Battered by the wind and weather since it was built in 1875, the Piedras Blancas Light Station still serves as an active beacon for ships traveling along the rugged coastline north of San Simeon. But maintenance on the historic facility is difficult, costly and, considering that extensive damage from an earthquake back in 1949 was never properly addressed, an intense challenge.

Now, with the help of several Cal Poly mechanical engineering students, the fog may be lifting for the historic landmark. The students have joined a volunteer effort led by the Bureau of Reclamation to renovate the Piedras Blancas Light Station.

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- Alum Paul Bonderson endows “Project-Based Learning”
- ME students begin work with Piedras Blancas Light Station
- Donors to the college can give their gifts a “bounce”

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- Cal Poly Engineering moves up to No. 2 in U.S. News rankings
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Faculty News
- Brain Self receives award from aerospace medical group
- Boeing fellow Kurt Colvin spends summer in Seattle
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Alumni News
- Ronald Smith (EE ’83) is CENG’s honored alum for 2010
- ME alums meet at 8,730 feet below the surface of the ocean
- Taufik receives patent on DC-to-DC power converter

Beyond borders
Cal Poly Engineering students work to build health clinic in Nicaragua

Three weeks of steady rain didn’t dampen Erica Chabot’s enthusiasm. In fact, it made the process of building a medical clinic in a remote Nicaraguan village even more satisfying.

“After the delays, seeing the walls go up block by block just made me really happy,” Chabot, a Cal Poly civil engineering senior, said. “After two years of planning, it was suddenly a ‘real world’ project versus an abstract concept and that was very satisfying.”

Working with Cal Poly’s Engineers Without Borders (EWB) chapter, Chabot and her fellow students will help the community of Camilio Ortega by building a medical clinic.

Please see EWB, Page 8

Cal Poly civil engineering senior Erica Chabot poses with children in the Nicaraguan village of Camilio Ortega.
Paul R. Bonderson, Jr. is such a staunch supporter of Cal Poly’s hands-on, “Learn by Doing” educational focus that in 2006 he built the Bonderson Projects Center, an $8 million facility dedicated solely to student projects.

A recent additional $550,000 gift from the 1975 electrical engineering alumnus will generate ongoing funds for those projects. The gift establishes an endowment that will not only provide salary support for technicians who staff the Bonderson Projects Center, but also grants for equipment and materials, faculty expenses, and team travel to conferences and competitions, such as the National Concrete Canoe Competition, the Shell Eco-Marathon, the Formula Hybrid Competition, and the Solar Decathlon. Cal Poly teams have consistently performed very well in these contests — the Cal Poly Concrete Canoe, in fact, took first last June.

“I love coming back to campus and seeing all the great student projects, especially the cutting-edge vehicles, and I’m especially interested in supporting club projects,” says Bonderson. “I believe that students get so much out of these national contests.”

Named the “Bonderson Fund for Project-Based Learning,” the endowment prioritizes multidisciplinary, cross-department and cross-college group projects because, Bonderson notes, these types of activities “duplicate what happens in industry.”

Part of Bonderson’s gift also supports the Baker Endowment for Excellence in Project-Based Learning. “I included $50,000 for the Baker Endowment because I want all students at Cal Poly to have the benefit of hands-on projects,” he said.

About Paul Bonderson
Currently president of Lone Oak Ventures LLC, Bonderson is the former vice president of engineering and the co-founder of Brocade Communications Systems Inc., a leading provider of infrastructure solutions for Storage Area Networks.

A 2001 College of Engineering Honored Alumnus, Bonderson is a long-standing member and former chair of the College of Engineering Dean’s Advisory Council and was a member of the college’s Centennial Campaign Committee. He is a founding member of the board of the Cal Poly Foundation.

In November, 2006, the university dedicated the Bonderson Projects Center, the first building on campus funded entirely by a private, individual donor.

Northrop Grumman continues its support of Cal Poly Engineering
Northrop Grumman, long-time partner of Cal Poly Engineering, recently delivered checks totaling more than $8,000 to support clubs and programs in the college. Beneficiaries of Northrop Grumman’s generosity included the Game Development program in the Computer Science Department, Women Involved in Software and Hardware, the Association for Computing Machinery, the Women’s Engineering Program (WEP), and the Multicultural Engineering Program (MEP). Pictured with Kerri Bennett, Northrop Grumman’s University Relations & Recruiting representative, second from left, are David Cantu, MEP director, left, CSC chair Ignatios Vakalis and Helene Finger, WEP director.

About Northrop Grumman
Northrop Grumman is a leading global technology company providing innovative systems and solutions in Information Systems and Technology, Space, and Naval Systems with a strong commitment to scientific discovery and卓越 engineering. Headquartered in Newport Beach, California, Northrop Grumman employs approximately 28,500 people in more than 20 countries, including the United States, Canada and Mexico.
Give your gift to Cal Poly Engineering a big “bounce”

Through matching gift programs offered by more than 13,000 employers, you can double or triple the value of your gift at no cost to yourself.

Steps to making a matching gift

1. Request a matching gift application from your benefits manager or Human Resources office. Matching policies vary and certain restrictions apply, so please read your company’s matching gift program rules.

2. Take a minute to complete the matching gift application process. Some companies now have web-based or automated phone application processes. Paper applications may be returned, along with your gift, to: Cal Poly Fund, Cal Poly, San Luis Obispo, CA 93407.

3. Cal Poly will verify receipt of your gift and complete the process. Your employer will send an additional gift to Cal Poly on your behalf!

For more information, see http://www.giving.calpoly.edu/matching.html
A leadership transition at Cal Poly Engineering brought Dr. Erling A. Smith to the helm of the College as acting dean on July 1. The change was part of Cal Poly Provost Bob Koob’s plan to develop and implement a strategic plan for Cal Poly Engineering that is consistent with California’s growing demand for engineers trained in a whole-system, multi-disciplinary way.

Koob said, “Erling Smith is a logical choice for this transition period. As Vice Provost for Programs and Planning, Erling was successful in leading the campus recently to complete Cal Poly’s overall strategic plan. “Erling knows how to lead a group through the strategic planning process, and given his engineering and administrative background, he will also be a capable manager of the College’s daily operations.”

Smith’s academic career spans more than 35 years, including teaching as a professor of civil engineering and serving as department head, associate dean, and interim dean at the University of Connecticut. A licensed professional engineer, Smith has received six National Science Foundation grants and served as an evaluator for the Accreditation Board for Engineering and Technology. He earned his Ph.D. in Engineering Science from the University of Durham, UK.

Koob said he expects Smith to oversee the College for most of the upcoming academic year. A search for a new dean should be concluded after a new Cal Poly president is named in early 2011.

Q&A with Acting Dean Smith

EA: What excites you about serving as Acting Dean for Cal Poly Engineering?
Smith: I enjoy new challenges—and I will need to learn everything about the College in a very short span of time. But knowing how things actually are “on the ground” around the university will have great value to me in my role as vice provost.

What are your immediate plans for the College?
To balance the budget and ensure our administrative procedures are robust and functioning. Next will be enrollment planning for the following year and this necessarily should be linked to a longer-term strategic plan. I plan to work with the chairs to sketch out longer-term objectives for the College.

What do you see as the long-term plans?
I would like to foster a climate that the College is always seeking to improve every aspect of what we do. We must be curriculum innovators and nationwide leaders.

How do your past positions and current Cal Poly administrative position aid you in serving as acting dean?
I have served as department head, associate dean and, most recently, as interim dean for engineering at my previous institution. I have also led strategic planning for Cal Poly during the past two years. I will call on all this varied experience to move the strategic planning efforts forward in the College of Engineering, developing an action plan for the College that aligns with the University as a whole.

How will you divide your time?
During these first months, I have focused on the budget and getting our administrative systems and procedures overhauled. In addition, I have been working intensely with the chairs. I am pleased to see them function as an excellent leadership team, collaborative college citizens while remaining solid advocates for their respective departments. I anticipate that the developing strength of that leadership team will allow me to more evenly balance my duties as vice provost and acting dean.

What sparked your interest in engineering?
I'm not sure how it happened, but as a child and early teenage I played with “Meccano,” the U.K.’s Erector set, almost all the time, eventually making gearboxes, steering mechanisms, differentials, etc.

What is the most significant change you have seen in engineering?
In my college days and early in my career, I used a slide rule, log tables, pencil and paper—design methods were constructed around these tools. Today's tools are radically different and vastly more powerful; they have expanded the horizons of what is possible and allowed engineers to be more creative.

What professional accomplishments are you particularly proud of?
While interim dean at my previous institution, I was able to raise over $2 million from industry for a fuel cell and energy initiative. During these past two years, I am particularly pleased to have moved strategic planning forward here at Cal Poly. The current plan developed from the several college planning efforts, a CSU strategic planning activity, and extensive feedback from internal and external constituencies. The current plan forms the institutional framework for the development of action plans for each college.

Bumper crop of new students with the best scores in Cal Poly history now on campus

Incoming students faced toughest competition in history

Fall Quarter started Sept. 20 with more than 3,500 new freshmen and 550 transfer students. This fall’s new students faced the toughest entry competition in Cal Poly’s history.

