CENG grad student honored by Clinton Initiative

Tricia Compas worked on “Polytech Waterbag”

Tricia Compas has dedicated over 2,000 hours to her Civil and Environmental Engineering thesis project, the Polytech Waterbag. All her time and effort paid off this October when Compas was awarded a grant by the Clinton Global Initiative University and the Wal-Mart Foundation.

With a team of students and an advisory panel of professors and business professionals, Compas created the Polytech Waterbag, a revolutionary water treatment system for disaster relief zones. It stands out from other methods because it can treat murky floodwater in one container, transforming it to water that meets the World Health Organization’s emergency standards.

How do you inspire teenagers to become our next great generation of engineers? Turn them loose in Cal Poly’s “Learn by Doing” labs for a week of hands-on engineering activities and let them engineer their own projects.

Led by Cal Poly faculty members and enthusiastic engineering student “counselors,” Engineering Days gives high school students a chance to experience the challenging and rewarding world of engineering firsthand.

“I think engineering is way more fun than I originally thought it was. You get to do stuff and invent and help the world be a better place.”

— Natalie Hagler, age 13

2008 Engineering Days

Young rocket scientists have a blast at Cal Poly

Brothers Christian, left, and Jonathan Rodriguez experience “Learn by Doing” while working on their model rockets during the Engineering Days camp at Cal Poly.

AERO student Joey Sanchez, right, works with Phillip Phung, 12, above, and Austin Liddicoat, 12, above left, with launching their rockets.
ME alumnus challenges others to fund “Learn by Doing” facilities

Eight years into retirement, John Nielsen (ME ’65) decided it was time to see how he might help his alma mater.

The 1965 mechanical engineering alumnus made trips to campus and joined the Mechanical Engineering Industry Advisory Council. “What excited me most was the enthusiasm of the students and the projects they develop—much more sophisticated projects than what we did in the ‘60s.”

John’s work in the Cal Poly shops gave him a solid foundation for a successful career. He retired from General Mills after designing, building and managing the engineering functions in several plants throughout the U.S.

When John looked back to Cal Poly, it was the shops that came to mind. So, he and his wife have established the John & Connie Nielsen Student Projects — Lab Upgrade Challenge Fund, committing up to $240,000 as a challenge to fellow alumni and friends. The Fund will match all unrestricted gifts to complete shops in the Bonderson Projects Center and the Aero Hanger, where students design and build their award-winning projects.

In recognition of John and Connie’s generosity, the college will name a lab in the Bonderson Center the “Mustang ’60 Student Projects Shop.” The name honors the memory of those who lost their lives in the football team plane crash on October 29, 1960. “Connie and I felt that this would be a way to remember those fallen students,” says John.

Scholarship promotes global outlook

In today’s competitive job market, it is important to become a global engineer. The Fluor International Education Scholarship will help the College of Engineering give students that opportunity.

The scholarship supports CENG students who are studying abroad. There are many low-income and first-generation students who might not have this option otherwise. Preference is given to students who are studying at one of CENG’s partner universities, which include schools in Taiwan, China, Germany, Spain, and Australia.

The scholarship is open to Mechanical Engineering, Materials Engineering, Electrical Engineering, and Civil Engineering students. Club membership within the college is a consideration and applicants must have a 3.0 GPA.

As freshmen, students are encouraged to learn a second language and by sophomore year students should be planning their study abroad experience.

“All of our partner universities offer engineering coursework, so with careful planning, a student should be able to stay on track for graduation and go abroad,” says Stacey Breitenbach, CENG assistant dean for student affairs.
CENG ranked No. 1 for second straight year; Cal Poly remains “Best in the West”

F or the second year in a row, Cal Poly’s College of Engineering was named by U.S. News & World Report as the No. 1 public engineering program in the nation for schools whose highest degree is a bachelor’s or master’s. Cal Poly Engineering ranked fourth overall among both public and private institutions.

Said Dean Mohammed Noori: “This year’s recognition is particularly important because the college achieved this tremendous accomplishment despite a significant growth in enrollment, yet no increase in number of full-time equivalent faculty since 2003, and while we have continued to experience major budgetary challenges.”

Noori pointed out that particularly noteworthy were the U.S. News rankings for individual College of Engineering departments and programs. “Our Industrial & Manufacturing Department out-ranked all others in the nation, both public and private,” he said. “I congratulate IME’s faculty, staff, students and chair Dr. Don White for this remarkable achievement.”

