or dread of needles can be an issue at any age, but it's especially serious if your child has Type 1 diabetes."



A new electrospinning fabrication technique was used in a recent research study by biomedical engineering graduate students **Nick Hudson** and **Sean Youra**. Their project was supported by **Jim Hannah** and **Jo Ellen Hose** through the **Hannah-Forbes Fund**.

Another project last year — a biomaterials study by graduate students **Nick Hudson** and **Sean Youra** that involved a new electrospinning fabrication technique — reflects the new and growing field of tissue engineering.

"The whole world in tissue engineering is opening up," said Hudson. "We believe this is the future where all our skills will be used for doing good. It's an experience that would not have been possible without Professor Hose and Dr. Hannah, who funded the project this year, and I think our work will be translatable to any career path."

"The Hannah-Forbes Fund functions like a mini-grant, and students may qualify for up to \$500," noted Hose. "But they must apply for the grant, write a proposal and provide a follow-up report. Each of those steps is good practice for their future careers."

"What some people may not realize," noted **Lanny Griffin**, department chair, "is that contributing to the Hannah-Forbes Fund isn't limited to Jim, Jo Ellen or Bert — anyone may donate to this endowment. And especially for new donors or for a few dollars, it's an ideal place to make a difference right away. When it comes to senior projects, a small investment can have a big impact." ■

CENG ONLINE

COLLEGE OF ENGINEERING WEBSITE

www.ceng.calpoly.edu/

Cal Poly Engineering alumni are making news — and we are posting and updating their stories daily. Stay in touch by logging on at:

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CARRYING CONCRETE: Civil and environmental engineering students transport the “Prospector” concrete canoe across campus near the Kennedy Library.

Earn by Doing: Tradition Strikes Chord with Students and Donors

When Cal Poly opened in 1903, students attended classes in the morning and worked in the labs and shops in the afternoon. As late as 1948, electrical and mechanical engineering students helped generate part of the electrical power needed on campus.

So having students serve as shop technicians is not new. What’s different today, however, is the dramatic increase in use of engineering shops, including the Aero Hangar Student Fabrications Lab and the Mustang ’60 Project Shop. As more and more students from across campus flock to these facilities, the number of student shop techs has substantially increased to ensure lab safety and effectiveness.

The epitome of Cal Poly’s Learn by Doing tradition, student technicians have become a favorite recruitment target of many industry partners. So popular are the tech positions that the college has begun offering sponsorship opportunities for external partners.

With a gift of \$5,000, individuals or companies can sponsor a tech for a year. A \$100,000 endowment generates income to sponsor a student technician in perpetuity.

Dubbed Earn by Doing, the paid positions provide on-campus jobs that hone new skill sets while also adding capacity to the student fabrication labs. For instance, **Jessica Caine**, now a senior technician, assists as many as 15 students every day with their project work. “All the hands-on work I do also underscores the theory I’m learning in class,” she said. “The job makes me understand more clearly how to design efficiently for manufacturing.”

For more information, contact Richard LeRoy at rleroy@calpoly.edu or (805) 756-7108. ■

Mustang ’60 Shop Machine Shop Engineer Eric Pulse, left, and mechanical engineering student Allian Roman work on a new VF3 verticle milling machine donated by HAAS.



Raytheon Visiting Scholar Connects Smart Grids to the Power of Senior Projects

“I’m here at Cal Poly because when I was a student, I chose a project on something that interested me.” That’s how **Ryan Faries** (B.S., Materials Engineering, 2004) recaps his journey from Cal Poly to his career as a systems engineer at Raytheon, and back again to Cal Poly as the Raytheon Visiting Industry Scholar.

Companies collaborate with the College of Engineering via the Visiting Industry Scholar program by sponsoring a company professional to serve as a teacher and researcher on campus. These individuals usually teach one or more courses, and may also work with students on company-sponsored projects.

This is the fourth year that Raytheon has funded a Visiting Industry Scholar. **Noel Ellis**, Raytheon deputy director of electronics and the 2012-13 Raytheon Scholar, taught the cross-college multidisciplinary senior project class as well as the senior project class in Electrical Engineering. “The Raytheon Visiting Industry Scholar program has a great home at Cal Poly,” he said. “We can provide first-hand

guidance and knowledge of best practices, and the exchange helps our industry create better engineers.”

Like Ellis, Faries will work with students on projects. Now a systems engineering section manager in Raytheon’s electro-optical systems design department, Faries’ interest in battery technology as a student attracted mentors, who helped expand his knowledge and network. Likewise, at Raytheon, he found a culture of professional growth and innovation. His areas of focus at the company include large-scale energy storage and hybrid power systems; he currently has two patents pending in energy storage and battery management systems.

“I see this year at Cal Poly as an opportunity to show students that if they follow what’s meaningful to them, they can use projects to

to Cal Poly without the scholarship,” said aerospace engineering freshman **Tiffany Nguyen**; “but I’ve found that the lab classes here really do go by the Learn by Doing model.”

Both **Kai Ling** in Civil Engineering and **Lucy Zuo** in Aerospace Engineering did a lot of research before choosing Cal Poly. “I initially targeted the UCs,” said Ling, “but I found that Cal Poly has the best engineering program. So far, my classes have been lots of fun, even if they’re hard.”

“I surveyed my high school

turbo-charge their career paths,” he said. “Learn by Doing is so important. My role is about giving students opportunities to do something very cool.”

Currently, Faries leads a micro-grid energy project at the Marine Corps Air Station at Miramar in San Diego, which will be among the Raytheon-sponsored projects available to Cal Poly electrical engineering students during his tenure. “This is a real-world application, a real need — combining cybersecurity, renewable energy, power systems and micro-grid technology,” said Faries.

“I’m looking forward to a year of opening doors to project ideas, bringing in industry perspective, interacting with the students and giving them a sense of what it’s like to be an engineer at companies like Raytheon.” ■

teachers and other students, and everyone said that Cal Poly is a great engineering school,” explained Kai. “I was happy to get accepted and being named a Cal Poly Scholar was double great!”

“We consider these Cal Poly Scholars pioneers,” said Stevens. “For some, this is the first exposure to college by anyone in their family. So we have our ears open to learn how we can best serve them, especially since the university plans to expand the Cal Poly Scholars program to the other colleges.” ■



Materials engineering graduate **Ryan Faries** is happy to be back on campus as the Raytheon Visiting Industry Scholar. Faries credits interesting projects while at Cal Poly for his career as a systems engineer at Raytheon.



Ignatios Vakalis, front, has been recognized for working with student donors.

‘Ignatis’ Computer Science Dept. Chair Recognized for Fundraising Flair

Ignatios Vakalis has been tapped by Cal Poly Provost **Kathleen Enz Finken** to receive the prestigious Leadership Award for Partnership in Philanthropy.

In notifying Vakalis of his award, Enz Finken stated: “Through your dedication and collaborative efforts, and because of your excellent relationships with industry leaders, and strong ties to students and alumni, the Computer Science and Software Engineering (CSC) community has enjoyed robust fundraising and department advancement.”

Vakalis’ advancement achievements include helping to frame a new initiative in cybersecurity, an increasingly vital industry and government priority. Vakalis similarly championed the university’s Big Data strategic initiative; as a result of his collaborative efforts, CSC has just acquired the first phase of the infrastructure.

CSC’s Game Development Lab, Mobile Computing Lab and Human-Computer Interaction (HCI) Lab also reflect Vakalis’ passion to establish cutting-edge learning facilities. In fact, Cal Poly’s HCI lab is the most modern in the San Luis Obispo area, and not only enhances opportunities for collaborative research across campus, but also provides a gateway for industry interaction with the university.

Notably, Vakalis has collaborated with students in advancement efforts, such as raising funds to send students to the Grace Hopper Conference, the world’s largest gathering of women in computing, and establishing a senior class gift. Now a department tradition, the students leaders of this campaign have not only generated a significant class gift, but they have also become annual donors to the university. ■

Cal Poly Scholars

From Page 1

it is important that they connect with their fellow scholars, other students and faculty. We can help.”

The first-time freshmen sound enthusiastic about the scholarship program and their college experience. At a reception for the group early in the quarter, many said that receiving the scholarship made the difference in their decision to come to Cal Poly.

“I’m not sure I would have come

Gift Signals 'Lift Off' for New Autonomous Flight Initiative

Unmanned aerial vehicles (UAVs) are no longer the exclusive domain of the military or big government, and Cal Poly is poised to be a leader in the emerging field of civilian uses for the airborne vehicles.

Cal Poly's new Applied Autonomous Flight Initiative looks beyond UAV technology to develop the kind of real-world applications that have never been — or were unable to be — considered.

"What we want to focus on is not the technology of the UAV itself but what it can do," said **Rob McDonald**, associate professor in Cal Poly's Aerospace Engineering Department.

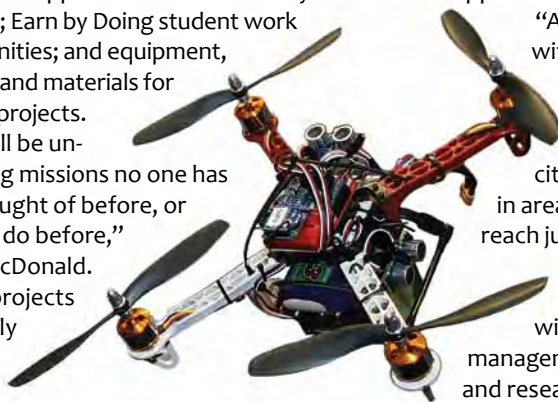
The initiative's focus on innovation drew the interest of the Raintree Foundation, which recently gave \$100,000 to initiate support of Cal Poly's effort to tap the potential of a new generation of UAVs. Alumnus **Jim Frank** (B.S., Aerospace Engi-

neering, 1973) serves as president of the foundation based in Santa Barbara, Calif.

The Raintree Foundation gift will be used to support student and faculty research; Earn by Doing student work opportunities; and equipment, supplies and materials for student projects.

"We'll be undertaking missions no one has ever thought of before, or couldn't do before," noted McDonald. "Some projects may really change society. Some may simply — but, in some cases, just as profoundly — improve how we go about our work and daily lives."

McDonald is currently working with



Marc Horney, assistant professor for the College of Agriculture, Food and Environmental Sciences, to identify project opportunities.

"As a scientist and as a person with a professional career in dealing with complex land management issues, UAVs seem to have an exciting potential to gain ground in areas that seemed well out reach just a few years ago," said Horney. "I can't count the conversations I've had with ranchers, farmers, land management and wildlife agencies and researchers about what could be done if only we had the right kind of aircraft," said Horney. ■

Photo: Cal Poly Engineering students work on autonomous "quadrotor" drones.

Cybersecurity

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wide range of activities that involve faculty and students collaborating with experts from other academic institutions, private companies, defense industries and government agencies and research labs. A nationwide search for a founding director of the Cybersecurity Center is currently underway.

Part of the cybersecurity initiative, the Cal Poly – Northrop Grumman Cyber Lab is due to open for classes in January 2014. The undergraduate and graduate teaching facility — the first of its kind in the nation — was made possible by support from the Northrop Grumman Foundation.

With 32 workstations, projectors, a presentation center and expansive whiteboard space, the lab will enable student and faculty experimentation in network security and cyber defense, exploitation, attack, research and development, analytics and visualization. The lab's associated server center offers a robust research environment, including all of the elements of an enterprise-scale information technology operation.

Not only did the Northrop Grumman Foundation provide funding for hardware and software, but the company helped design the facility and sent Dale Griffiths, chief scientist in the Northrop Grumman Intelligence System Division in McLean, Va., to set up and configure the lab.

Cal Poly - Northrop Grumman Cyber Lab

What makes this teaching space truly cutting-edge?

- The lab, made possible in part by a grant from the Northrop Grumman Foundation, is highly configurable, making it particularly suited to teaching security concepts.
- It has specialized equipment which allows students to more deeply engage curriculum topics.
- It has a direct connection to Northrop Grumman infrastructure, giving Cal Poly faculty and students access to a national leader in cybersecurity; creating new possibilities for curriculum development and research opportunities; and providing true insight to how computer security is developing in the real world.

A unique aspect of the Cal Poly – Northrop Grumman cybersecurity collaboration includes access via network connection to the Northrop Grumman Virtual Cyber Lab, thereby expanding educational and research capabilities for Cal Poly students and faculty.

"Our shared investment in the cyber lab will be the foundation for a meaningful cyber partnership between Northrop Grumman and Cal Poly," said **Ron Smith**, Northrop Grumman Information Systems sector vice president for programs and engineering.

Cal Poly's momentum in cybersecurity education builds upon an already-

established focus in the area, including a two-year-old cybersecurity project lab established with funding from Raytheon. The company also sponsors White Hat, the Cal Poly student club dedicated to making the Internet a safer place by protecting personal computers, private data and information systems.

The addition of **Zachary Peterson** to the faculty in fall 2013 ensures expansion of cybersecurity research and curriculum from entry-level to advanced, specialized topics. An expert in secure storage systems, applied cryptography, and law and policy, Peterson has received funding from the National Science Foundation for research in cybersecurity education. Cal Poly is currently searching for another faculty member with expertise in secure infrastructure.

"Whether you're a private citizen, private company or government agency, cyber threats are a real and growing concern," said **Debra Larson**, dean of Cal Poly Engineering. "Our cyber facilities and education offers every student the opportunity to learn about the risks associated with the use of cyber technology.