Some 40,941 freshmen and transfer students applied for roughly 4,100 open undergraduate seats. The average GPA of the first-time freshmen heading to campus is 3.84, up from 3.81 last year. Their average ACT score is 26.8, up from 26.3 from fall 2009. The fall 2010 freshmen have an average SAT Reading score of 589, up from 579 last year; their average SAT Math score is 626, up from 623 last year.

This fall, 26 National Merit and National Hispanic Scholars are enrolled as new students. (All of the enrollment numbers are preliminary — the official Cal Poly student headcount is in October.)
With 20,000 square feet of leasable space, the Cal Poly Technology Park aims to foster collaboration between industry and the university on multidisciplinary research projects.

**Cal Poly Tech Park open for business**

First proposed in 1997, the Cal Poly Technology Park now has its first tenant and recently received a $300,000 grant from the U.S. Department of Commerce's Economic Development Administration.

A joint effort of Cal Poly and the California Central Coast Research Partnership (C3RP), the Tech Park fosters university-industry collaboration and allows tenants to draw from the expertise of Cal Poly faculty and students.

The first Tech Park tenant, Applied Technologies Associates, plans to maintain a core software development team at the park “in addition to leveraging the resources of Cal Poly to expand special projects and programs,” according to Jim Dunning, project administrator for the park.

Built with the assistance of Dr. Susan Opava, dean of research, Dunning said the Technology Park, which includes 20,000 feet of leasable space, fits well with Cal Poly's learn-by-doing philosophy.

“The park serves as a massive space for research and projects in aerospace, mechanical engineering, computer engineering, electrical engineering, civil engineering and environmental engineering,” Dunning said.

**Slivovsky honored for community service**

Electrical engineering professor Lynne Slivovsky believes that helping others can be a powerful learning tool. Her efforts to infuse the engineering curriculum with service learning projects has earned her the President’s Community Service Award for Significant Faculty Contribution.

The award is one of those presented to students, faculty and staff for their contributions to the quality of life in San Luis Obispo and their spirit of civic engagement.

Before coming to campus in 2003, Slivovsky served as the academic administrator for Purdue University’s Engineering Projects In Community Service (EPICS). At Cal Poly, she has been an active member of various faculty teams in developing service learning courses, which have resulted in multidisciplinary teams of students working on projects to design assistive devices to aid individuals with physical disabilities.

She also recently received a $25,000 grant to partner with local non-profit organizations to address economic community needs through a mixture of sustainability, organic farming, computing, and civic engagement.

“The service-learning projects developed by Dr. Slivovsky increase understanding of socioeconomic and ethical implications in engineering design, and they increase student motivation,” stated Sema Alptekin, director of the Cal Poly Honors Program. “She serves as a role model for other faculty to show it is possible to implement service-learning in any course.”

**Cal Poly Engineering moves up to No. 2**

Judging by the U.S. News & World Report’s “2011 America’s Best Colleges” guidebook, Cal Poly Engineering moves higher. This year, the college moved up to No. 2 in the nation for public-master’s engineering programs.

In 2010, the U.S. Military and Naval Academies claimed first and second. But in the rankings released in August, Cal Poly tied for second with both the U.S. Naval and Air Force Academies.

In the last 12 years, Cal Poly Engineering has ranked among the top four spots in the nation, capturing the top ranking five times during those years.

“It’s a great privilege for me to take the helm, even temporarily, of a school that is consistently recognized as one of the nation’s best,” commented Erling Smith, who was recently named acting dean. “The U.S. News recognition speaks volumes about the excellence of our students, faculty, and staff, and the continuing relevance of our strong ‘learn by doing’ program.”

A number of College of Engineering programs ranked high in the Best Undergraduate Engineering Programs in their individual specialty categories. The university’s computer, electrical and mechanical engineering programs were each ranked as the top program at a public university in their respective specialty categories.

Cal Poly’s aerospace engineering and its civil and environmental engineering programs were ranked the second best programs at a public university.

Cal Poly as a whole also holds an unprecedented record in the U.S. News rankings: 18 years as the best public-master’s university in the West. Cal Poly again ranked 6th in the magazine’s overall list of the West’s best universities, including both public and private institutions, that provide “a full range of undergraduate and master’s-level programs but few, if any, doctoral programs.” U.S. News ranks colleges that grant doctoral degrees, such as those in the University of California system, in a separate category.

In the magazine’s list of Up-and-coming Regional Universities (West), Cal Poly ranked fourth. The category (included in the magazine for the third year in a row) designates institutions “that are making the most promising and innovative changes in the areas of academics, faculty, and student life.”

One hundred and forty high school students had an EPIC summer developing android mobile applications, building solar speed racers, growing new blood vessels, and undertaking even more exciting engineering experiences, thanks to the summer camp hosted by Cal Poly Engineering.

This was the fourth year that EPIC, or Engineering Possibilities in College, offered a chance for high school students to learn about engineering through hands-on labs taught by Cal Poly professors and grad students. Guest speakers from Raytheon and Amazon’s Lab 126 (Kindle product) shared their perspectives about engineering in the real world, while local engineering firms opened their doors for industry tours.

The highly successful program also reaches out to underrepresented students: nearly 50% of the attendees are female or from underrepresented groups. For more information, go to http://epic.calpoly.edu.

Aerospace companies like Cal Poly graduate Burt Rutan’s Scaled Composites, designers of SpaceShipOne (above), helped make Cal Poly No. 1 overall in workforce recruiting.

Aviation Week & Space Technology, the largest multimedia information and services provider to the global aviation, aerospace and defense industries, recently named Cal Poly first in the nation for industry workforce recruiting.

Cal Poly moved up to the number one spot after a second place ranking in 2009.

The magazine’s list of top schools, in order, is: Cal Poly, Georgia Institute of Technology, Pennsylvania State University, Virginia Tech and Massachusetts Institute of Technology (tied), and Purdue University.

According to Aviation Week, the “key rationale provided for selection of universities focuses on the academic reputation of the institutions coupled with the success of previous hires from the school by the corporation.”

“Cal Poly’s inclusion in this list of prestigious universities is indeed an honor,” said Cal Poly Engineering Acting Dean Erling Smith, who noted that the ranking “attests to the leadership role that Cal Poly plays in the aerospace and defense industries.”

“Our alumni have made a huge impact in this field,” he said. “Our reputation rests on their shoulders, and on our unswerving dedication to hands-on learning, which has provided generations of Cal Poly aerospace engineers the knowledge and practical experience they need to advance the industry.”

“I’d like to congratulate—and thank—our colleagues in Cal Poly’s Aerospace Engineering Department, which U.S. News & World Report also recently named as second in the nation for public-master’s programs,” said Smith.

Read the article on Aviation Week’s Workforce Study at http://www.aviation-week.com/aw/generic/story_channel.jsp?channel=defense&id=news/bestprac_wk10.xml
The Society of Fire Protection Engineers (SFPE) has named Dr. Dennis “Skip” Parks and Dr. Chris Pascual “Persons of the Year” for their efforts in establishing Cal Poly’s Fire Protection Engineering (FPE) program.

The award — one of the highest honors bestowed by the society— recognizes “significant achievement in the protection of humanity and the environment from the ravages of unwanted fire and an outstanding contribution to fire protection from outside the membership of SFPE which is broad in scope and has apparent lasting effects.”

Parks, assistant vice president for University and Community Engagement, and Pascual, a mechanical engineering professor and FPE graduate coordinator, were instrumental in developing the graduate degree program along with Dr. Fred Mowrer, professor-in-residence and FPE Director.

Mowrer is also receiving the John J. Ahern President’s Award from the Society for Fire Protection Engineers. "Persons of the Year" for their efforts in establishing Cal Poly’s Fire Protection Engineering program at Cal Poly.

According to the award citations, Parks has been recognized for working “tirelessly over a number of years with representatives of the SFPE and with university administrators and faculty members to obtain approval of the FPE program at Cal Poly.” Parks also helped provide funding for development of the FPE program through an educational grant from the California State University system.

SFPE named Pascual "one of the leaders of the Fire Protection Engineering program at Cal Poly" whose unwavering support “helped assure approval of the program as well as its future success.” Commenting on the Cal Poly awards, Mowrer said, “These awards are motivation to keep advancing the Fire Protection Engineering program at Cal Poly; and they’re evidence that the Fire Protection Engineering profession is thrilled to have this new educational opportunity and will work very hard with us to assure the program’s success.”

The new QL+ LAB is open at Cal Poly and dozens of engineering students are making news by undertaking projects that aid the disabled and, in particular, public servants and veterans who have been injured in the line of service.

Founded by alumnus Jon Monett (IE ’64), the QL+ Lab has already generated multiple multidisciplinary projects including:

**ERB PROSTHETIC HAND** — ME students Max Maloney, Matt Griebel and Nickolas Butler collaborated to update and redesign the Erb Conformable-Grasp prosthetic hand, originally developed in the early 1990’s. The updated hand will be inexpensive, lightweight, and fit a wide range of amputee arm sizes and remaining limb sizes.

**ADAPTIVE WHEELCHAIR** — A student team comprised of Mark Azzarello, Brian Robinson, Jason Della Rosa and Dean Swenson worked on a wheelchair design that will make it possible for wheelchair riders to re-experience nature independently, without the need to purchase or switch between different wheelchairs. The new wheelchair will "easily adapt between indoor and outdoor environments, and on-road and off-road formats, including rough terrain and gradients."