In addition, Cal Poly’s civil, computer electrical and mechanical engineering programs were each ranked as the top program at a public university in their respective specialty categories, while the aerospace program was ranked the third best program at a public university.

Cal Poly ranked 10th 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.”

Cal Poly President Warren J. Baker observed, “We are very pleased with Cal Poly’s continued No. 1 ranking. For 16 years Cal Poly’s faculty have been recognized for their outstanding work in educating the best and brightest students and helped them become successful and productive members of California’s workforce. We are also very proud to be home of the No. 1 undergraduate engineering program in the nation.”

The complete U.S. News college rankings are available at www.usnews.com.
CENG increases outreach efforts to young engineers

Cal Poly outreach efforts received a boost last year with the addition of an Outreach Coordinator. In her new position, Teana Fredeen (AERO ’91) reached over 1,600 K12 students with the help of two new student Outreach Ambassadors.

Hands-on projects were taken into local classrooms at Fesler Middle School in Santa Maria, visits to a 4th-6th grade math classes at Hawthorne Elementary in San Luis Obispo, SLO Christian School, and Mesa Middle School in Arroyo Grande.

In addition, industrial and manufacturing instructor Jim Robinson gave outstanding presentations about his custom-made Robinsong Guitars to an AP calculus class at Atascadero HS, and two CAD classes at Arroyo Grande HS. Robinson was also a distinguished speaker for the Spring Freshman Seminar Series sponsored by Cal Poly College of Engineering.

CENG Outreach also provided engineering activities to over 600 4th through 8th grade students who visited the Cal Poly campus for CESaME’s Learn By Doing Lab program. The K12 students built toothpick bridges, pop-fly levers, egg drop packaging and tower bridges with the help of mechanical engineering professor Peter Schuster, the Materials Engineering Department, the Outreach Ambassadors, and campus chapters of the Society of Women Engineers, the Society of Civil Engineers, and the American Society of Mechanical Engineers.

In marketing the second annual Engineering Days program for High School students, Teana Fredeen and MEP’s Maria Manzano, visited 35 classrooms to tell students about engineering and the Engineering Days program. These marketing efforts inspired more than 140 students to apply to the 2008 Engineering Days program. Please email outreach@calpoly.edu for information.

“It was fun to build a bridge. I learned how to see which material to use and what makes a sturdy bridge”

— 4th-grade student

Poly Canyon Village takes student housing

Student housing at Cal Poly reached a new luxurious milestone in September when 1,500 students moved into the first phase of Poly Canyon Village, a $300 million housing complex built into the foothills northeast of the campus center.

When the LEED*-New Construction certified project is completed in 2009, the Poly Canyon Village complex will boast 615 apartments with 2,661 beds, as well as 1,926 parking spaces and 11, 255 square feet of retail space featuring Jamba Juice, Einstein’s Bagels and Peets Coffee & Tea. Other highlights of Poly Canyon Village, which was designed with sophomores in mind, are a swimming pool, study areas, meeting rooms and basketball and volleyball courts.

The completion of Poly Canyon Village next year will give the Cal Poly student housing program more than 6,100 beds, largest in the CSU.

Engineering Days

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taste of the excitement and satisfaction that comes with engineering innovation and problem-solving. By all accounts, the 2008 Engineering Days program met its goals.

Targeted marketing, scholarships and sponsored transportation helped ensure the program’s success in recruiting underrepresented students, vital to increasing diversity both on campus and in the workplace. Of the 93 students who attended, 63% were from underrepresented groups, including 28 females. Students were primarily

BME counselor Natalie Lacey, right, helps Lisa Ferguson, 14, with her tissue-growing experiment during Engineering Days at Cal Poly.
Housing to the next level

from local counties, but also included 11 from non-local counties and three from out of state.
Engineering Days received $75,000 in donations including Platinum sponsorship from Cisco, Edwards Air Force Base and Fluor. Over $9,000 was used to provide scholarships directly to the attending high school students.
During the week, students participated in the following events:
- Hands-on labs taught by Cal Poly professors
- Presentations by Chevron and NASA engineers
- Professional development session on networking taught by Cal Poly engineering students
- Cal Poly Admissions presentation
- College of Engineering tour
- Collegiate Panel
- Fun day at Cal Poly’s University Union
- Plant Tours
- Student showcase
Although data is not yet available on how many of the participants go on to choose an engineering path or apply to Cal Poly Engineering, feedback from the students indicates that Engineering Days indeed inspired new goals and expanded outlooks on engineering.