"But, more importantly, through Learn by Doing instruction, Cal Poly will educate the Day One-ready cyber experts, who know how to defend, secure, tactically engage and restore the cyberspace. By partnering with businesses and government, we are creating a framework of education, applied research and public service that will benefit the nation." ■

Cal Poly Global Waste Research Institute Receives Grant From the Keck Foundation

A recent \$250,000 grant from the W.M. Keck Foundation will allow the Cal Poly Global Waste Research Institute (GWRI) to integrate new waste-related issues and environmental impacts related to nanotechnology into the school's broader undergraduate science, technology, engineering and math (STEM) curriculum.

GWRI Director **Nazli Yesiller** said the funds, which follow a \$50,000 Keck Foundation planning grant, will affect a wide variety of courses and disciplines, both technical and non-technical.

"The nanotechnology waste management portion could involve more than 700 students a year in nine separate disciplines including civil and environmental engineering, chemistry, materials engineering, mechanical engineering, biomedical engineering, industrial technology, political science and ethnic studies" Yesiller said.

"Securing this grant involved a highly selective process and takes Cal Poly into a new area — a leading edge — of integrating new emerging waste-related subject matter into the classroom, an area for which no text books are currently available."

According to Yesiller, advancements have been made in the manufacture and use of nanomaterials with commercial applications and available products numbering in the thousands. However, the short- and long-term environmental impacts of these new materials and the effectiveness of common waste management technologies for nanomaterials are largely unknown.

The Keck grant will support a postdoctoral fellow who will develop teaching and learning tools related to nanowaste management, including course content, classroom and laboratory exercises, databases and curriculum modules.

"This grant helps ensure that the next generation of workforce and graduate students will be equipped with awareness and interdisciplinary technical skills required for providing solutions to emerging global environmental problems," explained Yesiller.

The goal of GWRI is to educate future generations of professionals in sustainable waste and byproduct management. For more information on GWRI, see gwri.calpoly.edu or call 805-756-2932. ■

Cal Poly Engineering welcomed 1,417 freshmen to campus for the 2013 fall quarter.

The college's enrollment figures are the highest ever, reflecting a 17 percent increase from last year; the students' median 4.03 GPA is the highest in the university's history. The class represents about 30 percent of the university's total first-year students.

Approximately 150 transfer students also started at Cal Poly this fall, up from 130 the prior year.

The college received 12,991 applications for first-time freshmen, up from 11,080 for the prior academic year.

"We are delighted to introduce a new generation of students to the excitement, relevance and discovery of Learn by Doing," said **Debra Larson**, dean of the College of Engineering. "Through their classes, hands-on labs and team-based projects, these students will have unprecedented opportunities to work with industry and in multidisciplinary settings to solve real-world problems."

Overall, Cal Poly's freshman ranks have swelled to about 4,750 — an increase of nearly 28 percent from last year. The university has also enrolled about 1,000 new transfer students, up from 800 a year ago.

The incoming class is Cal Poly's most

Population Boom

Cal Poly Engineering welcomes largest, most diverse freshman class in history

ethnically diverse and academically successful in the university's history.

The enrollment growth is facilitated by a mixture of funding increases and the work of faculty, staff and students to improve Cal Poly's graduation rates.

The increased funds were the result of the passage of Proposition 30, approved by California voters in 2012, and the Student Success Fee, which Cal Poly students overwhelmingly supported in early 2012. The funds will help provide additional course offerings and other adjustments needed to accommodate the enrollment growth.

"I'm proud of how our faculty and staff members have stepped up over the summer to prepare Cal Poly for this influx of outstanding new students," said Cal Poly President **Jeffrey D. Armstrong**. ■



College of Engineering Honored Alum Beth Anderson, center, met with aerospace engineering students in October.

For Honored Cal Poly Engineering Alumna, 'The more hands-on, the better'

Beth Anderson cites Cal Poly's Learn by Doing philosophy for inspiration for career at Boeing

Describing herself as a visual learner, **Beth Anderson** (B.S., Aerospace Engineering, 1985) remembers that her aeronautical engineering labs were very helpful.

"The more hands-on, the better," she said. "Two labs pop to mind: solid rocket propulsion burn and wind tunnel/airfoil tufts. Both of these showed visibly the invisible science we were learning."

Named the College of Engineering's 2013 Honored Alum, Anderson currently serves as vice president of supply chain rate capability for commercial airplanes supplier management at Boeing Commercial Airplanes. Prior to her current position, Anderson was the director of the Interiors Responsibility Center, a Boeing Fabrication business of more than 1,600 employees responsible for the design, manufacture and assembly of a wide range of interior systems, including the interior systems of the Boeing 787 Dreamliner.

Anderson is an acting member of the Cal Poly President's Cabinet.

Asked about her path to a career in aerospace engineering, Anderson said, "I didn't grow up building airplane models or flying remote control airplanes. I wasn't particularly interested in aerospace until it came time to choose a major. Dr. **Frank Hendel's** freshman aero series provided a great foundation for my future at Cal Poly."

"He took the time to make sure we really got it. No one could forget him using every square inch of blackboard space, his amazing diagrams and, most importantly, his passion for his student's learning."

Learn by Doing instilled curiosity and a commitment to lifelong learning for Anderson. "It reinforced the importance of communication skills and provided many opportunities to practice. It also gave me confidence, because I didn't just learn the engineering concepts, but I put them in practice."

"I wasn't hesitant or afraid when I moved into industry, I was able to jump right in and tackle any assignment I was given." ■

"It reinforced the importance of communication skills and provided many opportunities to practice. It also gave me confidence, because I didn't just learn the engineering concepts, but I put them in practice."

Beth Anderson on Learn by Doing

Poly Days Alumni Weekend

Now in its second year, Poly Days held something special for Cal Poly alumni and their families in mid July. Registration this year more than doubled, with participants coming from nine states and representing every decade from the 1960s to the present.

The weekend included a Thursday night downtown Farmers Market welcome, an on-campus reception, Classes Without Quizzes, the Alumni & Family Barbecue, Sunday brunch, family activities at the new state-of-the-art Recreation Center, campus tours and more.

Classes Without Quizzes were especially popular, and ranged from instruc-



tion in the science of disasters, jam making and composting, to a class on the preservation of family papers sponsored by Kennedy Library. Everyone enjoyed a class by Mechanical Engineering Department Technician **George Leone**, above left, who introduced participants to the Aero Hangar shop and showed them how to make bookends from metal, plastic and wood. ■

Cal Poly Ranked Best in the West for 21st Consecutive Year

Magazine lists computer and mechanical engineering programs No. 1 among public universities

Cal Poly has been rated the best public-master's university in the West in the U.S. News and World Report's 2014 America's Best Colleges guidebook — the 21st consecutive year the university has earned the label.

Cal Poly's College of Engineering was named the best state-funded engineering program in the country. The only public institutions listed ahead of Cal Poly were the federally funded U.S. Military Academy, U.S. Air Force Academy and the U.S. Naval Academy.

Among public universities, Cal Poly Engineering was ranked number one for its computer and mechanical engineering programs; its electrical engineering and civil engineering programs were ranked second in the nation.

The magazine rankings are based on a survey of engineering deans and senior faculty at all accredited programs that grant bachelor's and master's degrees. Universities that grant doctorates are ranked separately.

"The recognition among our peers — those on the frontlines of higher education — is especially meaningful," said **Debra Larson**, dean of the College of Engineering.

"Cal Poly's long-standing appearance atop the rankings says a lot about the staying power — and transformative power — of Learn by Doing. Whether it's projects like our CubeSat program that has spawned a new micro-sized space industry, or programs like cybersecurity, clean water technology and biomedical engineering, the Learn by Doing model is preparing new generations of engineers to meet global challenges," she said.

Cal Poly ranked ninth in the magazine's overall list of the West's best universities, including both public and private institutions.

"Cal Poly's excellence is deep and enduring, as shown by our continued success in this prestigious ranking," said Cal Poly President **Jeffrey D. Armstrong**. "This honor belongs to our dedicated faculty and staff members, who provide the backbone of the Learn by Doing experience. And it belongs to our loyal alumni, whose generous support enriches the educational experience"

The U.S. News rankings are available at www.usnews.com/colleges.



In the chancellor's orbit



Derek Nelson, aerospace engineering senior, Nick Weiser, electrical engineering graduate student, and Melody Golobic, mechanical engineering senior, talk about the CubeSat program with visiting CSU Chancellor Timothy P. White during his visit to campus in May.

CSU Chancellor Timothy P. White makes contact with Cal Poly CubeSat team

CSU Chancellor Timothy P. White made contact with the Cal Poly CubeSat program during his visit to Cal Poly in May. Part of his tour of campus, the CubeSat stop gave him an introduction to Cal Poly's world-renowned small satellite design/build/launch program.

Students **Derek Nelson**, aerospace engineering senior; **Nick Weiser**, electrical engineering graduate student; and **Melody Golobic**, mechanical engineering senior, explained to the new CSU leader how the program exemplifies Cal Poly's Learn by Doing culture and provides them with hands-on, multidisciplinary opportunities.

"There's no limit to what we can undertake at Cal Poly," said Golobic. "In the case of CubeSat and PolySat, our satellite launching program, we are literally sending satellites into space with sophisticated payloads that we design and build and then collect return data."

In the 10 years since CubeSat/PolySat was founded by Cal Poly and Stanford, Cal Poly students have built and launched six satellites. Four more are currently in development.

For more information on the PolySat program, see polysat.calpoly.edu/.

WEP Director Receives National Awards for Closing Engineering Gender Gap

The shortage of women engineers is alarming, but **Helene Finger**'s hands-on efforts to close the gender gap are gaining national attention. The director of Women's Engineering Program at Cal Poly is actively expanding female engineers' academic and real-world opportunities.

Finger's research on improving recruitment of female engineering majors was recently recognized by the American Society of Engineering (ASEE). In addition, the Society of Women Engineers honored her as Outstanding Counselor of the Year at their annual conference.

The paper honored by ASEE, "When, Why, How, Who — Lessons from First-year Female Engineering Students at Cal Poly," was the result of an ongoing interdisciplinary collaboration between the Women's Engineering Program in the College of Engineering and the Departments of Ethnic Studies and Women's and Gender Studies in the College of Liberal Arts. Finger worked with **Jane Lehr**, associate professor of Ethnic Studies and Women's and Gender Studies, and ethnic studies student **Beverly Kwang**, on the paper.

"Jane and I are both passionate about promoting women

in STEM (science, technology, engineering and mathematics) fields," said Finger. "We feel that improving recruitment can have the biggest impact on increasing the number of women in engineering, but found a dearth of information about when, why and how women choose to study engineering."

While research continues, the initial results have already influenced the approach to female engineering student recruitment at Cal Poly.

"Partly as a result of this research, our incoming freshmen class has the highest percent of female engineering students in the history of our program," said Finger.

In addition to serving as WEP director, Finger has taught in the Civil and Environmental Engineering Department since 1997.



Helene Finger
Civil & Environmental Engineering

Cal Poly Engineering Women 'Go Big' at Grace Hopper 'Think Big' Conference

Cal Poly went big — 32 students strong — at the recent Grace Hopper Celebration of Women in Computing, whose theme invited attendees to “Think Big, Drive Forward.” The event, which is the world’s largest gathering of women in computing, was held in early October in Minneapolis.

With more than 400 universities represented, Cal Poly brought the largest cohort of students from a public university. The Cal Poly attendees represented a cross-section



Cal Poly had the largest cohort of students from a public university at the recent Grace Hopper Celebration of Women in Computing — the world’s largest gathering of women in computing. Led by Associate Professor Zoe Wood, 32 Cal Poly Engineering students attended the conference held in Minneapolis.

of majors including computer engineering, computer science and software engineering. Most of the students are members of the Cal Poly chapter of Women Involved in Software and Hardware (WISH), a mentoring program that pairs female majors with industry professionals.

Cal Poly’s strong presence at the confer-

ence reflects efforts undertaken by the Computer Science and Software Engineering Department under the leadership of Associate Professor **Zoe Wood** to increase the number of women in computing fields. For four years the department has sent students to the conference and, in the past two years, students have received grants for airfare,

registration and hotel accommodations. In addition to providing Grace Hopper grants, the department also supports WISH.

Wood and **Julie Workman**, a computer science lecturer, co-presented a workshop on computational art at the conference.

For more information, see: www.gracehopper.org/2013/. ■



Lily Laiho (and friends) will direct interdisciplinary projects for the College of Engineering.

“I tell students that this is a course that will set you apart. Just their opting for a project commitment that spans three quarters versus the usual two says a lot about their motivation.”

Lily Laiho on senior capstone courses

Lily Laiho Named Director of Interdisciplinary Projects

New position to promote ‘cross-college opportunities’

As the new director of interdisciplinary projects for the College of Engineering, **Lily Laiho** will help manage the spectrum of interdisciplinary project experiences across the college; create new opportunities for projects, innovation and collaboration; and foster connections between the school and industry.

“This new position is a natural extension of our progress in expanding our interdisciplinary activities,” said **Debra Larson**, dean of engineering. “Professor Laiho will further strengthen synergies and expand possibilities among our engineering disciplines and promote cross-college opportunities.”

“The push for interdisciplinary projects has become a big priority,” said Laiho. “My role is to facilitate connections in three key areas: CP Connect, which invites students and industry to collaborate on multidisciplinary educational projects; the cross-college senior capstone experience, which is a sequence of three courses taken in successive quarters; and QL+, which is a research, development and innovation lab focusing on adaptive technologies for

disabled military veterans.”

CP Connect serves as a catalyst for university-industry partnerships by making project funds available to support interdisciplinary student projects. “I lead the faculty committee that decides which projects get funded, based on a well-defined request for proposal that’s distributed each quarter,” continued Laiho.

“For the capstone course, my mission is to help make things happen. If a project calls for mechanical engineering, biomedical engineering and electrical engineering, for instance, my job is to coordinate that effort — putting together the project, recruiting students and working with the team.”