**BREATHABLE FACIAL PROSTHETIC** — The objective of this QL+ student team project is to develop and demonstrate a practical system for the aeration of facial prostheses for patients with severe disfigurement.

**CAT D6R INGRESS/EGRESS** — The team of Matt Rubin, Erick Serrano and Eric Ward developed a system to enable equipment operators with limited mobility, included leg amputees, to easily enter and exit the operating cab of a CATD6R earth moving machine, which is several feet above the ground.

**THE TABLETTE** — The goal for this QL+ project is to create a portable table to make dining out easier and more pleasurable for people in wheelchairs.

**RECURBENT BICYCLE** — The development of a recumbent bicycle designed to accommodate a rider with a length differential between right and left legs is the goal of this QL+ project. The bike includes a hydraulic seat for greater comfort.

See http://www.qplusplus.org/ for more information on QL+ Lab projects.

Mechanical engineering student Max Maloney, right, demonstrates his QL+ prosthetic hand project to Cameron Clapp.
Up, up and away for BalloonSat Summer Program

AERO student Ryan Sellers, above left, and the BalloonSat Summer Intern Program float a trial balloon in Engineering Plaza in July. The program allows high school seniors to design and launch weather balloons. For details, see: http://ceng.calpoly.edu/articles/two-students-go-edge-space-cal-poly-help/

EWB

From Page 1

nine other Cal Poly students worked on the planning and physical construction of a health clinic in Camilio Ortega, Nicaragua, a village of 18,000 residents that's so remote it's not on Google maps.

The clinic, which lives up to the EWB's mission “to improve quality of life through the design and implementation of environmentally sustainable, equitable, and economical engineering projects,” has a long list of features and services: four exam rooms, a pharmacy, pediatric care, treatments for fever, respiratory illness, diarrhea, parasites and more, workshops on such relevant topics as nutrition and drug abuse, a laboratory and a room for gynecology.

The ambitious plans required more than $40,000 in materials. Corporate sponsorship led by a $9,000 funding grant from structural engineering firm Thornton Thomassetti and a materials donation from Simpson Strong-Tie were key to the effort.

“We received a large in-kind donation of construction materials — such as screws, epoxy, and drill bits — from Simpson Strong-Tie,” Chabot said. “Their contribution helped us achieve our financial goal and they also helped with questions on design and constructability.”

Cal Poly students have been involved with Camilio Ortega since 2006, when an EWB team led by Shawna Von Stockhausen redesigned a water storage system. Since the village had been devastated by Hurricane Mitch in 1998, a health clinic was the top priority and the EWB began planning the clinic in 2008. In 2009, the team led by Chabot, the project manager, and EWB professors/mentors Chris Murphy and Rob Down embarked on Phase I of the health clinic project that included pouring a concrete slab foundation and building a retaining wall. Chabot led a Phase II group in September to continue the construction. While the rain slowed the project and necessitated an unplanned Phase III construction trip next year, Chabot said she will remain committed to the project after graduation.

“This has taught me that things don’t always go as planned and you have to adapt to circumstances beyond your control,” said Chabot. “In the future, I’d love to stay with EWB as a professional.”

For more information on Engineers Without Borders, see http://www.ewb-usa.org

Lighthouse

From Page 1

of Land Management and the Piedras Blancas Light Station Association that aims to return the lighthouse to its former brilliance.

Longtime ME Department lecturer Lee McFarland was visiting the lighthouse and talking to Jim Boucher, the station's Park Manager, when he realized the renovation plans provided many opportunities for engineering students.

“I was taking the tour, and it seemed a natural fit to get our students involved,” he said. “By the end of the day, Jim had already given me three viable senior projects.”

An interactive, hands-on model of the original Fresnel Lens (removed from the lighthouse tower after the 1949 earthquake and now on display in Cambria) was the first project. Students Matt Vaillancourt and Chris Lash (both ME ’09) developed a 3D, animated model of the Fresnel lightworks. ME seniors Andrew Japin, Matt Weber and Andrew James then developed a quarter-scale physical model of the lens and lightworks which will be used on public tours.

For more information on the Piedras Blancas Light Station, see http://www.lighthousefriends.com/light.asp?ID=89
“A globalized world has changed the perception of international student exchange programs, and nowadays international experience gives a graduate a leg up on other job seekers.” So says mechanical engineering professor Frank Owen when talking about his department’s growing international exchange program.

Organized through this year’s International Computer Engineering Exchange (ICEX) program, the students were part of the third NORUS Workshop on underwater technology dedicated to marine monitoring and ocean observation. The students included ME junior Kevin Hall, freshman ENVE Jessie Klemme, EE graduate student Greg Manyak, senior ME Frank Schreiber, and senior CSC Alex Xydes. CSC/CPE professor Chris Clark served as technical advisor to the group, and Jane Lehr in Ethnic Studies and Women and Gender Studies was the cultural advisor.

“Wow...what an experience,” exclaims Hall on the trip blog. “European culture, cutting-edge engineering, new friends, old friends, and robots! Who could ask for more?” Hall notes that the experience was about “dealing with the logistics of international collaboration...learning how to problem solve and think on the fly...and most of all it was about working and growing together as a team. It is so satisfying to be able to say that we made a difference. Our team sailed into uncharted waters and emerged with an extremely successful set of data that will hopefully have international implications.” ICEX is an opportunity for students to develop and apply technical knowledge in international contexts. It is a collaborative effort involving Cal Poly’s Computer Engineering Program and various international partners.

For more information about 2010 ICEX, visit the student blog at http://www.icex-norway.blogspot.com/. For more information on the third NORUS Workshop, visit: http://www.norus-science.com/ws-ntnu.html

A multidisciplinary team of Cal Poly Engineering students traveled to Sletvik-Hopavågen, Norway last July to work with Norwegian marine biology researchers in launching underwater robots and collecting data on climate-induced changes on Arctic and Norwegian ecosystems.

Three rocket motors fired simultaneously to send Cal Poly Space Systems’ “Wild Thing” rocket more than 3,000 feet into the air in mid-October. The club had never before built a rocket with three motors.

“What was going through my head was ‘don’t blow up’, but it worked great,” said club president Joshua Herrmann, who snapped these photos of the launch near Fresno.

Cal Poly students swim with robots in Norway

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International exchange program flourishes

ME Department starts new two-year master’s degree program

“A globalized world has changed the perception of international student exchange programs, and nowadays international experience gives a graduate a leg up on other job seekers.” So says mechanical engineering professor Frank Owen when talking about his department’s growing international exchange program.

“Three European universities are active exchange partners with our department, including Chalmers University in Gotenburg, Sweden, and the Universities of Applied Sciences in Karlsruhe and in Munich, Germany,” says Owen. “At any given time, there are Cal Poly students at these three universities and guest students from them here in San Luis Obispo.”

Owen said the ME Department recently signed an accord with Karlsruhe University to start a double, two-year master’s degree program in which students spend roughly half their time at each university, work possibly on a foreign master’s project, and then at the end of their studies receive master’s degrees from both institutions.

“Any student wanting to have an international career in engineering would have a very good start after completing this program,” Owen says.

To prepare for the full exchange program, Owen, who has spent three of the past four years teaching in Germany, says the department has held a summer school each year with the Munich University of Applied Sciences. From late July until late August, students can study in Munich and receive credit for several courses.

For more information, see http://eadvice.calpoly.edu/lep/.

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“Three European universities are active exchange partners with our department, including Chalmers University in Gotenburg, Sweden, and the Universities of Applied Sciences in Karlsruhe and in Munich, Germany,” says Owen. “At any given time, there are Cal Poly students at these three universities and guest students from them here in San Luis Obispo.”

Owen said the ME Department recently signed an accord with Karlsruhe University to start a double, two-year master’s degree program in which students spend roughly half their time at each university, work possibly on a foreign master’s project, and then at the end of their studies receive master’s degrees from both institutions.

“Any student wanting to have an international career in engineering would have a very good start after completing this program,” Owen says.

To prepare for the full exchange program, Owen, who has spent three of the past four years teaching in Germany, says the department has held a summer school each year with the Munich University of Applied Sciences. From late July until late August, students can study in Munich and receive credit for several courses.

For more information, see http://eadvice.calpoly.edu/lep/.
NASA signs five-year contract with Cal Poly’s picosatellite orbital deployer

P-POD has successfully launched 32 “CubeSats”

In the ten years since Cal Poly developed the Poly Picosatellite Orbital Deployer (P-POD) there have been six launches in the U.S. and Russia of 32 small “CubeSat” satellites using the deployer—close to 100 Cal Poly students have taken part in the Cal Poly satellite-launching program.

But that’s only the beginning. NASA has just announced a five-year contract award to Cal Poly to provide a broad range of P-POD services for NASA’s own CubeSat program. The contract’s maximum cumulative potential value is $5 million.

The contract will ensure out-of-this-world, hands-on opportunities for Cal Poly students, who will be involved in actual launch campaigns working with launch providers, the NASA launch team and all universities developing CubeSats.

Cal Poly and Stanford University created the CubeSat Standard to provide developers with guidelines to interface with the P-POD, which is a tubular, spring loaded mechanism easily integrated into any launch vehicle. CubeSats are research spacecrafts measuring 10 cm square with a mass of up to 1 kg.