“Actually, before I came here I thought of doing astronomy but after attending these seminars I might have actually been interested in aerospace engineering...”
— Justin Elenes, age 17

“(Prior to the camp) I was thinking of becoming a lawyer, but now I want to be an engineer.”
— Maximo Guzmo, age 15

“I used to think that engineers just built bridges and roads, but now I know that engineers can make a difference in the world.”
— Jorge Piñon, age 16

Student life at Poly Canyon Village includes playing beach volleyball or hanging out in Peets Coffee, Jamba Juice or Einstein’s Bagels in Poly Canyon Village’s central plaza.
NASA Regolith Excavation Challenge

Cal Poly team digs in to design a lunar backhoe

Right: Cal Poly/SLObotics team members check out their robot “Frankenstein.”

Digging in moon-like dirt with autonomous robots was the test when the Cal Poly College of Engineering hosted the NASA Lunar Regolith Excavation Challenge in early August. Twenty university and private sector teams competed for $750,000 in prize money and have the chance to contribute to NASA’s final product: an excavator that will be used to establish a moonbase by 2020.

The challenge required teams build an autonomous robot that could excavate 330 pounds of lunar soil, called “regolith,” in 30 minutes. Because solar energy on the moon is limited, the robot must be very efficient, operating with an average of less than 150 watts.

Unfortunately, all of the teams at the challenge fell short of minimum requirements. The Cal Poly/SLObotics team was foiled by a rock that lodged under a wheel.

Cal Poly/SLObotics team members lower their robot into the regolith material.

Engineering alum John Sweeney named president of Cal Poly Alumni Association

John Sweeney, a Cal Poly engineering graduate and founder and CEO of Dairy Procurement Group LLC of California, is the new president of the 14,000-member Cal Poly Alumni Association, the voice of more than 130,000 living university alumni.

In addition to his B.S. in Civil Engineering from Cal Poly, Sweeney received his MBA from Wharton, and is a Professional Registered Engineer in California. In addition to serving as the 2008-10 president of the 14,000-member Cal Poly Alumni Association, Sweeney currently serves on the College of Engineering’s Dean Advisory Council. He is also a former Member of the Board of Trustees for the California State University System.

He lives in Alamo in the San Francisco Bay Area with his wife and two children. Sweeney’s company, DPG, is an aggregated purchasing group for the dairy industry, purchasing supplies for nearly five percent of the dairy cows in California. He has extensive experience in management consulting, supply chain, process improvement and operations in utilities, healthcare, engineering, agriculture and financial services. As a consultant, Sweeney has led several strategic initiatives for Blue Shield of California and Kaiser Permanente.

Prior to his consulting work, Sweeney was a Vice President at Rabobank’s captive venture fund, vTraction, where he was responsible for several portfolio companies, generating investment leads and managing investment analysis in food and agricultural related exchanges and infrastructure companies. Earlier, Sweeney was a manager with Deloitte Consulting, serving clients in the Health Care and Utility industries after starting his career as a project manager for Pacific Gas & Electric Company.

In serving as president of the Cal Poly Alumni Association, Sweeney will also lead its 42-member Board of Directors. Sweeney follows outgoing president Al Amaral, the retired CEO of the university business auxiliary now known as the Cal Poly Corporation. Amaral is a 1964 Cal Poly Agricultural Business alumnus.

“I am looking forward to working with the board, administration and staff to find new ways to increase Cal Poly’s mission of lifelong learning,” said Sweeney. “My goal is to provide new and exciting ways for alumni from all generations to continue their involvement with Cal Poly throughout their lives.”

“We are extremely fortunate to have John as our new president,” said Cal Poly Alumni Relations Director Kim Gannon. “He brings a new perspective and is so very generous in giving his time and talent to serve Cal Poly.”

For details on the Cal Poly Alumni Association, visit its Web site at http://www.alumni.calpoly.edu/.
Biomedical Engineering Club members, from left, Daniel Hale, Katie Robinson, Eric Rowson and Rudolph Zacher wear their major on their sleeves. At top of page: Engineering Student Council members greeted prospective engineering students at Open House.

Chad Worth (ENVE) of the Hydrogen Energy Club prepares an exhibit with a canister of hydrogen.