Laiho will also serve as new director of QL+. Its industry and service-learning projects represent between 20-40 percent of interdisciplinary projects. A recent multidisciplinary QL+ student team developed a kayak guidance system designed for visually impaired military veterans. The project, which uses an ultrasonic sensor to enable the kayaker to navigate a slalom course of buoys, teamed up fifth-year mechanical engineering major **William Gardner** with three biomedical engineering seniors: **Amy Johnson**, **Ryan Kirkland** and **Ryan Phife**.

“I’m used to linear thinking in mechanical engineering, but I wanted to branch out and see how other disciplines think and problem-solve,” said Gardner. “This program has given me the chance to be part of a great team, with great advisors — and to see engineering systems that involve more than gears.”

Added Phife: “The benefit of working with a mix of disciplines and different perspectives is huge. It’s also what industry wants to see.”

“Projects like these offer experiences that can’t be taught in class,” said Laiho. “I tell students that this is a course that will set you apart. Just opting for a project commitment that spans three quarters versus the usual two says a lot about motivation. In addition to the engineering, design and variety of majors involved, the value of this capstone senior design experience is how it integrates aspects that are relevant to their careers: ethics, global perspective, corporate culture, entrepreneurialism and intellectual property.

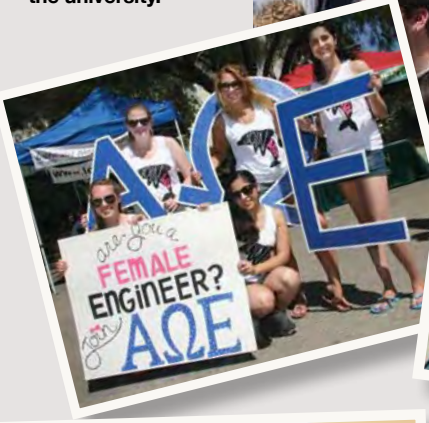
“A framework of operations and administration is now in place that will help sustain and grow interdisciplinary projects. By formalizing the program, the departments and college are investing in learning environments for the future,” she said. ■

Open House 2013

The 20th annual Cal Poly Open House in April allowed College of Engineering clubs and departments to put on a show for visiting alums and friends of the university.



College News

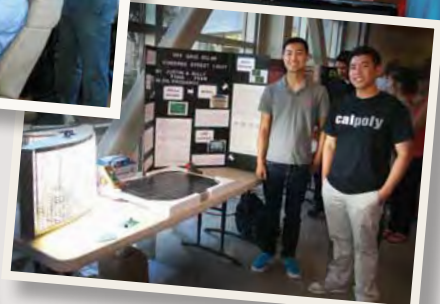


EPIC

It was an epic year for EPIC (Engineering Possibilities in College). The summer camp for teens and pre-teens expanded to three sessions and added a residential program.

PolyHouse

PolyHouse, the annual "home makeover" service project conducted by Cal Poly's industrial and manufacturing engineering project management class, renovated the homes of three local families with special needs.



More than 150 senior projects were on display in May during the second annual College of Engineering Project Expo.

Air Superiority

Cal Poly wins first and second in AIAA aircraft design competition

Cal Poly aerospace seniors won first and second place awards in the 2012-13 American Institute of Aeronautics and Astronautics Foundation (AIAA) Undergraduate Team Aircraft Design competition in early September. The winning entries extend more than a decade of remarkable finishes in this competition, considered the most prestigious national collegiate contest in the aeronautical engineering design industry.

Led by faculty advisors **Bruce Wright** and **Robert McDonald**, the Cal Poly teams won for their designs of a regional-sized commercial airliner powered by hybrid electric propulsion and advanced modular batteries. The teams were required to “determine if hybrid technology offers fuel burn, cost, noise, or emissions advantages over

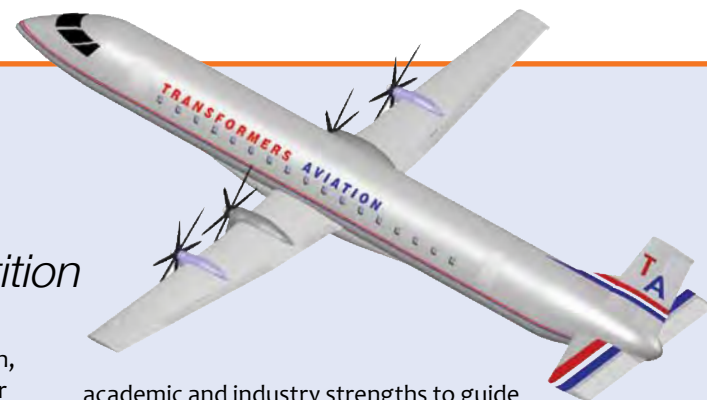
conventional propulsion.”

The first place winner, Team Transformers Aviation, received a \$1,500 award from the AIAA Foundation for their design of the Optimus, which utilizes two advanced inboard gasoline engines supplemented by two highly efficient outboard electric motors. Team members included **Adam Darley, Rene Farfan, Trevor Goehring, Chris Ostrom** and **Samson Truong**.

Second place and a \$750 award went to Team ChimAira for the design of the Hybrid Electric Regional Commuter Parallax. Team members included **Tony Cash, Arexy Monterroso, Philip Osterkamp, Abe Shabbar** and **Rick Stebbins**.

The \$500 third place award went to Team CARRL from Georgia Institute of Technology for their design of the Clean Air Rapid Regional Link.

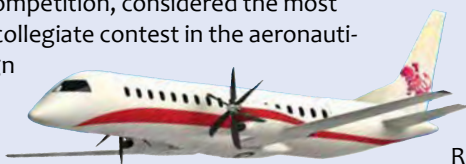
“Cal Poly brought together the perfect blend of



academic and industry strengths to guide and direct the aircraft design class,” said Wright of Cal Poly’s unprecedented success at the competition. “Design entails the combination of basic and applied theory and advanced technologies. All of these exist at Cal Poly by combining the talents and backgrounds of the teachers, advisors, and selected teacher assistants from previous design classes.”

More information on the AIAA Undergraduate Team Aircraft Design Competition is available at www.aiaa.org. ■

Cal Poly’s Team Transformers Aviation’s Optimus, above, won first place at the AIAA Undergraduate Team Aircraft Design Competition. The Parallax, left, from Cal Poly’s Team ChimAira finished in second place.



Six Cal Poly Engineering Students Travel to China for Collaborative Research Project

Electrical engineering students **Gabriela Aleman, Ashli Behill, Juliet Chico, Tattiana Davenport, Gabriel Halpin** and **Travis Robinson** spent five weeks traveling in China as part of a program sponsored by the National Science Foundation.

Thanks to an International Research Experiences for Students grant, this was the third trip made by Cal Poly students and EE professors **Xiaomin Jin** and **Helen Yu** to undertake collaborative research with the Department of Physics at Peking University on gallium-nitride

lasers and light emitting diodes.

“While I accomplished quite a bit of research during my stay in China, the adventure of living in another country means far more than the work alone,” Halpin said of his experience. “I valued our visits with professors and Ph.D. students, and enjoyed asking them questions about their work during our meetings. I will always have so much more to learn, but I appreciate the chance I had in Beijing during the Summer of the Snake to learn about LEDs, people, culture and China.” ■

Cal Poly engineering students pose with Chinese researchers in Beijing.



ESC 2013-14

ENGINEERING STUDENT COUNCIL

The Cal Poly Engineering Student Council for 2013-14 includes, from left: **Cameron Naugle** (corporate director), **Esha Joshi** (vice president - internal), **Robby Potter** (president), **Gilenn Collado** (vice president - events), **Michael Waddington** (vice president - finance) and **Bo Oelkers** (website and social media director). Not pictured: **Michael Jurs** (vice president - external). For more information on the ESC and National Engineers Week activities, see esc.calpoly.edu.

Great Grads

Cal Poly Engineering announces its 2013 outstanding graduates

Cal Poly Engineering announced its 2013 Outstanding Graduates at the collegewide Project Expo in late May.

Mechanical engineering senior **Andrew Nahab** was recognized as the College of Engineering's top-most graduating senior for academic excellence. Nahab earned a 3.978 GPA and a place on the Dean's List and President's List every quarter from 2009-12. As an undergraduate, Nahab interned at Phillips 66, Woodward HRT and Abraxas Energy, gaining experience in industries that include oil and gas; aerospace; and heating, ventilation and air conditioning. He was the recipient of numerous scholarships, including the Donald Chivens Scholarship, Manjit K. Bain Mechanical Engineering Scholarship, Adele and Aldo Alessio Scholarship, and Robert Byrd Scholarship.

Computer science senior **Eriq Augustine** was named Outstanding Graduating Senior for Contributions to the College of Engineering. Over the course of his education, Augustine has participated in a wide range of organizations, including the Association for Computing Machinery, White Hat Club, Cal Poly Linux Users Group, Cal Poly Game Development Club, Badminton Club, Minna No Anime and the Chinese Cultural Club. He has served as vice president of the Cal Poly Progressive Student Alliance and is an officer in the Graduate Student Association. Augustine is known for making important contributions as a teaching assistant, instructor and departmental lead tutor.

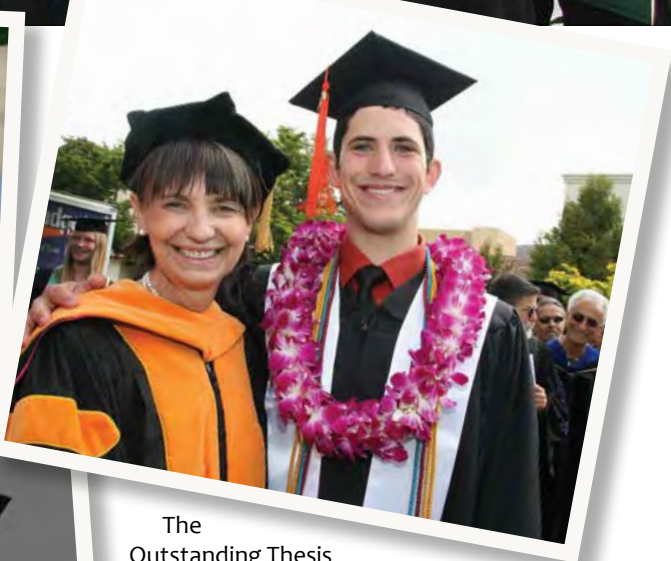
Civil engineering senior **Aaron Opdyke** was honored as the Outstanding Graduating Senior for Contributions to the University. Opdyke is distinguished by his work with Engineers Without Borders-Cal Poly (EWB), a group that supports community development programs in Thailand, India and Nicaragua by collaborating with local partners to design and implement sustainable engineering projects (see below).

Computer science senior **Ross Light** was named the



Clockwise from top: Outstanding Graduating Seniors; Dean Debra Larson and Andrew Nahab; Cal Poly president Jeffrey D. Armstrong with Aldrin Montana; Eriq Augustine and Aaron Opdyke.

Outstanding Graduating Senior for Service to the Community for his mentorship of Atascadero High School's robotics team, The Greybots. The group of up to 25 students competed in the FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition, an international competition. Ross taught the students to program a robot they built and designed over the course of six weeks. For many of the students, this was their first introduction to programming. In 2011, Ross helped the team win the world championship in St. Louis, an event that drew more than 300 teams.



The Outstanding Thesis Awards for the College of Engineering went to **Aldrin Montana** (computer science) and **Jonathan Lichtwardt** (aerospace engineering).

Announced as the Student Volunteer of the Year was second-year civil engineering student **Connor Paquin**. Paquin was recognized for instigating a pilot peer mentoring program in collaboration with the Engineering Advising Center and the Multicultural Engineering Program. Known as Poly Pals, the program matches first-year engineering students with undergraduates in their departments. ■



Opdyke Receives National Engineers Without Borders Award

Aaron Opdyke, president of the Cal Poly student chapter of Engineers Without Borders (EWB), was named the 2013 recipient of the Student Founders' Award by EWB-USA.

The award, announced during Engineers Week in February, acknowledges the exceptional efforts of individual members in leading their regions' or chapters' work on sustainable engineering projects in developing countries.

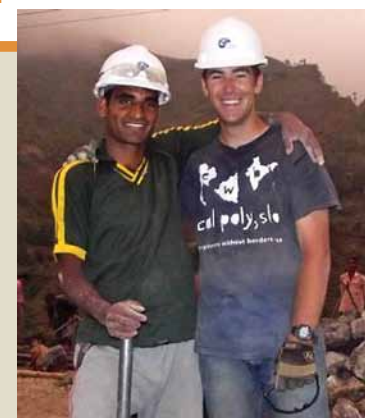
Last year, following Opdyke's first term as president, the Cal Poly chapter was recognized as the National Premier Student Chapter by EWB-USA.

"One of the main reasons I was drawn to Cal Poly was its strong Engi-

neers Without Borders chapter, and I wasn't disappointed," said Opdyke. "I wanted to find a way to apply my engineering skills to global projects that had a meaningful impact. EWB was the answer."

Opdyke co-founded EWB-Cal Poly's India program during his first year of college, and led the team on its initial assessment trip as a project manager. He has also worked extensively with the design and implementation of wastewater treatment facilities for this program, traveling on two trips.

"Engineers Without Borders has expanded my experiences beyond the classroom and transformed how I see the world," said Opdyke. ■



Aaron Opdyke, right, in India.