NASA’s contract with Cal Poly is part of the agency’s Educational Launch of Nanosatellites program, a series of small, student-built satellite missions intended to promote science, technology, engineering and mathematics in higher education.

The “visionary” behind the Cal Poly CubeSat/P-POD program is Dr. Jordi Puig-Suari. “From the start,” he recalls, “CubeSat existed to help students understand spacecrafts and the work needed to craft them. We were trying to develop a very simple spacecraft for students. Now we have government agencies developing extremely sophisticated satellites based on our design.”

Puig-Suari credits the commitment of the NASA team to providing launch opportunities for students. “We would not be here without their help,” he says. “The NASA contract also signifies a huge level of confidence in the P-POD and our Cal Poly students,” notes Puig-Suari. “That confidence is built on ten years of experience, development of our team’s skills and facilities, and our previous launch experience and successes.”

Cal Poly civil engineering design course wins national award

Cal Poly’s Civil Engineering Senior Design course recently won a $7,500 Engineering Award from the National Council of Examiners for Engineering and Surveying (NCEES) in recognition of its extensive collaboration with professional engineers. A jury of NCEES members and representatives from academic institutions and professional engineering organizations made the award selection.

Initiated in 2006, the course enlists up to 30 local engineering practitioners to serve as mentors and advisors. Dr. Gregg Fiegel facilitated the development of the curriculum in conjunction with numerous faculty members and practicing professionals.

“The scale of our course is unlike any other in the country, with student enrollments typically ranging between 150 and 175,” noted Fiegel. “Practitioners help with the course by evaluating student projects and presentations, advising on design project issues, teaching technical subjects related to the design projects, and lecturing on professional topics such as communication, ethics, project management, leadership, and team work.”

In accepting the award, Fiegel thanked the local professionals who have helped with the course, the department staff and technicians responsible for coordinating the course logistics, and the students. “Introducing the new course was a huge undertaking, and our students were receptive to the change,” he said.

Fiegel also credited faculty members who helped develop and teach the class, in particular, Dr. Jay DeNatale. “His past engineering experience, excellent teaching skills, and established relationships with local practitioners helped make the course what it is today: a nationally recognized model for civil engineering capstone design.”
Materials Engineering students spend a lot of time looking at another world through optical and electron microscopes and snapping photographs. Last spring, the MATE Department held a student photo contest that produced some beautiful images. These photos and more are now on display in the Metallography Lab (Bldg. 192, Rm. 212).

A. — 1st Place
"Brass Crane" Photo by Tim McCrone
Dendritic formation in the composite region of a brass resistance weld.

B. — 3rd Place
"Deathstar" Photo by Pat Hyland
Dendritic structures cover the surface of a simulated nano-wear particle from artificial hip implant following heat treatment.

C. — 2nd Place
"Shaved Ice with Chocolate Chips" Photo by Sadeo Takabayashi
ZnO crystal formation created by chemical processes.

D. — Piezo-Electric Fibers" Photo by Alex Beckker
These are piezo-electric ceramic fibers in a Head Liquid Metal tennis racquet.

E. — Studley Steel" Photo by Jeremy Lenhof
The composite region of a stud weld on a steel sample.

F. — Leopiriond" Photo by Matt Manges
The lamellar structure of eutectic silicon and aluminum looks like an ancient fossil.
Top gun again: Cal Poly wins AIAA aircraft design competition

For the eighth time in the past nine years, Cal Poly aerospace seniors soared above the competitors at the national Undergraduate Team Aircraft Design competition, taking both first and second place at the contest sponsored by the American Institute of Aeronautics and Astronautics Foundation (AIAA).

Designing "Alternate Fuels and Environmentally Friendly Aircraft Systems," 34 teams from 12 universities competed in the 2010 contest. Cal Poly’s “Much Better Planes Introduces the Bearedactyl” won the $2,500 first place award while Cal Poly’s “GFX-50” won the $1,500 award for second place. The University of Southern California’s “Egret” team earned third place.

“The competition was really fierce and much like a consistently winning college football team, our program stands with great talent and good training in the off-season,” said faculty advisor Dr. Bruce R. McDonald, who cr eated six separate reviews by engineers from Boeing, Lockheed Martin, Northrop Grumman and the Air Force Flight Test Center with the success of the 2010 Cal Poly teams: “The industry feedback is a great mechanism to improve student designs and they are extremely motivating for the students.”

Both of Cal Poly’s winning teams were invited to present their designs at the AIAA Aviation Technology, Integration and Operations Conference in Ft. Worth, Texas, in mid September.

Led by faculty advisor Bruce R. Wright, Cal Poly’s first place team Bearedactyl was comprised of Dominic Surano, Jake Armstrong, Chris Choi, Jake Gaunt, David Guerrero, Ben Naravage, Dan Shehan and Kyle Thoma. Cal Poly’s GFX-50 team, also led by Wright, included Kasey Johns en, Simo Alberti, Brian Borra, Erin

Road to success: Cal Poly’s AERO design team “Much Better Planes” marched to national success.

Cal Poly is No. 1 at the 2010 ASCE national concrete canoe competition

On June 19, the Cal Poly Concrete Canoe team finished first among 22 universities from the U.S. and Canada competing in the 2010 American Society of Civil Engineers National Concrete Canoe Competition.

“The team contributed over 4,600 hours of work to the canoe,” said team leader Kyle Marshall. “This year was the culmination of years of hard work, and we could not have asked for a better showing.”

The regatta held at Laguna Lake in San Luis Obispo County capped off a three-day competition hosted by Cal Poly that included presentations on the construction of the canoes and a design contest for the aesthetic displays.

Marshall pointed out that the design paper and technical presentation account for 50% of the overall score. “This year we did exceptionally well in both these areas,” he noted. “Additionally, with first places in final product and races, we scored 96.5 points out of 100, one of the highest overall scores in the history of the competition.”

In the races, Cal Poly paddled “Amazonia” — its jungle-themed, 20-foot long, 170-pound canoe — to first place in the men’s endurance and sprint races and second place in the women’s endurance and sprint races. Combined with points earned in the academic portion of the competition, the strong race finishes propelled Cal Poly to its first national victory. Cal Poly, which finished third in 2009 and second in 2006, also became the first host school to claim first place in the ASCE’s annual competition that awards more than $9,000 in academic scholarships to the winning teams’ undergraduate civil engineering program.

Overall, the University of Nevada-Reno placed second and Ecole de technologie superieure from Montreal was third.

The ASCE says the National Concrete Canoe Competition is designed to “provide students with a practical application of the engineering principles they learn in the classroom, along with important team and project management skills they will need in their careers.”

“Personally, I feel all the team members developed and grew throughout the project,” said Marshall. “In addition to gaining knowledge in engineering areas . . . members also gained ‘soft skills,’ which include teamwork, perseverance, leadership, and dedication.”
CONCRETE

Michigan Tech team members lift their canoe into the swamp test tank set up on O’Neill Green at Cal Poly.

Rutgers University tried to take a bite out of the competition. At left: The Crimson Tide of Alabama was easy to spot in and out of Laguna Lake.

At right, the University of Wisconsin Badgers take to the water.

Above, an ASCE judge measures and inspects the Cal Poly concrete canoe “Amazonia.” At left, getting in and out of Amazonia was a team effort.

While concrete canoes do float, it takes a full team to lift them as the University of Washington demonstrates at right.
Cal Poly students unveil new “launch vehicle” to aid disabled kayakers

Cal Poly Engineering and Kinesiology students unveiled their Adapted Paddle Launch Vehicle in mid-May. The device is the result of a collaborative project aimed at helping people with disabilities enjoy kayaking. Funded by a National Science Foundation grant, the APLV was designed to make the process of loading clients into boats less invasive while simultaneously increasing safety within Cal Poly’s Adapted Paddling Program.

The Adapted Paddling Program also offered a free kayaking clinic to local residents with disabilities and includes a paddling experience in the Morro Bay estuary. Kinesiology students participate as assistant instructors.

Previously, participants in the program who used wheelchairs had to be physically lifted and placed into the kayaks by students. Four to six students were then needed to lift the kayak and walk it down the boat ramp in order to launch the kayak.

A team of mechanical engineers and Kinesiology students was created and challenged with devising a less invasive way of loading program participants into their kayaks and then safely transporting the kayak to the water.

The vehicle consists of multiple parts that can be broken down for easy transportation as well as assembled quickly for use at the launch site. A hoist is used to transfer the paddler from their wheelchair to the kayak, which is securely mounted on the launch vehicle. The APLV is then deployed to safely transport the kayak down the boat ramp to be launched.

BMED student really takes the water

In and out of the classroom and in and out of the pool, everything went swimmingly for biomedical engineering student and water polo player Sara Ur in 2010.

Ur, who excelled in the classroom studying tissue structure in the college’s new Blood Vessel Mimic Lab, led Cal Poly to its third straight National Collegiate Club Water Polo Championship in April when she scored three goals in the Mustangs’ 6-5 win over Michigan in the title match. Ur earned both NCCC Most Valuable Player and Player of the Game honors with the performance, becoming the first three-time winner of the awards.

Despite juggling the daily load of intense academics and constant water polo practices and matches – the Mustangs finished the year a remarkable 25-2 – the junior from Lompoc said she actually feels more productive during the season.

“As far as time management, I’m fairly positive I’m more efficient when we’re competing,” Ur said. “When I know I’m going to be busy it necessitates planning ahead to get school work done. If I have a set amount of time to accomplish a large amount of things it helps me to not procrastinate as much as I normally would.”

Ur felt as proud of her studies as she did her athletic accomplishments. “This year was great in terms of academics, mainly because I started taking upper-division BMED classes,” she said. “Which really meant that I was able to figure out that tissue engineering is most interesting to me in the wide range of Biomedical Engineering.”

Ur said time spent analyzing tissue cells has inspired her studies. “The Blood Vessel Mimic Lab will easily be what shapes my future career the most,” she said. “I couldn’t be happier or more grateful for this experience.”
The first ever IEEE Antenna Design Challenge asked students to design and build “an antenna demonstration system that can be used to teach the magic of antennas.” The system also had to be safe, durable, easily reproducible, and inexpensive — less than $1500.

Cal Poly electrical engineering students Alex Hempy and Michael Civerolo met the test and won second place.

“The contest began a year ago with the submission of a proposal,” explained faculty advisor Dean Arakaki. “As one of the three top finalists, Alex and Michael received travel funds to attend the IEEE Antennas and Propagation Symposium in Ontario this past July, where they demonstrated their antenna.”

Arakaki noted that the contest was “an international competition with original proposals submitted by educational institutions throughout the world.”

PolyHouse 2010 builds a home for Caleb

Nine-year-old Caleb has achondroplasia dwarfism and hydrocephalus—he has special needs for a place to play and live that are suited to his disabilities. That’s where PolyHouse came in.

For the past six years, Cal Poly’s industrial and manufacturing engineering project management class has completed a home renovation service project to help a local family or individual struggling with issues related to disabilities.

This year during three weekends in May, the PolyHouse team renovated the home of Simon and Ruby Todd in Nipomo, whose son Caleb has endured more than 13 brain surgeries. While the family makes every possible accommodation for Caleb, his physical limitations hinder him from doing very basic life tasks.

PolyHouse added an ergonomically designed bathroom for Caleb, addressed the crowded living situation and storage space, provided a yard more suitable to Caleb, and offered monthly cost reduction techniques.

The project involved 28 students, six weeks of planning, six days of construction, and $160,000 in donations of cash, building materials and other assistance for the repairs and home improvements.

The class blog (http://polyhouse.wordpress.com/) reveals what the Cal Poly students got out of their unique learning experience. “What we are learning is amazing,” Michelle noted. “I have learned about how planning and execution, combined with a determined group of like-minded people can accomplish amazing work. I think that this will be the best experience of my time at Cal Poly.”

According to the faculty advisor, Dr. Liz Schlemer, the educational purpose of the class is to give students hands-on experience planning and managing a technical project involving fundraising, scheduling, supply management, team recruitment, resource allocation, time and cost budgeting, risk assessment, task coordination, project monitoring, and post-project assessment.

Schlemer’s project management students come from a variety of backgrounds, including business, engineering management, and industrial and manufacturing engineering.

Central Coast businesses and construction companies give the Poly House project tremendous support. For information on the project and a complete list of supporters see http://polyhouse.wordpress.com/.

PolyHouse team member Michelle Huynh (IME) shows Caleb his new backyard swing set.
By repairing one washing machine, Jen Van Donk helped build international relationships, save lives, and debunk stereotypical expectations.

The moment came last August in a small hospital in the village of Olanchito in central-northern Honduras. Van Donk, a fifth-year mechanical engineering student, had been sent to the hospital by the international group Engineering World Health (EWH) to provide tech and engineering expertise. “When we arrived in Olanchito, my EWH partner, Amber Hackett from Virginia Commonwealth College, and I were not taken very seriously,” said Van Donk. “Here we were, two white women in a very macho culture. The hospital administrator didn’t trust us to do anything but take inventory. But then we fixed the washing machine—that was the breakthrough.”

Van Donk explained that the washing machine is no minor piece of equipment: “It’s vital for sanitation and the hospital only has two, one of which had been broken for four months. When we engineered a fix, the laundry lady kept jumping up and down.”

With confirmation of their technical abilities, Van Donk and Hackett were given other equipment to repair, including one of the hospital’s two infant warmers. “We had to find a creative solution because no parts were available—a common problem in developing countries and one of the foremost issues for EWH,” notes Van Donk, who along with biomedical engineering student Tim O’Neil founded Cal Poly’s EWH chapter last year.

Among other projects, EWH Cal Poly has built over 20 low-cost defibrillator testers that allow hospital technicians in developing countries to effectively maintain and repair medical equipment. The group is also working with Direct Relief International in Santa Barbara to rebuild autoclaves (equipment sterilizers) for hospitals around the world.

Van Donk’s involvement with EWH and her trip to Honduras has confirmed her own calling. “I always knew I wanted to use engineering in developing countries, and the trip this summer fueled my desire to build programs for tech training and sustainability,” she said.

EWH Cal Poly meets every other Tuesday at 6:00 p.m. For information contact engineeringworldhealth.cp@gmail.com.

Cal Poly Engineering recently announced its 2010 Outstanding Graduates, including the top graduate students, the top departmental graduating seniors for academic excellence, and graduating seniors recognized for service to the College, service to the University, and service to the community. The winners in each category received $200 bonds from Lockheed Martin.

Honored as the top graduating master’s degree students were Brian Fujizawa and Jason Anderson. Fujizawa, an aerospace engineering graduate student, was the recipient of a graduate fellowship at the Aero-Flight Dynamics Directorate at NASA Ames Flight Research Center. Anderson, a 4 + 1 B.S./M.S. graduate in computer science, did seminal work for his thesis that may provide a framework for improved ground support for space operations.

Announced as the 2010 Outstanding Graduating Seniors for Academic Excellence were: Kevin Hougen (AERO), Leif Anderson (BME), Ryan Cahill (CE), Stephen Beard (CPE), Alexander Xydes (CSC), David Boeck (EE), Melissa Woo (ENVE), Joshua Olmstead (GEN), Jessica Paz (IME), Sarah Shackelford (IME), Bryan Rogers (MATE), Trevor Ness (ME) and William Whitney (SE).

Ness was recognized as the College of Engineering’s topmost senior for academic excellence. With a 3.99 GPA, including 11 quarters in which he had perfect 4.0’s, Ness is now enrolled in graduate school at Stanford University.
Award from Aerospace Medical Association has special meaning for ME Professor Brian Self

The Aerospace Medical Association’s prestigious Kent Gillingham Award meaning for Brian Self.

“Kent Gillingham had a huge influence on the field of spatial disorientation and was an amazing researcher for the Air Force Research Laboratory,” said the mechanical engineering professor, who received the award last spring.

“Dr. Gillingham was the mentor for one of the leading researchers in the field, Dr. Bill Ercoline, who had a great impact on me; so, in a way, the award honors Dr. Gillingham’s influence on my career as well as all of the other researchers he has inspired.”

The Aerospace Medical Association (AMSTA) presents the award annually to an individual who has made a significant contribution in the fields of spatial disorientation and situational awareness related to flight.

Self’s research involved work at the U.S. Air Force Academy and Brooks Air Force Base. Closer to home, Self wants to continue teaching courses in spatial disorientation and sustained acceleration, and he wants to foster student projects that can improve lives and add to the body of knowledge in the field.

“If the students are familiar with the physical properties of spatial disorientation, that can really bring home their understanding of forces and accelerations,” Self said. Some of his students have actually designed a rotating chair to provide “vestibular stimulation to children with developmental disabilities,” while others have created “simulation that models the three dimensional angular and linear motions for a three-degree of freedom flight simulator,” he said.

Biomedical & General Engineering

Trevor Cardinal presented a poster on “Impaired vascular reactivity following chronic ischemia in arteries of the mouse hindlimb” co-authored by Thomas Kesler (BMED ’10) at the annual meeting of the American Physiological Society; the poster was also published in abstract form in the 2010 Federation of American Societies for Experimental Biology Journal (24) 774.21.

Scott Hazelwood published the following articles: “Locked Plate Fixation of Osteoporotic Humeral Shaft Fractures: Are Two Locking Screws Per Segment Enough?” by D.J. Hak, P. Althausen, and S.J. Hazelwood, Journal of Orthopaedic Trauma (Vol. 24, No. 4, pgs. 207-211, 2010; and “Biomechanical Strain Analysis of the Proximal Femur After Retrograde Intramedullary Nailing” by D.J. Hak, R. Neiman, and S.J. Hazelwood, Current Orthopaedic Practice (Vol. 21, No. 4, pgs. 385-389, 2010).

Civil & Environmental Engineering

Rakesh Goel, department chair, has been appointed chair of the Seismic Effects Committee of the Structural Engineering Institute of American Society of Civil Engineers. He published articles in the Journal of Structural Engineering and Earthquakes and Structures titled, respectively, “Simplified Procedure for Seismic Design of Piles with Partial-Moment-Connection to the Deck in Marine Oil Terminals” (Vol. 136, No. 5, 2010), and "Aerospace Engineering

David Marshall and graduate student Jay Marcos presented “Improved Computational and Experimental Validation Using Different Turbulence Models” at the 28th AIAA Applied Aerodynamics Conference in Chicago. Marshall co-authored “Design and Wind Tunnel Testing of Cal Poly’s AMELIA 10 Foot Span Hybrid Wing-Body Low Noise CESTOL Aircraft” with Tina Jameson, graduate students Robert Ehrmann, Eric Paciano, and Rory Golden, and Patersonlabs employee D. Mason. They presented the paper at the 27th International Congress of the Aeronautical Sciences, ICAS, in Nice, France. Marshall’s $3 million NASA contract to develop prediction methods and design and fabricate test hardware that can predict the low speed, high lift performance of Cruise Efficient Short Takeoff and Landing (CESTOL) aircraft was extended, bringing the total contract value to over $4.4 million through four years.