Cal Poly Concrete Canoe Tips Over the Competition

Steel bridge team finishes second at ASCE Pacific Southwest Conference

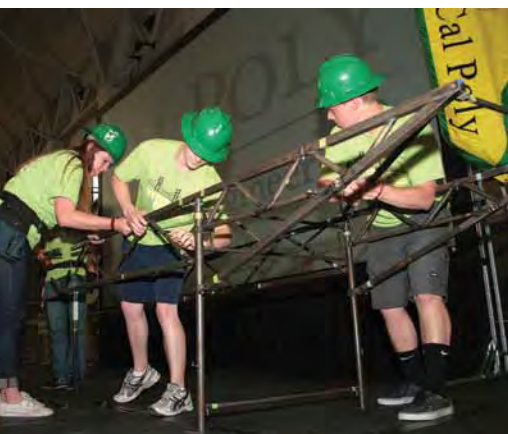
Cal Poly's Concrete Canoe took first place in design for the fifth year in a row at the National Concrete Canoe Competition held June 20-22 at the University of Illinois at Urbana-Champaign. Sponsored by the American Society of Civil Engineers (ASCE), the event drew 23 collegiate teams from across the United States, Canada and Puerto Rico.

Cal Poly's winning design, combined with some fast paddling, won the team a strong fourth-place showing.

To qualify and get to the national level, Cal Poly first had to win at the ASCE Pacific Southwest Conference (PSWC) held in April. At that event, the Concrete Canoe team won all

three academic categories – design paper, oral presentation and final product – and took first place in all four races in which it participated.

Cal Poly's Steel Bridge team placed second overall at the PSWC, scoring high in the category of construction



speed. The Steel Bridge team was led by senior captains **Kari Johnson**, **Brent Clavin** and **Trent Casillas**. Assistant captains included **Jose Ascencio**, **Alan Blevins**, **Shauna Kean**, **Demi Pacifuentes**, **Andrew Ricker**, **Alex Vlosky** and **Joseph Wild**.

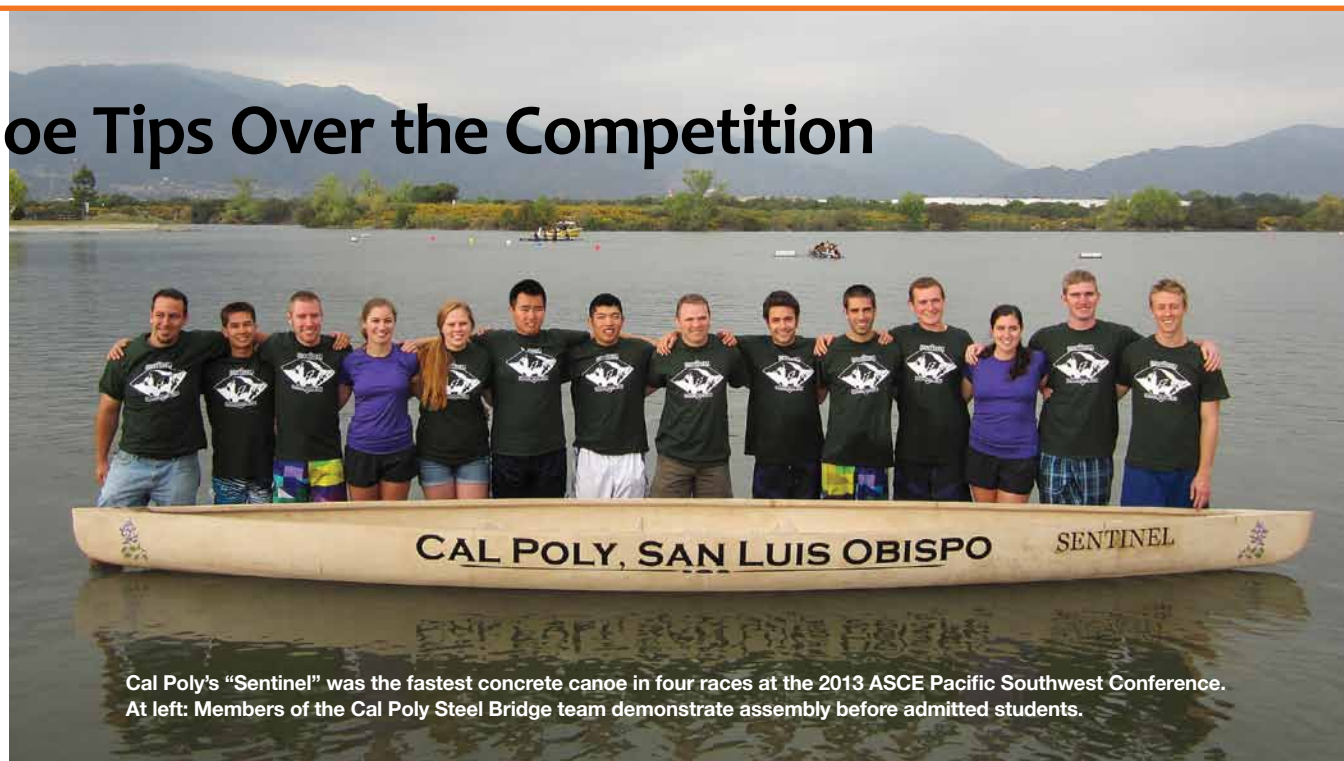
The concrete canoe team included **Alicia Welling**, project manager, and captains **Jason Armes**, **Heather**

Baessler, **Jason Cui**, **Marc Saar**, **Katrina Watkins** and **Thomas Wong**. The faculty advisor was **Gregg Fiegel**.

At the National Concrete Canoe Competition, Cal Poly faced challenges that prevented a fourth-in-a-row championship title. "Right after winning the endurance and slalom events, a severe thunderstorm with lightning passed through," said Welling. "As a

result, the men's, women's and co-ed sprint events were called off."

In the oral presentation, the team lost points for exceeding the time allotted. Nonetheless, the Cal Poly design received national media attention, including a story in the New York Times that noted the canoe's workmanship, elegance and advanced features. ■



Cal Poly's "Sentinel" was the fastest concrete canoe in four races at the 2013 ASCE Pacific Southwest Conference. At left: Members of the Cal Poly Steel Bridge team demonstrate assembly before admitted students.

Cal Poly's Leaning Power

Leaning trike design places second at 2013 Human Powered Vehicle Challenge West

Cal Poly leaned in at the 2013 Human Powered Vehicle Challenge West, taking second place for an innovative leaning-trike design. The team finished fourth overall at the regional competition held at San Jose State University.

"The design certainly set us apart. Very few vehicles are built as leaning trikes," said **Matt Baker**, mechanical engineering senior and club president. "It was gratifying to see the design generate so much curiosity among other teams, and to see their interest in how we managed to design and build the vehicle.

"We chose the leaning tricycle design in response to changing competition rules. In recent years the contest has been shifting more to a utility-based vehicle and less to a speed bike. Our design is not only novel, it offers very real advantages — adding the stability of three wheels while maintaining the feel and quickness of a bike."

What didn't quite mesh for the team's entry this year was its drivetrain: "There was more drag in the system than we would have liked," said Baker.

In addition to Baker, team members included mechani-

cal engineering graduate student **Josh Smith**; seniors **Bryan Cook**, **Will Hilgenberg**, **Judy Lantaca**, **Jenny Sevilla** and **Samantha Weiner**; juniors **Matthew Allen**, **Peter Aumann**, **Trent Hellman**, **Marley Miller**, **Alex Nolan**, **Alex Powers**, **Lauren Romero** and **Zachary Yasuda**; sophomore **Cody Anderson**; and computer science graduate student **Kimberly Paterson**. **Kim Shollenberger** and **Andrew Kean** were faculty advisors; **George Leone**, technical advisor.

The Rose-Hulman Institute of Technology was top-ranked overall, followed by Colorado State University, Missouri University of Science and Technology and Cal Poly.

Founded as the American Society of Mechanical Engineers, ASME promotes the art, science and practice of multidisciplinary engineering and allied sciences around the globe. ASME's international Human Powered Vehicle Challenge provides an opportunity for students to demonstrate the application of engineering design principles in the development of sustainable and practical transportation alternatives.

For more on the national society, see www.asme.org. For more on Cal Poly ASME, see www.me.calpoly.edu/cpr/asmel/. ■



A unique leaning trike set Cal Poly apart from the other entries in the 2013 Human Powered Vehicle Challenge West competition.

(Zero) Gravity

Five Cal Poly engineering students take a weightless ride

A team of five Cal Poly engineering students conducted hands-on experiments in near-zero gravity this summer as part of NASA's Reduced Gravity Education Flight Program at Johnson Space Center in Houston.

The undergraduate team from Cal Poly Engineering was among six in the nation selected to conduct experiments related to current NASA research. The teams were selected based on scientific merit, educational outreach potential and team dynamics.

Cal Poly team members included **Christian Hume**, a fourth-year electrical engineering major; **Brandon Bussjaeger**, a fourth-year computer science major; **Sara Lillard**, an aerospace engineering senior; and **Jenna Becker** and **Bodin Rojanachai-phanin**, both mechanical engineering seniors. **John Oliver**, associate professor in Electrical Engineering and director of the Computer Engineering Program, was faculty advisor; **Robert Hirsch**, a NASA aerospace engineer, served as NASA mentor.

The program gave participants rare access to virtually gravity-free conditions to perform scientific experiments. The near-weightless environment was achieved aboard NASA's G-Force One, a modified Boeing 727 airliner nicknamed the "Weightless Wonder." The aircraft produces periods of weightlessness lasting up to 25 seconds by executing a series of



extreme parabolic maneuvers over the Gulf of Mexico.

The Cal Poly experiment demonstrated the ability of a free-floating system to locate a point of interest and track it autonomously in real time for an extended period.



Professor John Oliver and five Cal Poly Engineering students participated in NASA's Reduced Gravity Education Flight Program last summer. Below left, mechanical engineering senior Jenna Becker seemed to enjoy floating in air.



The work contributes to technology currently in development by NASA to allow spacecraft to make unmanned landings on remote, rough-terrain surfaces, such as the moon or Mars.

"It's incredibly satisfying to be able

to see a project like this through in its entirety: from its design to its construction to its successful performance. And the cherry on top was the opportunity to experience weightlessness. It was fantastic and indescribable," said Becker. ■



Cal Poly Wins International Vehicle Safety Design Competition

Collision-avoidance technology created by the team took first place at the Enhanced Safety of Vehicles (ESV) International Collegiate Student Safety Technology Design Competition held in late May in Seoul, Korea.

Ian Painter and **Elliot Carlson**, both seniors, and **Thomas Stevens**, a graduate student, worked with faculty advisor **Charles Birdsong** to develop a 10th-scale vehicle prototype that uses a light detection and ranging (LIDAR) sensor to aid a driver in last-minute maneuvers around a crash obstacle.

In March, Cal Poly was chosen by the U.S. Department of Transportation (DOT) as one of two finalist teams to represent

Cal Poly's winning team at ESV design competition were, left to right, faculty advisor Charles Birdsong with students Ian Painter, Elliot Carlson and Thomas Stevens.

North America at the international technical conference. They competed against finalists from Korea and Japan. The student competition was sponsored by the National Highway Traffic Safety Administration and the DOT.

"The event is all about the cutting edge of vehicle safety technology. Crash and injury mitigation have been huge topics of research for many years but the next logical step is to avoid collisions entirely," said Painter. "With this year's release of the first steer-by-wire car in which the steering wheel is linked by computer to the wheels, it's clear that autonomous steering maneuvers are becoming a realizable proposition.

"It was exciting to learn that we were investigating many

Please see SAFETY, Page 14

Enlivening the Library

Computer Science student named 'Best in the West' employee for work on Robert E. Kennedy Library website

At Cal Poly's Robert E. Kennedy Library, information is everywhere – and so, it seems, is **Glen Beebe**. The third-year computer science major was recently named Student Employee of the Year by the Western Association of Student Employment Administrators (WASEA) for his contributions to enhancing users' digital experience of Robert E. Kennedy Library.

Beebe has worked as a programmer and web developer for the campus Robert E. Kennedy Library for the past two years, focusing on the library's website. He was selected by WASEA from among 600 nominees from 13 western states.

"Glen doesn't just program — he makes sure users have the best online experience possible," said Conny Liegl, Kennedy Library's web designer, who nominated Beebe for the honor. "That includes a real talent for marketing and outreach. His efforts contributed to the success of our 'I'm with the Banned' campaign as part of the 2012 Banned Books Week. The promotion featured an interactive website, and his handiwork helped draw more than 6,000 visitors and prompted dozens of libraries across the nation to link to our site."

"He's more than just a web developer. He comes up with intelligent solutions for programming issues, and happily shares his codes and ideas so that other libraries can benefit from his work. He has received

thank you notes from librarians throughout the U.S. for making their work easier."

Said Beebe: "I work with an amazingly collaborative and creative team that strives to enhance the technological connection between students and the library. The need for libraries is never going away, and we work hard to stay current and keep people coming back."

Beebe credits Cal Poly Engineering's computer science classes for giving him the foundation in programming concepts that have led to his achievements at the library.

"My library projects have immersed me in languages such as HTML5, CSS, Javascript/JQuery, PHP, Python and MySQL. And some, involving databases, spurred me to take a computer engineering database class that I

might not have otherwise considered. The skills I have learned here will be applicable to any career path I pursue.

"My favorite project has been the Banned Books Week promotion, in which I collaborated with graphic designers **Kate Johnson** and **Fiona Fung** to put together an interactive infographic for Banned Books Week explaining the types of books that are banned. It was exciting to learn that, as a result, the library received the John Cotton Dana Award honoring outstanding library public relations and marketing, including an award of \$10,000 from the American Library Association. We are all so ecstatic about this around here!" ■



Glen Beebe, left, was presented with the Student Employee of the Year Award by Cal Poly President Jeffrey D. Armstrong.

Cal Poly Solar Team's Environmental Solution Wins First Place at International Competition

Cal Poly Engineering students' vision of a solar still earned the team first place at the international Environmental Design Contest held in April at New Mexico State University (NMSU) in Las Cruces, N.M.

The challenge was to develop a more efficient solar desalination unit. For their entry, a group of Cal Poly's environmental engineering students designed and built a solar still to convert brackish groundwater to fresh water for rural, low-income communities with limited access to electricity.

Led by **Kyle Lee**, team members included **Yakov Suvorov**, **Shasta Billings**, **Cherie Du**, **Brian Kane**, **Chris Pittner**, **Carter Reiff**, **Tiffany Racz** and **Maddie Bouvier**.

A \$2,500 prize was awarded with the first-place finish. The Cal Poly team also received the Intel Environmental Innovation Award of \$2,500 and was one of four teams to earn a special renewable energy award and \$1,000 from the United States Bureau of Reclamation.



Cal Poly Engineering students work on the wooden base for their solar desalination unit, shown below.

In response to the research conducted during this year's competition, NMSU's Institute for Energy and the Environment created an internship to foster selected work. Team members had to apply for the internship; selection was based on experiments the applicants suggested for their bench scale model and the potential the students identified to improve their original designs.

Pittner and Suvorov were selected for the new internship, in addition to NMSU chemical engineering student Rachel Woods.

"For a number of schools, the contest is part of a year-long design course," said Suvorov. "But, for us, it is part of a special one-unit, student-led course, with just two quarters to get everything together — from research and design to fabrication and presentation.

"We prize the opportunity to expand on our design and gain new knowledge, experience and connections to take it to the next level." ■



Safety

From Page 13

of the same problems and opportunities that major automotive companies are looking at right now."

Birdsong, a mechanical engineering professor, has been working on collision avoidance for many years through student projects. This year's success, he noted, combined Learn by Doing with

the knowledge accrued and shared by successive student teams.

"This was Cal Poly's fourth entry into the competition. Our students had made it to the international finals two times before, but this is our first win. This year's project was an extension of many students' work, including a grad student, **Nikola Noxon**, who worked on the stability control problem, and the senior project team of 2010 that put the

car together and implemented the path-planning algorithm."

"Our team is particularly proud of the fact that we designed with the user in mind," added Painter. "Our system is designed so that someone driving the car will leave feeling excited and satisfied. We also preempted many of the judging panel's 'why didn't you...' and 'what if...' questions, which I believe is a large part of this year's success." ■



Cal Poly's collision-avoidance system uses a one-tenth sized model employing a light detection and ranging (LIDAR) sensor.

Students Put on Thinking Caps

The newest definition of a computer system includes humans in the mix, which was the inspiration for a new class taught last spring by **Tina Smilkstein**, assistant professor in the Computer Engineering Program.

The EE 521 class focused on medical technology applications within the growing field of human-computer interactions.

“The scope of the class took computer engineering students into areas beyond the boundaries of their curriculum,” said Smilkstein. “The makeup of the multidisciplinary teams drew from psychology and biomedical engineering disciplines, as well as the full range of computer-related majors — and the result was some incredible projects.”

One of the projects explored the realm of brain-computer interface technology by designing a non-invasive EEG (electroencephalography) system that uses a dry electrode cap to pick up the wearer’s brain activity.

“Specific regions of the brain control different mental functions — muscle move-

ment, focus, awareness, memory,” said **Kellen Hillmann**, electrical engineering senior and project manager. “With this device we

can map out activity levels of each part of the brain. Worn as a helmet, it can be used by anyone to monitor multiple areas of their own brain.”

The students built their electrodes from scratch and designed a smart phone app for viewing the EEG. A psychology major on the team provided data for analyzing the EEG signals.

In addition to Hillman, team members included **Bassem Tossoun**, a computer engineering graduate student; **Tanner Stevenson** and **Ken Tran**, biomedical engineering seniors; **Sourabh Katti**, electrical engineering senior; and **Matt Glenwright**, psychology senior.

An imperceptible change in face color that accompanies each human heartbeat was the basis of another project. Electrical engineering students **Alan Kenyon**, **Miguel Buenrostro** and **Matt Lienemann** adapted an algorithm, developed at MIT, to amplify a face’s color change in real time.

“With a camera application, individuals see their heartbeat face-to-face,” said Smilkstein. ■



Wheels in the Sand

Beach wheelchair project helps people with disabilities enjoy the sand — and the water

Nine Cal Poly Engineering students working as Team SandCrawler have developed a beach wheelchair that allows someone with physical disabilities to have a “full beach experience” that includes reaching the sand, moving easily around the beach and even entering the water. In October, team members **Sam Coyne** (general engineering) and **Rory Aronson** (mechanical engineering) took the sand wheelchair down to Avila Beach for some testing. The wheelchair, which is propelled by a hand crank, uses large balloon tires that allow easy travel across the sand and provide adequate buoyancy in the water. Other members of Team SandCrawler include Joshua Marcum, Alex Hayes, Alexa Colburn, Max Hessel, Benedikt Strauss, Marvin Rimmele and Marco Pietsch.



Engineering students **Sam Coyne** and **Rory Aronson** ran the beach wheelchair through a series of tests in Avila Beach.



Cal Poly Engineering Students Present their Spacecraft Designs to Lockheed Martin Engineers

At the conclusion of their year-long Spacecraft Design class taught by **David Esposto**, Cal Poly aerospace engineering students didn’t simply turn in a project or paper. Instead, following real-world standard commercial and government contract procedures, they completed a “customer” design review with Lockheed Martin Space Systems Company for Geostationary Satellites and Service Vehicles.

At the start of the academic year, the students received a request for proposal (RFP), and then performed research, calculations and simulations to design the spacecraft that met the RFP requirements. The 19 students then presented their designs to a group of 30 experienced Lockheed Martin engineers, who acted as an independent review panel for this project as part of the company’s engagement activities with Cal Poly.

Student **Ryan Rader** said that the design review gave him insight into things “that you cannot look up in a textbook,” including increased knowledge of technical issues as-

sociated with spacecraft design.

“The students demonstrated a love for the aerospace industry, a command of their discipline, and an inquisitive nature to learn and innovate,” said Julie Sattler, vice president and general manager of special programs, Lockheed Martin Space Systems Company. “Their design solutions were unconstrained by traditional designs and lessons learned, providing new perspectives to us as engineers.”

Student **Leila Tebyani**’s favorite part of the design presentation was “the number of people who came to the presentation, the quality of feedback and the burst of inspiration from Julie Sattler.” In addition to evaluating the spacecraft designs, Sattler provided the students with insights on career options.

“Exposure to real-world work practices through project-based learning fosters students’ creative and critical thinking skills, both of which are imperative to the type of work we do,” said Tory Bruno, president of Strategic & Missile Defense Systems, Lockheed Martin Space Systems Company. ■

BME's Lanny Griffin Receives Distinguished Scholarship Award

Cal Poly Biomedical and General Engineering Professor **Lanny Griffin** received the university's Distinguished Scholarship Award for 2012-13. An internationally recognized authority on bone mechanics, Griffin is noted for pursuing dynamic sponsored research projects that provide positive learning outcomes for students and innovative outcomes for medical practitioners.



Lanny Griffin
Biomedical Engineering

Griffin's work focuses on orthodontic hardware and surgical closure techniques of the chest cavity. His special expertise allows him to advance research on a larger scale by serving as a technical

reviewer for the National Institutes of Health and Defense Advanced Research Projects Agency.

Griffin incorporates his research examples into his curriculum and provides myriad opportunities for his students to engage in real-world research. He joined Cal Poly in 1997 and was a key figure in the establishment of the Biomedical and General Engineering Department.

Griffin also serves in the U.S. Army Reserve at the U.S. Military Academy and has been recently called into active duty as an instructor in the Civil Engineering and Mechanical Engineering Departments. ■

Water or Foam?

Cal Poly leads research into the best way to fight fires

A multidisciplinary research effort funded by the Department of Homeland Security underway at Cal Poly's Fire Protection Engineering Program will be the first comprehensive scientific study conducted on the benefits of foam versus water to fight structural and interior fires.

Already an accepted practice for fighting wildfires, the use of compressed air foam systems on structural fires is considered an unproven technology.

Because foam needs less water, it is useful for fighting fires in remote locations. Other attributes — including faster knockdown time, rapid heat reduction and lowered potential for flare-ups — can be adapted for fighting structural fires.

Questions remain, however, about the safety, reliability and cost of foam compared to water. The \$1 million grant from the Assistance to Firefighters Grant



Fire protection engineering students are studying fighting fires with foam.

program will help the Cal Poly research team establish a scientific basis for how, where, when or if compressed foam is used.

Faculty, scientists and students from a cross-section of disciplines including engineering, construction management and fire safety are participating in the research project.

"The collaboration of three different colleges at Cal Poly is a great reflection of the interdisciplinary

work that the university espouses, which benefits faculty, students and the nation as a whole," said **Christopher Dicus**, professor and graduate coordinator, Cal Poly Natural Resources Management and Environmental Sciences Department.

For more information on the Fire Protection Engineering Program and updates go to www.fpe.calpoly.edu/about/research.html. ■

Tower of Wind Power



The Cal Poly Wind Project has moved into the data collection phase. Above, Mechanical Engineering Professor Patrick Lemieux, right, and junior Alex O'Hearn discuss the collection of data from Cal Poly's 3-kilowatt wind turbine during a visit to the site at Cal Poly's Esquella Ranch in October. Sitting atop a 70-foot tower, the student-built turbine became fully operational in late spring.

At left, Lemieux adjusts the digital meter, which draws power from a solar panel when the turbine is locked down.

"We are beginning to analyze all the raw data on current, voltage and wind speed to determine where the turbine is most efficient," O'Hearn said. "It's actually pretty exciting stuff." ■

Faculty Notes

Dean's Office

Debra Larson, dean, was elected to a two-year term, 2013-15, as the co-chair of the Undergraduate Experience Committee of the American Society for Engineering Education (ASEE) Engineering Deans Council.

Rakesh Goel, associate dean, was appointed by the Executive Committee of the Technical Activities Division of the Structural Engineering Institute to a three-year term as chair of the Technical Administrative Committee (TAC) on Dynamic Effects.

Multidisciplinary

Alex Dekhtyar (Computer Science), **Anya Goodman** (Chemistry) and computer science graduate student **Aldrin Montana** won Best Paper at the 2013 Pacific Southwest Regional American Society for Engineering Education (ASEE) Conference in Riverside, Calif., for "Teaching Bioinformatics in Concert: an Interdisciplinary Collaborative Project-based Experience."

Scott Hazelwood (Biomedical Engineering) and **Steve Klisch** (Mechanical Engineering) co-authored three poster presentations at the American Society of Mechanical Engineers (ASME) Summer Bioengineering Conference in Sunriver, Ore.:

- "Integrating qPLM and Biomechanical Test Data with an Anisotropic Fiber Distribution Model and In Vitro Regulation of Articular Cartilage Fiber Modulus" (abstract 14092, 2013) co-authored with mechanical engineering students **Mike Stender** and **Kevin Yamauchi**; UC Davis colleagues **Chris Raub**, **Reza Shirazi** and **Robert Sah**; and **Pasquale Vena** from Politecnico di Milano.

- "Matrix Remodeling Accompanies In Vitro Articular Cartilage Shaping" (abstract 14106, 2013) with biomedical engineering students **Nathan Balcom**, **Dominic Grisafe** and **Daniel Crawford**,

Klisch Named the Constant J. and Dorothy F. Chrones Professor

Mechanical Engineering Professor **Steve Klisch**, an expert in biomechanics and continuum mechanics, has been named the Constant J. and Dorothy F. Chrones Professor. He will use the two-year endowment to acquire a motion analysis system to support Cal Poly's emerging Human Motion Biomechanics (HMB) Lab.

According to Klisch, the long-term goals of the HMB Lab are to enhance research and education through multidisciplinary efforts among faculty and students; provide broad benefits to society through basic and applied research in human motion biomechan-

ics; and develop proposals to external agencies for large, collaborative, multidisciplinary projects.

"The HMB Lab's main research efforts will include biomechanical engineering studies aimed at improving clinical approaches related to the prevention, treatment and rehabilitation of articular cartilage and bone defects in hip and knee joints," explained Klisch.

Constant and Dorothy Chrones established the professor endowment in 2005, stating that they arranged this generous bequest because of their belief in Cal Poly and the way things are taught here: engineering for the real world.

and mechanical engineering student **Juan Gutierrez-Franco**, along with UC Davis colleagues.

- "Glycosaminoglycan and Collagen Remodeling During In Vitro Dynamic Unconfined Compression of Articular Cartilage: Experiments and Finite Element Modeling" (abstract 14286, 2013) with Yamauchi and UC Davis colleagues.

Trevor Harding (Materials Engineering), **Linda Vanasupa** (Materials Engineering) and **Liz Schlemer** (Industrial and Manufacturing Engineering) conducted a workshop at the Engineering Social Justice and Peace Conference in Troy, N.Y. called "Fishing Together: What Does It Take?"

David Hey (Kinesiology), **Brian Self** (Mechanical Engineering), **Lynne Slivovsky** (Computer Engineering/Electrical Engineering), **Kevin Taylor** (Kinesiology), and **Jim Widmann** (Mechanical Engineering) co-authored "Adapted Physical Activity Design Projects: A Collaboration Between Kinesiology and Engineering" presented at the ASEE Annual Conference and Exposition in Indianapolis, Ind.