Rob McDonald presented “Mission Performance as Point Performance” at the 10th AIAA Aviation Technology, Integration and Operations Conference in Ft. Worth, TX. He received a $100,000 grant from NASA to extend his original, three-year, $1M research on a multidisciplinary analysis and optimization (MDAO) software framework that will facilitate the design of future aircraft.

Multidisciplinary

Tryg Lundquist (ENVE), Dairy Science Head Bruce Golden, and Brian Di­etrick (Natural Resources Management) received a grant from the USDA National Institute of Food and Agriculture to conduct animal waste management research projects at Swanton Pacific Ranch and the Cal Poly dairy.

Linda Vanasupa (MATE) and Liz Schlem­mer (EE) received a $105,064 grant from California State University Monterey Bay and Cuesta College.

Lynne Slivovsky (EE) and Tom Trice (History) received $25,000 from California State University Monterey Bay. The team is working with CSU Monterey Bay and Cuesta College in Integrated Course Transfer.

Lynne Slivovsky (EE) and Tom Trice (History) received $25,000 from California State University Monterey Bay. The team is working with CSU Monterey Bay and Cuesta College in Integrated Course Transfer.

Faculty Notes

Aerospace Engineering

Dan Biezad and Tanner Sims (M.S. AERO ’09) presented “Design and Control of a Skid-to-Turn LAUV” at the AIAA Guidance, Navigation, and Control Conference in Ontario, Canada.

Notes
Kurt Colvin’s Boeing adventure

A
fter spending his summer as a Boeing Welliver Faculty Fellow and meeting with more than 200 Boeing engineers and managers, some of whom were Cal Poly alumni, industrial and manufacturing engineering professor Kurt Colvin observed, “Nobody in the world can do what Boeing can do.”

The Boeing program exposes eight select professors from U.S. and international universities to key elements and the business realities of industry and promotes interaction and collaboration between the company and academia.

Over the course of eight weeks, Colvin learned about both the Boeing military and weaponry programs and the commercial airplanes, including the 737, 767, 777, 747 and the new 787.

“I was exposed to the entire life cycle of complex system development, from initial conceptual design of the next generation, the manufacture of the large, complex assemblies, through the support of operating airplanes in the commercial fleet,” explained Colvin.

Asked how his fellowship experience will influence his teaching, Colvin responded: “Cal Poly is a major source for Boeing’s next generation of engineers. I bring back undergraduate projects, monetary support and the task of connecting Boeing’s engineering needs with our graduates. I anticipate my collaboration with Boeing will last for the rest of my career at Cal Poly.”

Computer Science & Software Engineering


Chris Clark supervised an ICEX trip to Norway to deploy an underwater robot to study climate-induced changes on Arctic ecosystems. The International Computer Engineering Experience program allows Cal Poly students to apply their technical knowledge in an international context. The group was featured with the Arctic adventure through the support of operating airplanes in the commercial.

Kurt Colvin (IME), the Boeing Welliver Faculty Fellow, toured the Boeing facility in Seattle over the summer.

Faculty News

p. 321-329), and “Approximate seismic displacement capacity of piles in marine oil terminals” (Vol. 1, No. 1, pgs. 129-146). In the proceedings of the 9th US National and 10th Canadian Conference on Earthquake Engineering in Toronto, Goel published “Limitations of estimating base shear demand in existing buildings from recorded motions,” and “Simplified Seismic Analysis of Piles in Marine Oil Terminals.” He also published “Challenges in base shear estimation from recorded motions” in the Proceedings of 2010 Structures Congress in Orlando.

The government of Portugal has funded Goel and a Portuguese colleague to develop “Nonlinear Static Methods for Assessment/Design of 3D Structures.”

Gregg Fiegel was named the 2009 Outstanding Faculty Advisor for Region 9 by the ASCE. He and Jay DeNatale published “Design teams in a civil engineering capstone course: formation, preparation, and performance” in Proceedings: 2010 Capstone Design Conference held in Boulder, CO.


Eugene Jud gave a seminar to the San Luis Obispo Community Development Department on “Newer Developments for Sustainable Mobility in Downtowns.”

Tryg Lundquist received a second algae wastewater treatment/biofuel grant from the California Energy Commission to expand the existing student-operated Cal Poly algae production ponds. Five faculty members from departments across campus advise student research conducted at the pond facility, including Yarrow Nelson, Lundquist and Research Engineer Ian Woertz (B.S./M.S. CE ’08) presented papers at the Water Environment Federation annual meeting and the Algal Biomass Organization annual meeting on algae bio-energy and wastewater treatment research.

Lundquist and Tricia Compas (B.S./M.S. ’09) traveled to Thailand to field test the Polytech Waterbag during Crison Viper 2010, an annual U.S. Marines-Thai military event, this year partly focused on humanitarian assistance and disaster relief water supply.

Robb Moss co-organized the 2nd International Symposium on Cone Penetration Testing (CPT) in Huntington Beach, where he was one of a dozen specialists from around the world to participate in a workshop on CPT and liquefaction. Moss co-authored “Spatial Variability of Levees as Measured Using the CPT” published at the conference. He also co-authored “Shake table testing to quantify seismic soil-structure-interaction of underground structures” published at the 5th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics in San Diego. Moss was invited to speak at a recent Seismic Information Workshop hosted by the Nuclear Regulatory Commission in San Luis Obispo.


Qu and Bruneau also presented “Design of Steel Plate Shear Walls Considering Boundary Moment Resisting Action” at the 9th U.S. and 10th Canadian Conference on Earthquake Engineering held in Toronto, Canada. Qu received travel support from the National Science Foundation to attend the conference.

Ashraf Rahim collaborated with a team of researchers from UC Davis and CSU Long Beach to develop guidelines for soil stabilization for Caltrans. He also secured a $48,000 grant from Leonard Transportation Center (LTC) to investigate moisture sensitivity of asphalt mixes.
David Janzen received $10,000 from Google to create curriculum material based on App Inventor, which allows non-programmers to create apps for Android phones. Last spring, Janzen’s Software Engineering capstone students created a system for Applied Technologies Associates (ATA) and its sister company, Scientific Drilling (SDI) that allows ATA customers to visualize data from their well drilling projects from anywhere in the world. More than 16,000 visits have been made to course materials developed by Janzen and Chris Lupo and provided to Google Code University. See http://code.google.com/edu/android/index.html.

Chris Lupo has been working to incorporate parallel computing into Cal Poly’s teaching and research. He facilitated Cal Poly’s NVIDIA CUDA Teaching Center, a massively parallel compute server with 1800 processor cores that is likely the highest performance compute system in the entire CSU. In collaboration with John Oliver (EE/CPE) and Zoe Wood (SCS), Lupo has developed a research relationship with Western Digital to do workload characterization on distributed storage systems.

Zoe Wood co-authored “Finding Good Paths: Applications of Least Cost Caloric Computations” and presented the paper at the International Conference on Computers and Their Applications in Honolulu. She also co-authored “Real-Time Visualizations of Ocean Data Collected By The NORUS Glider,” a poster presented at the IEEE Visualization 2010 conference in Salt Lake City. Wood presented a talk on “Scientific Visualization and Video Games: challenges in creating images of complex data” at the Central Coast Software & Technology Association, Inc. (Softec) in San Luis Obispo.

**Electrical Engineering**

**Dennis Derickson**, department chair, was awarded a $21,000 grant from ViaSat Inc. to purchase 140 educational robots for first-year electrical engineering and computer engineering students.


**Xiaomin Jin** and **Helen Yu** were awarded a $148,000 grant from the National Science Foundation (NSF) for a project on “Interdisciplinary Design: the Good, the Bad, and the Ugly” by ARCHE faculty Jill Nelson, Brent Nuttall, and Allen Estes.