Brian Self (Mechanical Engineering), **Lynne Slivovsky** (Computer Engineering/Electrical Engineering), **Kevin Taylor** (Kinesiology), **Jim Widmann** (Mechanical Engineering) and kinesiology undergraduates **Elizabeth Alison**, **Alexa Colburn** and **Andrea Hernandez** co-authored "Adapted Throwing Frame and Equipment Cart" presented at the California Association for Health, Physical Education, Recreation and Dance (CAHPERD) Annual State Conference in Santa Clara, Calif.

Aerospace Engineering

David Marshall's extensive research for NASA was featured in an article in Popular Science about the future of flight. See <http://www.popsci.com/technology/article/2013-06/future-flight-new-designs-will-end-congestion>.

Biomedical & General Engineering

Kristin Cardinal was featured in the March-April issue of Prism published by ASEE. The article examines work done by Cardinal and

other researchers to develop human tissue in a lab, opening up a new way to test medical therapies without involving patients or animals. See https://connect.calpoly.edu/service/home/~K%20Cardinal%20ASEE%20Prism%20article.pdf?auth=co&loc=en_US&id=220651&part=2.

Trevor Cardinal was elected secretary of the Microcirculatory Society. The group includes life scientists, engineers and physicians working to study microcirculation and develop disease diagnostics and therapies.

Cardinal, biomedical engineering graduate student **Josh Cutts** and colleagues from the University of Virginia and Johns Hopkins University co-authored "MURINE SPINOTRAPEZIUS MODEL TO ASSESS THE IMPACT OF ARTERIOLAR LIGATION ON MICROVASCULAR FUNCTION AND REMODELING," published in Visualized Experiments (2013 March 3; (73):e50218; doi: 10.3791/50218).

Cardinal, Cutts and a collaborator from Johns Hopkins co-authored "Functional Vasodilation is Impaired in Arterialized Capillaries following Ischemia" presented by Cutts at the Annual Meeting of the Microcirculatory Society in San Diego (FASEB J. 2013(27) 685.21). At the same conference, Cardinal

Graduate student Jeff Pyle, left, is working with Professors Steve Klisch, right, and Scott Hazelwood to develop a human hip joint finite element model from CT scans, which will use data obtained from the motion analysis system to analyze tissue stresses during select exercises. Shown on the computer image are predictions of maximum hip cartilage strains during normal walking.

delivered a poster presentation on “The Impact of Outward Remodeling on Vasodilation in skeletal Muscle Resistance Arteries” authored by **Ryan Gallagher** (B.S./M.S., Biomedical Engineering, 2012) (FASEB J. 2013(27) 685.18).

Civil & Environmental Engineering

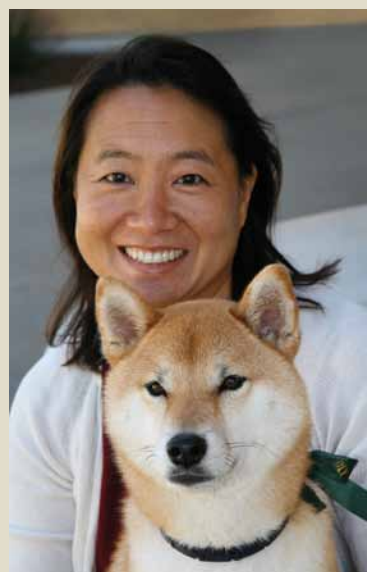
Gregg Fiegel was appointed to a three-year term as American Society of Civil Engineers (ASCE) Region 9 at-large governor.

Jim Hanson received the 2013 George K. Wadlin Distinguished Service Award from the ASCE Civil Engineering Division.

Robb Moss served as a visiting professor during his sabbatical in 2012-13 at Universidad de Concepcion in Concepcion, Chile, and Montana State University. He published Applied Civil Engineering Risk Analysis (Shedwick Press, 2013, www.createspace.com/4412096). He also co-authored five journal papers:

- “Shake Table Testing to Quantify Seismic Soil-Structure Interaction of Underground Structures” in Earthquake Spectra (August 2013).
- “The impact of Material Stiffness on the Likelihood of Fault Rupture Propagating to the Ground Surface” in Seismological Research Letter (Vol.84, no.3, 485-488, May/June, 2013).
- “Shear Wave Velocity-Based Probabilistic and Deterministic Assessment of Seismic Soil Liquefaction Potential” in the Journal of Geotechnical and Geoenvironmental Engineering (March 2013, Vol. 139, No. 3, pp. 407-419).
- “Liquefaction at Strong Motion Stations and in Urayasu City during the 2011 Tohoku-Oki Earthquake” in Earthquake Spectra (Vol. 29, S1, pp.S55-S80).
- “Verifying Liquefaction Remediation Beneath an Earth Dam Using SPT and CPT Based Methods” (Soil Dynamics and Earthquake Engineering, Vol. 53, pp. 130-144, Oct. 2013).

Yarrow Nelson co-authored “Settling and Bioflocculation of Two Species of Algae Used in Wastewater Treatment and Algae Biomass Production” with **Derek Manheim** (B.S./M.S., Environmental Engi-



Kathy Chen & Satchi
Materials Engineering

Chen Appointed Chair of Materials Engineering

Kathy Chen is serving her second stint as chair of the Materials Engineering Department. Her previous appointment was in 2006-09. Chen joined Cal Poly in 1999 after working at the Los Alamos National Laboratories in New Mexico.

With a doctorate in materials science from Massachusetts Institute of Technology, Chen’s research focus is in nickel titanium shape memory alloys. She is also very involved in the design of learning experience and outreach programs to pre-college audiences, such as NanoDays, which offer hands-on activities that demonstrate different, unexpected properties of materials at the nanoscale level.

neering, 2012) published in the AIChE Journal of Environmental Progress and Sustainable Energy.

Nelson received \$200,000 in grants from the Department of Energy to investigate methods to bioremediate the Susana Field Laboratory in southern California. Nuclear and energy research and liquid propulsion rocket engine tests by the U.S. Department of Defense, the National Aeronautics and Space Administration, the United States Air Force and several commercial companies at the site has resulted in soil contamination with significant amounts of poly chlorinated biphenyls, dioxins, petroleum hydrocarbons, polycyclic aromatic hydrocarbons and mercury. Nelson’s three commissioned studies involve phytoremediation (using plants to remove or biodegrade contaminants), bioremediation (using bacteria and/or fungi to biodegrade the contaminants), and natural attenuation (using natural processes on site to reduce contaminant concentrations).

Nelson also received funding from Greenbelt Resources Corp. and its subsidiary Diversified Ethanol Corp. for research on fermentation testing related to various ethanol production-related feedstocks.

Anurag Pande was selected technical editor of the Traffic Engineering Handbook, 7th Edition, published by the Institute of Transportation Engineers.

Computer Science & Software Engineering

John Clements spent the last two quarters on sabbatical working for the nonprofit Mozilla, the makers of Firefox. He collaborated with the company’s research team on the Rust programming language, and successfully implemented macro hygiene for

let-bound variables in Rust.

Alex Dekhtyar presented “Human Recoverability Index: a TraceLab Experiment” at the Traceability in Emerging Forms of Software Engineering Workshop held as part of the International Conference on Software Engineering in San Francisco. The paper was co-authored by Michael Hilton (M.S., Computer Science, 2013).

“Improving Requirements Tracing via Information Retrieval,” co-authored by Dekhtyar, received the Most Influential Paper Award at the 2013 International Conference on Requirements Engineering.

With colleagues from the University of Massachusetts, Lowell and the University of Kentucky, Dekhtyar co-authored “Uncertain Data: Representations, Query Processing, and Applications,” a chapter in “Advances in Probabilistic Databases for Uncertain Information Management” (Zongmin Ma and Li Yan, eds., Springer Publishing, 2013).

Alex Dekhtyar and **Chris Lupo** have received a CP Connect grant to acquire 40 Raspberry Pi computers to use in graduate and undergraduate coursework on distributed systems.

David Janzen co-authored a paper with **John Clements** and **Michael Hilton** (M.S., Computer Science, 2013) titled “An Evaluation of Interactive Test-Driven Labs with



John Oliver
Computer Engineering

Oliver Named Computer Engineering Director

John Oliver, a professor in the Computer Engineering Program (CPE) and Electrical Engineering Department, has been appointed CPE director. An expert in computer architecture, energy efficient computing and sustainable computing, Oliver has stated, “I like the dynamic field of computer architecture. I’m currently working on investigating the environmental impact of semiconductors and how eco-related metrics can impact architectural design.” As CPE director, Oliver is interested in connecting with alumni. “This is CPE’s 25th year, so we’ll be making a special effort to engage with our alumni,” he said. Oliver holds a doctorate from U.C. Davis.

WebIDE in CSo,” which Janzen presented at the International Conference on Software Engineering in San Francisco. On completing his master’s degree at Cal Poly, Hilton was awarded the J.L. Moore Fellowship to support his doctoral studies at Oregon State University.

Electrical Engineering

Dennis Derickson, chair, received a \$20,000 grant from the Jet Propulsion Laboratories to investigate software-defined radio applications using the National Instruments USRP radio platform. He is working with two graduate students on the project.



Dale Dolan received research grants for “High Efficiency Portable Air Conditioner” (\$25,000 from UC Berkeley, Lawrence Berkeley National Laboratory, Max Tech and Beyond Appliance Design Competition) and for “Torture Stand Data Acquisition Board” (\$40,000 from Western Digital).

Dolan received a Distinguished Educator Award from the California Faculty Association. As chair of the Institute of Electrical and Electronics Engineers (IEEE) Power and Energy Society Central Coast Chapter, he also received two consecutive and highly competitive High Performing Chapter Awards. As faculty advisor to the Cal Poly IEEE Power and Energy Society, Dolan chaired the third annual Cal Poly Power and Energy Conference: Electric Vehicles and Energy Storage (May 2013), with sponsorship from San Diego Gas and Electric; Pacific Gas and Electric; and the IEEE Central Coast Chapter.



Dale Dolan, Taufik and electrical engineering undergraduate **Michael Ducasse** co-authored “Variability in Detailed Energy Usage on Repeated Trips in the Chevrolet Volt.” Dolan, Taufik and **Jim Dunning** (Cal Poly Office of Research) co-authored “Analysis of Detailed Electric Vehicle Data in Electrical Engineering Education” published at the 27th International Electric Vehicle Symposium in Barcelona, Spain. Dolan, Taufik and Ducasse also published “Characterizing Energy Usage of Chevrolet Volt Versus Speed” at the IEEE Conference on Technologies for Sustainability in Portland, Ore.



Xiomin Jin with **Guifang Dong** (Tsinghua University) and students co-authored “Improved Organic Optocouplers Based on a

New Engineering Faculty Bring Expertise in Cybersecurity, Clean Water Technologies

Zachary Peterson and **Rebekah Oulton** have very different fields of teaching and research, but their addition to the faculty demonstrates that the College of Engineering is looking to the future in its strategic planning. Both professors help position Cal Poly at the forefront of emerging fields and vital national and global challenges.

Peterson, who holds a doctorate from Johns Hopkins University and joins the Computer Science Department as an assistant professor, previously taught at the U.S. Naval Postgraduate School, where he developed cutting-edge curricula in the areas of secure storage systems, applied cryptography, and law and policy. He has received funding from the National Science Foundation for research in cyberse-

curity education. “My research interests extend to addressing the current shortage of security professionals in the United States,” he said.

Peterson’s appointment reflects the commitment of Cal Poly Engineering to become the nation’s leading supplier of cyber-ready professionals. Working with other faculty on campus, Peterson will lead in developing a cybersecurity curriculum at the undergraduate, graduate and professional levels.

With a doctorate from the University of Iowa, Oulton began teaching this fall as an assistant professor in the Civil and Environmental Engineering Department. An expert in advanced water treatment and water quality, Oulton has studied the development of nanotechnology-enabled advanced



Zachary Peterson
Computer Science



Rebekah Oulton
Environmental Engineering

treatment processes targeting emerging contaminants in water and wastewater.

Oulton plans to develop an undergraduate research program at Cal Poly that would provide hands-on opportunities for students interested in water and environmental chemistry, materials science, hydraulics, and water and wastewater treatment. ■

Deep Blue Fluorescent OLED and an Optimized Bilayer Heterojunction Photosensor” published in Elsevier: Sensors and Actuators B (Vol. 188, pp. 879–885, 2013). Jin and electrical engineering graduate student **Gabriel Halpin**, with colleagues from Peking University, co-authored “Study of Top ITO Nano-Gratings on GaN LEDs” presented by Halpin at the 13th IEEE International Conference on Nanotechnology in Beijing. At the conference, Jin’s senior design students, **Gabriela Aleman** and **Juliet Chico**, also presented “Transmission Efficiency Study of Grating Layer Location of a GaN Nano-grated Structure,” co-authored with Jin and colleagues from Peking University.



Xiomin Jin and **Helen Yu** with colleagues from Tsinghua University and Peking University co-authored “Virtual International Research/Education Center: Energy Saving LEDs” presented by Jin at the IEEE International Conference on Advanced Learning Technologies in Beijing.



Art MacCarley has been appointed interim department head of BioResource and Agricultural Engineering in the College of Agriculture, Food & Environmental Sciences.



Vladimir Prodanov received a \$15,000 grant from UC Berkeley, Lawrence Berkeley National Laboratory, Max Tech and

Beyond Appliance Design Competition for research on “Smart Strip: Smart Sensing Power Bar.” Dale Dolan is co-principal investigator on the project.



Xiao-Hua (Helen) Yu published “An Adaptive Filtering Approach for Electrocardiogram (ECG) Signal Noise Reduction Using Neural Networks” in Neurocomputing (Vol. 117, 2013). The paper was co-authored with alumnus **Suranai Pongpon-sri** (M.S., Electrical Engineering, 2009). Yu also presented and published two conference papers: “Autonomous Robot Path Optimization Using Firefly Algorithm,” co-authored with **Michael Brand** (B.S., Electrical Engineering, 2012) at the International Conference on Machine Learning and Cybernetics held in Tianjin, China, and “Multi-circle Detection for Bladder Cancer Diagnosis Based on Artificial Immune Systems” co-authored with **Dingran Lu** (M.S., Electrical Engineering, 2012) at the IEEE International Joint Conference on Neural Networks in Dallas, Texas.

Industrial & Manufacturing Engineering

Karen Bangs was selected as one of the nation’s most innovative, young engineering educators to take part in the National Academy of Engineering’s fifth Frontiers of Engineering Educa-

tion (FOEE) symposium in Irvine, Calif. Stephen W. Director, chair of the FOEE Advisory Committee, said, “Through this forum our engineering faculty are empowered to create the conditions to meaningfully engage engineering students in innovation and entrepreneurship to meet 21st century challenges and are encouraged to be agents of change at their home institutions.”



John Pan presented “Effect of Voiding in Solder Joints on Thermal Performance of the LED” at the 46th International Symposium on Microelectronics in Orlando, Fla., and served as a co-chair for a session on Pb-free solder and restriction on the use of hazardous substances (RoHS) at the conference. Pan gave an invited talk on “Microelectronics Packaging” at NuSil Technology in Carpinteria, Calif.

Pan received renewed funding from Western Digital for ongoing research on “Hard Defect Pattern Analysis.” He received \$100,000 in project sponsorship for “Evaluation of Gold-Plated Quad Flat No-leads (QFN) Packages After Thermal Cycling” from Agilent Technologies. Raytheon also provided \$18,000 to Pan to evaluate performance and reliability of environmentally friendly marking inks. Cisco Systems helped support IME 458, Pan’s course in microelectronics and electronic packaging.

Pan received a three-year appoint-

ment as an associate editor for the IEEE Transactions on Components, Packaging and Manufacturing Technology.



Liz Schlemer received the Best Paper Award for the Engineering Economy section at the ASEE annual meeting in Atlanta, Ga. The paper was titled “Project Based Learning in Engineering Economics: Teaching Advanced Topics Using a Stock Price Prediction Model.” Schlemer was invited to give a talk on “Post-Reductionist Model of STEM Learning: Can It Help the Cause of Green Engineering?” at the Green Chemistry and Engineering Conference in Bethesda, Md.

Materials Engineering

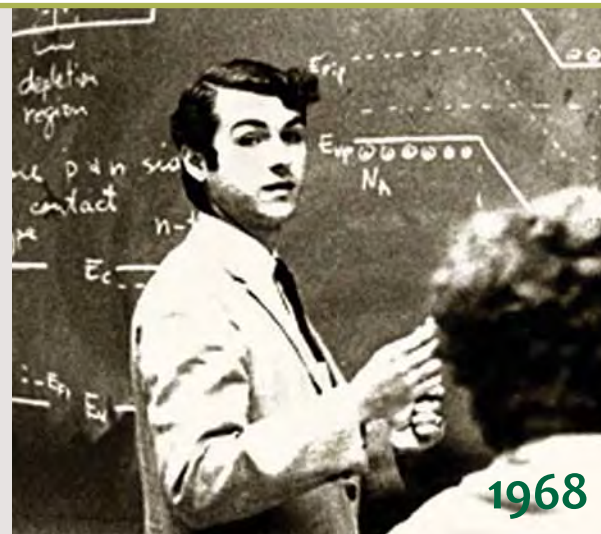
Kathy Chen, chair, was awarded a mini-grant from the Central Coast STEM Collaborative (www.ccstem.org/) to present the first SLO Mini Maker Faire in May 2013. The event was a collaboration with the San Luis Obispo Museum of Art, iFixit.com, and students and faculty from Materials Engineering, Architecture, Liberal Arts and Engineering Studies, Expressive Technology Studios and Kennedy Library’s Science Cafe.

Chen also helped organize two NanoDays events. In partnership with Bellevue Santa-Fe Charter School, she presented NanoDays at Cal Poly that highlighted the scanning electron microscope and the cleanroom. Chen also facilitated a NanoDays at the Exploration Station in Grover Beach, Calif.

Mechanical Engineering

Patrick Lemieux has continued with development of the Cal Poly Wind Turbine. The facility came online in May 2012; an active yaw drive was completed last winter.

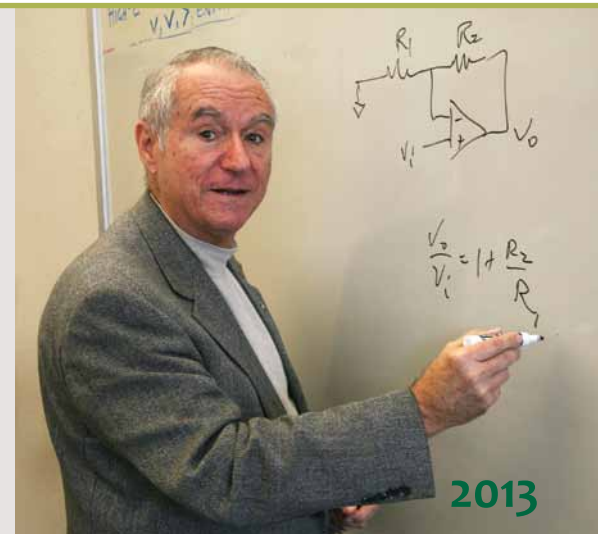
Lemieux co-authored papers including: “An ‘Inefficient Fin’ Non-Dimensional Parameter to Measure Gas Temperature Efficiently” published in NASA Tech Briefs (Vol. 36, No. 5, 2012); “Transient Small Wind Turbine Tower Structural Analysis with Coupled Rotor Dynamic Interaction” and “Design of a Safety System for Wind Turbine Tower Tilt-Down Operations” presented at the American Wind Energy Association Windpower 2012 Conference



1968

A 45-Year Legacy

Electrical Engineering Professor Mike Cirovic retires



2013

Mike Cirovic, perhaps Cal Poly’s longest-serving professor, is retiring after 45 years of teaching in the Electrical Engineering Department (EE).

The author of six textbooks, Cirovic served as department chair from 2001-07. He received numerous teaching awards, including the American Society for Engineering Education Dow Young Faculty Award, the TRW Excellence in Teaching Award, and the EE Department’s Most Inspirational Professor Award, which he won seven times.

“Mike’s a legendary figure in our depart-

ment,” said current chair **Dennis Derickson**. “In a career that spanned from the Flower Children to the Millennials, he made many significant contributions, including our Design, Build and Test electronics lab in which students design subsystems, build them, and then create trial procedures to test operation.

“He focused on rigorous career preparation for students and established a signature lab course, EE 449, which cuts students loose from the standard question-answer format, and instead requires independent thinking and open explora-

tion of problems. And he also co-founded Innovation Quest, a nonprofit corporation that helps students launch entrepreneurial ventures based on their projects.”

At a Bay Area alumni reception held in his honor, Cirovic met more than 100 of his former students.

“Two graduates remarked that they wished I was staying to teach even longer because they both have sons at Cal Poly and they would like their children to have me as their professor,” remarked Cirovic. “That was a spectacular moment for me.” ■

“In a career that spanned from the Flower Children to the Millennials, he made many significant contributions.”

Dennis Derickson (EE Department Chair)

in Atlanta, Ga.; and “Performance Measurement and Analysis of Vertical Shaft V-Twin Engines, and Comparison with Horizontal Engines of the Same Model Class” presented at the American Society of Mechanical Engineers (ASME) Internal Combustion Engine Division Fall Technical Conference in Vancouver, BC, Canada.



Patrick Lemieux and **Bill Murray** co-authored “Nitrous Oxide Cooled, Reusable Hybrid Aerospike Rocket Motor: Experimental Results” presented at the AIAA 48th Joint Propulsion Conference in Atlanta, Ga.



Tom Mackin offered undergraduate students in his Failure Analysis class a unique opportunity to work with mentors from the Department of Homeland Security and the Coast Guard to evaluate the Golden Gate Bridge and the Washington D.C. sub-

way system.

Mackin and mechanical engineering undergraduates published “Fatigue Failure of a Star-Ratchet Gear” in the Journal of Engineering Failure Analysis (2013).



Brian Self and graduate students and faculty from the University of Illinois at Chicago co-authored “Classical Test theory Analysis of the Dynamics Concept Inventory” published in the Proceedings of the ASEE Pacific Southwest Annual Conference in Riverside, Calif.

Self was a major contributor to “Vector Mechanics for Engineers: Dynamics, 10th Edition” (Beer, F., Johnston, E.R., Cornwell, P.J.; McGraw-Hill; New York, N.Y.; 2013).



Brian Self, **Jim Widmann** and **Mike Prince** (Bucknell University) co-authored “Effectiveness of Two Inquiry-Based Learning Activities in Dynamics” presented at the

2013 Research in Engineering Education Symposium in Kuala Lumpur, Malaysia. Self, Widmann and mechanical engineering graduate student **Jeff Georgette** co-authored “Inquiry-Based Learning Activities in Dynamics” presented at the ASEE Annual Conference in Indianapolis, Ind.

Self, Widmann, Georgette, mechanical engineering undergraduate **Kathryn Bohn**, and **Eric Wang** from the University of Nevada, Reno, co-authored “Rolling, Rolling, Rolling: An Inquiry-Based Learning Activity in Dynamics.” Georgette presented the paper at the ASEE Pacific Southwest Annual Conference in Riverside, Calif.



Jim Widmann and **K.C., Binaya** from Kathmandu University presented “Active Learning in Nepal: A Case Study of Effectiveness, Cultural Considerations and Student Attitudes at a South Asian University” at the ASEE Annual Conference in Atlanta, Ga. ■

2000s

Tres Clements

(M.S., Engineering, 2007)

Clements featured in New Times

Tres Clements and manufacturing engineering senior Sam Kaplan were part of a cover story on Really Right Stuff, a local manufacturing company that was started in a garage and has grown to a 90,000-square-foot facility. Featured in New Times' Sept. 26 issue, the article chronicles a day in the life of the company's photography equipment manufacturing process – accompanied by plenty of photos. <http://bit.ly/1h6yVkl>



Kristen Maitland

(B.S., Electrical Engineering, 2000; M.S., Electrical Engineering, 2002)

Maitland Named Senior Member of IEEE; Research Featured in Biomedical Journal

Karen Maitland, assistant professor in the Department of Biomedical Engineering at Texas A&M University, has been recognized as a senior member of the Institute of Electrical and Electronics Engineers (IEEE) – joining a select eight percent of IEEE's 419,000 total members. Earlier this year her research was featured on the cover of the May issue of Biomedical Optics Express. The work by Maitland and Texas A&M University Professor Brian Applegate focused on the development of a chromatic confocal microscope. <http://engineering.tamu.edu/news/2013/08/12/k-maitland-ieee> <http://engineering.tamu.edu/news/2013/05/08/maitland-and-applegate-cover>



Engineer-Turned-Artist Urges Graduates to 'Find Your Calling'

Alfred Qöyawayma (B.S., Mechanical Engineering, 1961) — Hopi potter, bronze sculptor and mechanical engineer — received an honorary Doctor of Science degree at Cal Poly's spring commencement on Saturday, June 15.

In his keynote address at the ceremony, Qöyawayma told the graduates to find the calling that incites their passion and impels action, a calling that allows them to make a creative difference in the world.

Qöyawayma, whose name is Hopi for "Grey Fox Walking at Dawn," began his career developing guidance systems for military and commercial applications, including the X-5, the F-15, the 747, and even Air Force One. He then worked for Arizona's utility industry, leading a team of scientists and engineers in solving challenges to the state's power and water systems.

He co-founded the American Indian Science and Engineering Society, serving as the first chairman of an organization that has helped more than 12,000 students graduate in the critical STEM (science, technology, engineering and mathematics) disciplines. In 1988 he received a White House appointment to become vice chairman of the Institute of American Indian Art, and he became a full-time artist and published researcher on



Mechanical engineering graduate Alfred Qöyawayma's bronze sculpture "Corn Mother" is displayed in Cal Poly's Performing Arts Center.



native culture in the Western Hemisphere.

In 2002, one of Qöyawayma's ceramic pots was placed into orbit aboard Space Shuttle mission STS-113, which docked with the International Space Station. That pot, described as a "miniature Sikyatki-style seed jar with corn motif" is now in the collection of the National Museum of the American Indian.