**Papers presented at 2010 ASEE Conference**

- “Interdisciplinary Design: the Good, the Bad, and the Ugly” by ARCHE faculty Jill Nelson, Brent Nuttall, and Allen Estes.
- “Development and Assessment of a PCB Layout and Manufacturing Lab” by Al Liddicoat (CPE), Jianbiao Pan (IME), James Harris (CPE), Gary Perks (EE), Linda Shepherd (Political Science), Gregg Fiegel and Jay DeNatale (CE/ENVE).
- “Dynamics Buzzword Bingo: Active/Collaborative/Inductive Learning, Model Elitciting Activities, Conceptual Understanding” by Brian Self and James Widmann (ME).
- “Testing the Test: Validity and Reliability of Senior Exit Exam,” by Liz Schlemmer and Daniel Waldorf, IME.
- “Gender Representation in Architectural Engineering – Is it all in the name?” by Pamalee Brady and Allen Estes (ARCHE).
- “Assessing Curriculum Improvement through Senior Projects” by Jianbiao Pan (IME), Al Liddicoat (CPE), James Harris (CPE), and Linda Shepherd (Political Science).
- “Improving Student Understanding of Structural Dynamics Using Full-Scale, Real-time Excitation of Buildings” by Cole McDaniel and Graham Archer (ARCHE).
- “Model-Eliciting Activities” by Brian Self and Andrew Kean (ME) along with co-authors from other universities.
- “Assessing Self-Efficacy, Identity, Morality, and Motivation in a First-Year Materials Engineering Service Learning Course” by Trevor Harding (MATE), Lynne Slivovsky (CPE), and Nina Truch (Communications).
- “ExCEEED II: Advanced Training for Even Better Teaching” by Allen Estes (ARCHE) and co-authors from other universities.
- “A New Full Year Multidisciplinary Engineering Senior Design Project Course: Structure, Content and Lessons Learned” by Lily Laiho (BME), Richard Savage (MATE), and James Widmann (ME).
- “Using Video Technology to Extend Learning Styles in a Geotechnical Engineering Laboratory” by James Hanson and Gary Wellin (CE/ENVE), along with colleagues from Auburn University.
- “Development and Dissemination of Learning Suites for Sustainability Integration in Engineering Education” by Linda Vanasupa (MATE) and colleagues from other universities.
- “Understanding the differences between faculty and administrator goals and students’ experiences with ethics education” by Trevor Harding (MATE) and colleagues from other universities.
- “Institutional obstacles to integrating ethics into the curriculum and strategies for overcoming them” by Trevor Harding (MATE) and colleagues from other universities.

**Cal Poly faculty taking a lead in the American Society for Engineering Education (ASEE)**

The practice of engineering is constantly changing; likewise, engineering education must evolve to incorporate new research on learning and to meet the needs of students and society. The pre-eminent clearinghouse for that research—and for exchanging information about innovative teaching—is the American Society for Engineering Education (ASEE). While the total membership of the group is over 13,000 worldwide, Cal Poly has a notable presence in both leadership positions and research contributions.

Over 70 Cal Poly faculty members are ASEE members and attend regional, national, and international meetings each year. Not only has this participation allowed Cal Poly faculty to publicize the university’s “learn by doing” teaching philosophy, but Dr. Brian Self, a Cal Poly mechanical engineering professor and former ASEE Zone IV chair, also notes that Cal Poly’s active ASEE membership “has allowed Cal Poly instructors to gain insight into educational practices, including active learning, community based experiential experiences, and pedagogical research methods.” Dr. Elizabeth Schlemmer (IME), ASEE vice chair of membership for the Pacific Southwest Section, adds “To the extent that ASEE is the place where engineering educators go to attend regional, national, and international meetings each year. Not only has this participation allowed Cal Poly faculty to publicize the university’s “learn by doing” teaching philosophy, but Dr. Brian Self, a Cal Poly mechanical engineering professor and former ASEE Zone IV chair, also notes that Cal Poly’s active ASEE membership “has allowed Cal Poly instructors to gain insight into educational practices, including active learning, community based experiential experiences, and pedagogical research methods.”

Cal Poly’s ASEE impact can be seen by the offices held by Cal Poly professors and the variety of papers presented at the recent 2010 conference:

**Leadership positions**

- Trevor Harding (MATE); Materials Division Chair, the Educational Research and Methods Division Vice-Chair for Programs
- Jim Widmann (ME); Chair of the Design in Engineering Education Division (DEED)
- Jose Macedo (IME); Chair of the Pacific Southwest Section
- Stacy Breitenbach (Assistant Dean); Vice Chair of Faculty Awards - Pacific Southwest Section
- Lizabeth Schlemmer (IME); Vice Chair of Membership – Pacific Southwest Section
- John Chen (ME); Program Chair for the K-12 & Pre-College Engineering Division
- Brian Self (ME); former Chair, Zone IV

**Papers presented at 2010 ASEE Conference**

- “Improving Student Understanding of Structural Dynamics Using Full-Scale, Real-time Excitation of Buildings” by Cole McDaniel and Graham Archer (ARCHE).
- “Model-Eliciting Activities” by Brian Self and Andrew Kean (ME) along with co-authors from other universities.
- “A New Full Year Multidisciplinary Engineering Senior Design Project Course: Structure, Content and Lessons Learned” by Lily Laiho (BME), Richard Savage (MATE), and James Widmann (ME).
- “Using Video Technology to Extend Learning Styles in a Geotechnical Engineering Laboratory” by James Hanson and Gary Wellin (CE/ENVE), along with colleagues from Auburn University.
- “Development and Dissemination of Learning Suites for Sustainability Integration in Engineering Education” by Linda Vanasupa (MATE) and colleagues from other universities.
- “Understanding the differences between faculty and administrator goals and students’ experiences with ethics education” by Trevor Harding (MATE) and colleagues from other universities.
- “Institutional obstacles to integrating ethics into the curriculum and strategies for overcoming them” by Trevor Harding (MATE) and colleagues from other universities.

For the eighth year in a row, Saghri has ten papers published in international conference proceedings.

Taufik spoke on “Solar Energy for Remote Areas” as the invited keynote speaker at the 2nd Indonesia International Conference on Innovation, Entrepreneurship, and Small Business held at the Universitas Multimedia Nusantara in Jakarta and at the Conference on Information Technology and Electrical Engineering held in Yogyakarta.

He had ten papers published in international conference proceedings. Topics included:

- “A New Multiphase Interleaving Buck Converter With Bypass Cell Capacitor and Inductor,”
- “Harmonic Analysis of Grid-Connected Photovoltaic System with Adjustable Speed Drives,”
- “Lessons Learned: Encouraging Product Competitiveness through In-class Projects,”
- “Determining the Optimum Operating Parameters of a Unipolar PWM Inverter,”
- “Analysis and Simulation of Two-Phase Zero-Voltage-Switching Resonant Buck Converter,”
- “Power Quality Analysis of Adjustable Speed Drive with Multi-Pulse Rectifier,”
- “Modeling and Analysis of a Static VAR Compensated Mixed Load System,”
- “A Cell-Based Multiphase Interleaving Buck Converter with Bypass Capacitors,”
- “Design and Analysis of Two-Phase Boost DC-DC Converter,”
- Xiao-Hua (Helen) Yu chaired a session and presented a paper titled “Biokinematics Data Mining Using Artificial Immune Systems and Neural Networks” (co-authored with Shane Dixon, M.S. EE ’10) at the IEEE International Conference on Information and Automation in Harbin, China. She served in the program committee and chaired a session for the International Symposium on Neural Networks in Shanghai, China. Yu also published “Ant Colony Optimization Algorithm for Robot Path Planning” co-authored with EE undergraduate students Michael Brand, Michael Masuda, and N. Wehner in the proceedings of the International Conference on Computer Design and Applications.

Power patent

As new electronic devices demand more and more power, voltage regulator modules must become more and more efficient. Dr. Taufik (EE), working with Dodi Garinto at the Indonesian Power Electronics Center and Cal Poly students Kay Ohn and Ian Waters, recently received a U.S. patent on a multi-phase DC-to-DC converter that meets the challenge of today’s — and tomorrow’s — electronics.

“The number of transistors in a microprocessor basically doubles every one-and-a-half years,” Taufik says. “Intel’s new chip has two billion microprocessors. That will require increased power regulation for efficiency and heat dissipation. Our system method provides that.”

At right: Dr. Taufik holds his patented multi-phase DC-to-DC converter.
Ronald Smith (EE ’83)
2010 College of Engineering Honored Alum

The 2010 Honored Alum for the College of Engineering started his career at Northrop Space Technology in 1982, and he’s been on an upward trajectory ever since. Over his 27 years with Northrop, EE alum Ron Smith is credited with helping to pave the way for effective implementation of a process-based approach across the company’s entire engineering organization; serving as the acting Vice President of Directed Energy Systems; and holding the position of Vice President of Northrop Grumman’s Six Sigma Group.

Ron was responsible for the design and development of all electrical hardware for flight programs; he led the Digital Products Center for payload electrical design; and he was principle investigator for multiple IR&D programs in the development of advanced communications hardware.

Today, Ron serves as Northrop Grumman’s Vice President and Director of Mission Assurance in Information Systems with responsibility over 35,000 employees in all 50 states. Among his many achievements, Ron was named the 2006 National Black Engineer of the Year. A member of the Cal Poly President’s Cabinet, he has been very active in support of Cal Poly Engineering and EE. “Ron has helped promote electrical engineering as a career choice among prospective students, and served as an exemplary role model for future engineers both at Cal Poly and in primary and secondary schools,” said EE chair Dennis Derickson. “It’s fitting that he should receive the highest honor given to Cal Poly alumni.”

1960s

Burt Rutan (AERO 1965)
Cal Poly grad’s VSS Enterprise takes first flight

 Mojave-Virgin Galactic announced that its commercial manned spaceship, VSS Enterprise, successfully completed its first “ captive carry” test flight, taking off at from Mojave Air and Spaceport, California. ... Founded by Cal Poly Graduate Burt Rutan (AERO 1965), Scaled developed SpaceShipOne which in 2004 claimed the $10m Ansari X prize as the world’s first privately developed manned spacecraft. Read the story posted by KCY: [http://sanluisobispo.kcoy.com/content/cal-poly-grads-vss-enterprise-takes-first-flight](http://sanluisobispo.kcoy.com/content/cal-poly-grads-vss-enterprise-takes-first-flight) ALSO, KKFX, March 22, 2010 [http://www.myfox11.com/Global/story.asp?S=12184032](http://www.myfox11.com/Global/story.asp?S=12184032)

1970s

David Intersimone (CSC 1973)
People Power Company announces Technology Advisory Board

People Power Company today announced its Technology Advisory Board, which includes leaders in the area of research and innovation in wireless sensor technology, building developer communities, and energy management. ... Inaugural Board members include ... David Intersimone, Embarcadero ... David holds a bachelor’s degree in computer science from California Polytechnic State University at San Luis Obispo, California. [http://prcanada.net/index.php?option=com_content&task=view&id=229049&Itemid=59](http://prcanada.net/index.php?option=com_content&task=view&id=229049&Itemid=59)

Scott Liddi (EE 1987)
Fiero Italian Café and Bakery brings the “old country” to San Luis Obispo


Greg Podshadley (ET 1980)
Coulomb Technologies prepares for Growth by adding seasoned executives

Coulomb Technologies, a leader in electric vehicle infrastructure, today named Bret Sewell as executive vice president and Greg Podshadley vice president of operations. ... Podshadley holds a Bachelor of Science in Engineering from California Polytechnic State University in San Luis Obispo, Calif. [http://www.auto-mobi.info/index.php?option=com_content&task=view&id=31940&Itemid=50](http://www.auto-mobi.info/index.php?option=com_content&task=view&id=31940&Itemid=50)

1980s

Gary Bloom (CSC 1982)
New CEO hired at smart grid software maker eMeter Inc.

1990s

Harry Starkey (ME 1985)
New Water District GM learning about WKWD as he goes

Harry O. Starkey has hit the ground running as the new general manager of the West Kern Water District. ... After graduating from Cal Poly San Luis Obispo with a degree in mechanical engineering he was hired by the Kern County Water Agency in 1987. In his nine years with KCWA he managed the Cross Valley Canal project — Taft Midway Driller [http://www.taftmidwaydriller.com/features/x932357156/New-Water-District-GM-learning-about-WKWD-as-he-goes](http://www.taftmidwaydriller.com/features/x932357156/New-Water-District-GM-learning-about-WKWD-as-he-goes)
Last summer, I had a coincidental run-in with other ME alumni and thought other Cal Poly alumni might be interested in the story.

I’ve been working with Woods Hole Oceanographic Institute for the last eight years with the Alvin research submersible as a pilot and also the sub’s mechanical lead on board the research vessel Atlantis (http://www.whoi.edu/page.do?id=8422).

Atlantic carries about 59 people, including 30 scientists, about 20 ship crew and eight of us in “The Alvin Group.” The DSRV II Alvin research submersible is the nation’s deepest diving manned submersible; it carries three people, a pilot and two scientists.

I was piloting a dive off of the Pacific Northwest at 8,730 feet deep with observers Dr. James Cowen (University of Hawaii) and Dave Huey (Stress Engineering Services out of Houston, TX). Our dives last up to nine hours, and at this depth it takes 90 minutes to reach the bottom and another 90 to 100 minutes for ascent. During the ascent I get the chance to get to know my observers. That’s when I found out that Dave was a Cal Poly alum (ME ’75). We swapped stories and he informed me that another member of the science group, Kevin Gomes, was also from Cal Poly and also an ME, class of ’92.

Notes:
• Kevin Gomes is now a software engineer with the Monterey Bay Aquarium Research Institute (MBARI). (http://www.mbari.org/staff/kgomes/)
• There is a good article by Dave at: http://sections.asme.org/nwhss/previous-2003.html#032703

Glenn Wensloff (ME 1986)

Arroyo Grande company produces novel way to treat hazardous waste water

New Times: Winemakers are not so innocent as they’d like you to think: Their business produces waste... Fortunately, laws forbid wineries and other such agricultural producers as strawberry farmers from releasing untreated wastewater... Glenn Wensloff of Elutriate Systems of Arroyo Grande has a different process... The Cal Poly mechanical engineering graduate started Elutriate Systems in the late ’90s. http://www.newtimeslo.com/strokes-and-plugs/4286/bacteria-to-the-rescue/

1990s

Christopher Burnett (CE 1995)

Lunch & Learn: Simpson Strong-Tie Lateral Systems

AIA East Bay: Attend this presentation to learn about the latest innovations addressing your clients’ desire for more doors and windows while addressing lateral shear forces in your design. Chris Burnett of Simpson Strong-Tie Co. will present the latest products from their Lateral Systems product lines. Burnett graduated from Cal Poly SLO with a Civil Engineering degree in 1995 and began working as a structural design engineer at an engineering firm in Visalia, California. http://aiaeastbay.blogspot.com/2010/03/lunch-learn-simpson-strong-tie-lateral.html

Glenn Curtis (CSC 1993)

Likewise Software promotes new director of engineering

Likewise Software has announced the promotion of two current employees into senior engineering roles. Glenn Curtis, formerly software development manager, has been promoted to director of engineering focusing on enterprise customers... Curtis holds a Bachelor’s degree in Computer Science from California Polytechnic State University. http://www.prweb.com/releases/2010/05/prweb3985674.htm

Richard Magill (CE 1995)

Construction firm names associate

Ventura County Star: Heery International, a design and construction management firm, has promoted Richard Magill to associate. The 30-year industry veteran is currently responsible for several Ventura County Community College District projects that are part of a bond construction program. He holds a bachelor’s degree in civil engineering from Cal Poly San Luis Obispo. http://www.vcstar.com/news/2010/jul/24/business-in-brief/#ixzz0upPEun00-vcstar.com

Scott Metzger (CSC)

Leading cloud innovator Joins Sonoa Systems

MARKETWIRE via COMTEX: Sonoa Systems, Inc., the leading provider of enterprise API management solutions, today announced that Scott Metzger has joined the executive team. In this new role, Metzger will work closely with Sonoa’s customers and partners, providing first-hand insight and advice to companies driving new revenue services and innovation with APIs. http://www.marketwatch.com/story/leading-cloud-innovator-scott-metzger-joins-sonoa-systems-2010-03-29?reflink=MW_news_stmp

Douglas Peete (CPE 1996)

xMatters Appoints New CFO and Vice President of Product Management

MarketWire.com xMatters, the relevance engine company, today announced that two long-standing employees have been promoted to senior management roles: Simon Pius was named CFO and Doug Peete was named Vice President of Product Management... Doug holds a B.S. in Computer Engineering from Cal Poly, San Luis Obispo. http://www.marketwire.com/press-release/xMatters-Appoints-New-CFO-and-Vice-President-of-Product-Management-1296577.htm


Savage Spreads Word Of Women’s Role in Engineering

Memphis Daily News: As the founder of Medtronic Inc.’s local chapter of the Society of Women Engineers (SWE), Heather Savage helps spread the word that the field of engineering is wide open to young women. Savage earned three degrees – a bachelor’s degree in mechanical engineering, a master’s degree in engineering management and a master’s of business administration – from California Polytechnic State University at San Luis Obispo. http://www.memphisdailynews.com/opinion/268851-president-hops-on-bike-designed-locally

Fred Sisson (ME), Judy Ledford (ENVE 1997)

SLO firm lands huge solar carport project in Arizona

The Tribune San Luis Obispo-based REC Solar has scored what it claims is the largest solar installation on a carport in Arizona... REC, which installs both residential and commercial solar panels, employs about 200 people in San Luis Obispo and about 600 nationwide. It has completed more than 5,000 solar systems since it was founded in 1997 by two Cal Poly engineering students, Fred Sisson and Judy Ledford. http://www.sanluisobispo.com/2010/08/16/1253331/buzz-solar-company-wins-big.html

2000s

Amber Lucas (ME 2007)

President hops on bike designed locally

Gilroy Dispatch: Last month, President Obama and his family visited Martha’s Vineyard, and the news filled with images of them riding their rental bikes... For former Gilroyan Amber Lucas, it was a proud moment: the most powerful man of the western world stranded a bike she designed. Lucas, who now lives in Morgan Hill, works for Specialized bikes, headquartered in that city... In her first year, hired right out of Cal Poly with a degree in mechanical engineering, she says she did a “ridiculous amount of designs,” close to 10 bikes. http://www.gilroydispatch.com/opinion/268851-president-hops-on-bike-designed-locally


iFixit’s ‘teardowns’ of Apple gadgets draws customers

Los Angeles Times Nearly a dozen men crowded around the table gawking at a box containing one of the first 3G-enabled iPads to go on sale, but no one dared make a move to touch it. Finally, Miroslav Djuric, a veteran who had broken into other Apple devices, stepped forward. ... Djuric is the technical communications director for iFixit, whose claim to fame is cracking open the latest Apple gizmo to see what makes it work. Founded by graduates of Cal Poly, across from its headquarters here, the company makes money by selling electronic parts on its website to do-it-yourselfers. http://www.latimes.com/business/la-fi-ifixit-20100623,0,6099190.story
Parents please note: If your son or daughter is no longer at this address, please report his or her current address to the College of Engineering.