Qöyawayma has been a Fullbright Scholar and a featured artist at the Smithsonian's permanent Archives of American Art, and his "Corn Mother" sculpture is on permanent display at Cal Poly's Performing Arts Center. ■



Brian Selvy

(B.S., Aerospace Engineering, 2003)

Selvy Joins 'Dark Matter' Telescope Project

Brian Selvy, a senior systems engineer, has joined the team leading the systems engineering effort for the Large Synoptic Space Telescope (LSST) project. Engineers and scientists from a spectrum of national labs and academic, private and public organizations are collaborating to build a "big data" telescope, which is expected to be operational by 2022. The

LSST's three-billion pixel digital camera is designed to survey the sky in unprecedented depth, range and detail. <http://www.lsst.org/News/enews/sys-eng-201304.html>



Tom Trott

(B.S., Civil Engineering, 2003)

Twain Harte Has a New GM

Tom Trott has assumed the post of general manager for the Community Services District of Twain Harte, Calif. <http://www.mymotherlode.com/news/local/2122619/Twain-Harte-Has-A-New-GM.html>



Marcus Yasutake

(M.S., Engineering, 2001)

Folsom Names New Environmental and Water Resources Director

Marcus Yasutake has been appointed environmental and water resources director for Folsom, Calif. <http://www.villagelife.com/news/folsom-names-new-environmental-and-water-resources-director/>



1990s

Paul Lancaster

(B.S., Aerospace Engineering, 1996)

Paul Lancaster Promoted to Director of Sales-Americas for BTU International

BTU International Inc. has promoted Paul Lancaster to the position of director of sales – Americas. Lancaster's previous role was regional sales manager with the company. BTU is global supplier of advanced thermal processing equipment and processes to the electronics and alternative energy manufacturing markets. http://www.us-tech.com/RelId/1181429/ISvars/default/BTU_International_Promotes_Paul_Lancaster_to_Director_of_Sales_%25e2%2580%2593_Americas.htm



Marcus Simon

(B.S., Materials Engineering, 1997)

Marcus Simons Named Partner, Adds IP Experience to Patent Group

Dorsey & Whitney announced that **Marcus S. Simon** has joined the international law firm's patent group as a partner in its Salt Lake City office. <http://eon.businesswire.com/news/eon/20130620006431/en/Dorsey-Adds-Patent-Practice-Salt-Lake-City>



1980s

James P. Chappell

(B.S., Computer Science, 1982)

James Chappell, That's Who – Whodini Announces New CEO

James P. Chappell is the new CEO of Whodini Inc., a company with expertise in linguistics, analytics, social graph and artificial intelligence. Chappell brings more than 30 years of high technology experience and industry leadership to his new position. He currently sits on the Cal Poly Computer Science Industry Advisory Board and was a founding board member of the Enterprise Device Alliance. <http://www.prweb.com/releases/whodini/ceo/prweb10681524.htm>



Ralph Crosby

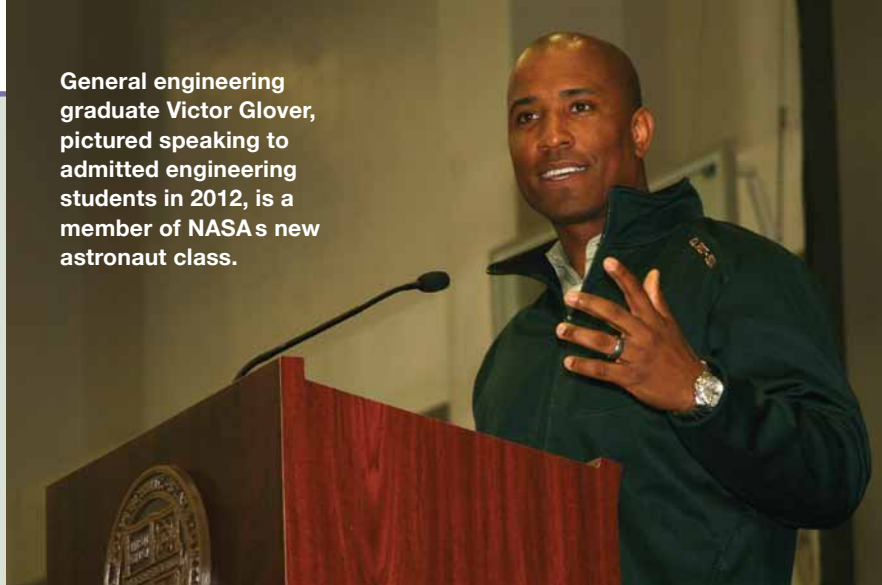
(B.S., Computer Science, 1985)

Computer Science Alum Receives President Obama's Volunteer Service Award

Ralph Crosby received the President's Volunteer Service Award in April for his significant contributions to the Graduate Teaching Academy fellowship program at Texas A&M University, where he is pursuing a Ph.D. in computer science. <http://engineering.tamu.edu/news/2013/05/02/computer-science-students-recognized-for-their-volunteer-service>



General engineering graduate **Victor Glover**, pictured speaking to admitted engineering students in 2012, is a member of NASA's new astronaut class.



Cal Poly Engineering's Newest Astronaut

Lt. Commander **Victor Glover** (B.S., General Engineering, 1999) has been named as one of the eight individuals selected from more than 6,100 applicants as NASA's 21st astronaut candidate class.

According to NASA, the new group of potential astronauts will help the agency push the boundaries of exploration, including the first human mission to an asteroid and Mars.

From Pomona, Calif., and Prosper, Texas, Glover is an F/A-18 pilot and graduate of the U.S. Air Force Test Pilot School. In addition to his undergraduate degree from Cal Poly, he holds degrees from Air University and the Naval Postgraduate School. He was winged a Naval Aviator in 2001

and served two years deployed in support of Operation Iraqi Freedom, flying 24 combat missions.

When he completes his training, Glover will become the fourth Cal Poly alumnus to serve as an astronaut. The others include: **Robert L. "Hoot" Gibson** (Captain, USN, Ret.) (B.S. Aerospace Engineering, 1969), a four-time commander on the space shuttle and recent inductee in the National Aviation Hall of Fame; **Greg Chamitoff** (B.S., Electrical Engineering, 1984), and **Frederick "Rick" Sturckow** (Colonel, USMC, Ret.) (B.S., Mechanical Engineering, 1984).

For more on the 2013 NASA Astronaut Group 21, see www.nasa.gov/astronauts/2013astroclass.html ■

Co Huynh

(B.S., Electrical Engineering, 1987)

Calnetix Founder Returns as VP of New Product Development

Co Huynh, co-founder of Calnetix Technologies, which specializes in high-speed machines, has returned to the company as vice president of new product development. In 2008, he transferred to Direct Drive Systems, a subsidiary of Calnetix, to lead a new sub-sea pump development project. Huynh has more than 20 years of experience in designing and developing advanced motors, generators, and electromagnetic devices for commercial and aerospace applications <http://www.sys-con.com/node/2598096>



Randell Iwasaki

(B.S., Civil Engineering, 1982)

Iwasaki Named to U.S. Transportation's National Freight Advisory Committee

Randell Iwasaki was among a diverse group of professionals named to the National Freight Advisory Committee by U.S. Transportation Secretary Ray LaHood. The members will provide advice and recommendations aimed at improving the national freight transportation system and meeting the national goal of doubling U.S. exports by 2015. <http://content.govdelivery.com/bulletins/gd/USDOT-7d3142>



Pete Nortman

(B.S., Electrical Engineering, 1989; M.S., Electronic & Electrical Engineering, 1993)

Nortman Named Co-Manager of CODA Energy

A new company called CODA Energy will be co-managed by **Pete Nortman** and Ed Solar. The company designs and builds scalable energy storage solutions that support a smarter, cleaner and more reliable grid. Nortman has designed innovative hardware and software systems for more than 20 years and is a recognized expert in high-voltage battery systems and battery management technology. A company he co-founded, EnergyCS, was acquired by CODA Holdings in 2011. http://www.electriconline.com/?page=show_news&id=170915



Tim Sink

(B.S., Engineering Technology, 1983)

Deep Space Engineer Tim Sink Speaks to Upland High School Students

Tim Sink, an engineer with the Jet Propulsion Laboratory (JPL) in Pasadena, Calif., spoke to Upland High School students about his work maintaining JPL's Deep Space Network, and shared his personal path to engineering. Sink was invited to speak at the school after his appearance on an episode of National Geographic's "World's Toughest Fixes." The program followed the repair of a 7-million-pound Mars antenna at the Goldstone Deep Space Communications Complex. http://www.dailybulletin.com/news/ci_23322071/deep-space-engineer-tim-sink-speaks-upland-high?source=rss



Walter Stein

(B.S., Civil Engineering, 1988)

Stein Heads Up Jensen Precast Stormwater Division

Jensen Precast recently hired **Walter G. Stein** to head up the company's stormwater division, Jensen Stormwater BMP/LID Systems. The division's products include those for stormwater detention and retention, infiltration treatment, evapotranspiration and bio-retention. <http://www.prweb.com/releases/2013/05stein/prweb10743469.htm>

Cal Poly Engineering's Own Rocky Balboa

An athletic scholarship opened doors for **Pete Godinez** (B.S., Electronic Engineering, 1957). "I was fortunate that Cal Poly offered me a track scholarship because, otherwise, I could not have



Pete Godinez
Electronic Engineering

afforded a college education," he said.

Godinez, an outstanding track and field athlete at Santa Maria High School, was recruited as a high hurdler, but made his mark in boxing at Cal Poly. He earned silver medals in

the Pacific Coast Intercollegiate as a sophomore and junior in 1955 and 1956 and claimed a bronze medal in the NCAA

Championships at Madison, Wis., in 1956. Godinez was also voted Cal Poly's Boxer of the Year in 1956. The following year, he graduated with a degree in electronic engineering.

"Bell Labs had just invented the transistor and Cal Poly was one of the first universities to offer a course in this new technology," recalled Godinez. Backed with this new knowledge and a Learn by Doing education, Godinez went on to a successful 43-year career as an electronics engineer for aerospace and defense industries. Later in his career he co-founded a company which designed and manufactured automated inspection systems which could electronically inspect food products and sort out defects at very high speeds.

"Succeeding in boxing while also studying electronics gave me the confidence that I could succeed in anything I



Pete Godinez won an NCAA bronze medal boxing for Cal Poly in 1956.

attempted in life," he said.

In 2011, Godinez was inducted into the Cal Poly Athletics Hall of Fame. ■

Rick Sturckow

(B.S., Mechanical Engineering, 1984)

NASA Astronaut Rick "CJ" Sturckow Joins Virgin Galactic

NASA astronaut **Rick "CJ" Sturckow** has left the agency to accept a position with Virgin Galactic as pilot on their commercial flight team. Before joining NASA, Sturckow served in the U.S. Marine Corps as a pilot and flew combat missions during Operation Desert Storm. He joined the astronaut corps in 1995. During his 18-year tenure at NASA, Sturckow served in multiple technical and leadership roles supporting Johnson Space Center's Astronaut Office including chief of the Capsule Communicator Branch and chief of the International Space Station Branch. <http://www.freshnews.com/news/796829/nasa-astronaut-rick-cj-sturckow-leaves-agency>

AERO '63 Reunites for 50th — and Re-ignites to Give Back

At the 50th reunion of the 1963 aeronautical engineering graduates held at Cocoa Beach, Fla., in late May, alumni not only reconnected, but also hatched a plan to support labs in the Aerospace Engineering Department (AERO).

"Of the 26 graduates in our class, 12 classmates and their wives joined us for a great reunion," said alumnus **Bob Wulf** (B.S., Aerospace Engineering, 1963). "It was a wonderful time to spend together renewing friendships and establishing new ones. The event was fantastically organized by **Gordon Nielsen** and **Bill Parker**."

The reunion included a dinner at the home of Gordon and Susan Nielsen and a barbeque at the canal-side home of Bill and Louise Parker, along with special tours of the United Launch Alliance facilities, Kennedy Space Center and Warbird Museum at Titusville.

"As a group, the Class of '63 has contributed to most of the major aircraft, space, missile, helicopter, and weapons



AERO '63 alums, left to right: Milt Shannon, Bill Parker, Dave Coe, Gordon Nielsen, Dale Knutsen, Stan Nash-Boulden, Dean Borgman, Norm Shirakata, Bob Wulf, John Nipper, Norm Lee and Wayne Maples.

programs since their graduation, including many engineering achievements they cannot yet talk about!" noted **Eric Mehiel**, chair of Cal Poly's Aerospace Engineering Department.

"Cal Poly deserves much of the credit for our success," said Wulf. "Understanding that when we graduated, the State provided 95 percent of the cost of a Cal Poly education, but today it's more like 35 percent, we agreed to give back by founding an endowment."

To encourage giving by new alumni, the '63 grads decided to make the endowment a joint venture with the Class

of 2013. The goal of the AERO '63 and '13 Lab Support Endowment is to raise at least \$100,000 over five years — Wulf has pledged to personally match all gifts to the endowment up to \$25,000.

"Hundreds of Cal Poly graduates have been inspired in their professional careers by the Class of '63," said Mehiel. "Once again, that group is providing leadership — we hope that our new alumni cohort will follow in their footsteps."

For information on the AERO '63 and '13 Lab Support Endowment, contact **Richard LeRoy**, (805) 756-7108 or rleroy@calpoly.edu. ■

1970s

Jason Len

(B.S., Engineering Technology, 1975)

Len's Firm Makes SLO a Mecca for British Car Enthusiasts

A company started 40 years ago by Jason Len, when he was still a Cal Poly student, has made San Luis Obispo a mecca for people who love classic British cars. <http://www.ksby.com/news/no-place-like-home-xk-unlimited-in-san-luis-obispo/>

1950s

Eugene J. West

(B.S., Mechanical Engineering, 1957)

Alum Applies ME Background to Developing New Toys

After retiring from Navy 20 years ago, Gene West turned toymaker. He has applied his engineering skills to handcrafting more than 700 toys, many with gears, spirals and cranks that help introduce the laws of physics to young minds. http://www.toacorn.com/news/2013-08-01/Family/Santa_Claus_of_fair_returns_to_exhibit_for_16th_ye.html ■

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MAKE A DIFFERENCE

BUILD A LEGACY

After flying 83 missions with the Army Air Corps in Europe, Martin Engler (B.S., Mechanical Engineering, 1950) returned to civilian life and realized he needed an education that would lead to a career. At Cal Poly, Engler learned “how to build things,” knowledge he put to use in the liquefied natural gas industry. Starting as



a laborer but retiring as an executive vice president, Engler has included Cal Poly in his will in addition to making an annual gift because, as he says, “Cal Poly gave me so much.”

For more information or to talk about your legacy, contact Assistant Dean Richard LeRoy at rleroy@calpoly.edu or (805) 756-7108.

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