 Hundreds of 2008 Cal Poly Open House visitors filled the parking lot near the Bonderson Projects Center and Engineering Plaza to visit booths like the Cal Poly Space Systems club at right.

ME students J.J. Siefert and David Wang demonstrate the shock absorbers on the Society of Automotive Engineers’ mini Baja car
Down to the sea in a high-tech adaptive kayak

As a teen, Cal Poly alumnus Bryan Gingg (Social Science, ’90) enjoyed swimming, surfing and paddling a kayak in the waters around Morro Bay Harbor. But a 1982 car accident left the Morro Bay resident paralyzed without the use of his arms or legs, ending his love affair with ocean sports.

With the help of Cal Poly engineering and kinesiology students and professors, Gingg was back in the calm blue water of Morro Bay Harbor in mid-May.

Gingg was the test pilot for the “solo quad” kayak developed in Cal Poly’s adaptive paddling program. He used a mouth-held electronic “straw” to control a small electric motor on the kayak and to the cheers of dozens of students, media members and supporters, piloted the craft smoothly through the harbor for about 30 minutes.

Starting with an $11,000 grant from the Christopher and Dana Reeve Paralysis Foundation in 2002, the project was developed by Mechanical Engineering Professor Frank Owen and Cal Poly Kinesiology Professor Kevin Taylor.

CPE students Brian Smith and Frank Sanchez are two of the CENG students and faculty that have worked on the Solo Quad-Conversion Project since 2002. Above: Bryan Gingg pilots the kayak in Morro Bay.

Mechanical, computer and electrical engineering students worked on the high-tech, outrigger-equipped kayak, which also includes a joystick feature for paraplegic users — those with movement in their arms. Quadriplegic kayakers can sip or puff on the straw to send signals to the kayak’s sensor controls and operate the craft.

Exploring Engineering program opens doors for parents and students of underrepresented groups

Last year, the College of Engineering experimented with a new idea to reach financially and academically disadvantaged families by communicating directly with parents — in both English and Spanish.

The 2008 Exploring Engineering conference offered six different workshops to parents/guardians and K-12 students from local counties. Because 85% of the parents spoke Spanish only, the presentations were bilingual, an effort that prompted one parent to say, “I like that you were concerned in that we understood what was being presented.”

The conference goal was to promote diversity both on campus and in the engineering fields by providing information about engineering, as well as how parents can motivate their children and navigate the educational and administrative processes required for entrance to college.

The success of Exploring Engineering is evident in comments made by the parents, including: “This was a great experience. We got a lot of great information that will help us”; and “Our daughter feels comfortable here. I like the hands-on training offered.”

And, “This is a great Engineering School!”

The next Exploring Engineering Conference is scheduled for April 18, 2009 with room for 170 participants. Free lunch and bus transportation from Santa Maria, Fresno and Bakersfield will be available. If you are interested in volunteering for this upcoming Exploring Engineering Conference, contact Maria Manzano at msmanzan@calpoly.edu.

“Our daughter feels comfortable here. I like the hands-on training offered.”

— Parent attending Exploring Engineering

CENG staff awards

The college’s 2008 Outstanding Staff Awards were awarded to Kay Kibbe and Kim Marsalek. Kibbe, the administrative support coordinator for the Civil & Environmental Engineering Department, serves as a genial and knowledgeable first point of contact for the department’s 1000 students and the general public. She supports advising efforts, the graduate program, scheduling, the webpage, the student assistant program, events and activities, alumni outreach, and admissions work. Her work assisting the Society of Civil Engineers, frequently going above and beyond to help the student group with event coordination, exemplifies her commitment to the department and to the students.

Marsalek, a College of Engineering academic advisor, served as a student peer advisor before joining the staff in 2006. She is known for her extensive knowledge of academic rules and policies, her positive attitude, patience, and work “behind the scenes” to help students post their degrees. Last year, Marsalek won a scholarship to attend the National Academic Advising Association conference, and she returned with valuable information that the Advising Center incorporated into the Freshman Academic Probation Workshops.

Parents received information about Cal Poly Engineering at the 2008 Exploring Engineering Conference.
CENG’s 2008 honored alum is out of this world

On October 15, over 100 local school children along with Cal Poly students and faculty had a once-in-a-lifetime experience: they had a live, face-to-face conversation with NASA Astronaut Gregory Chamitoff. Pretty exciting, but the kicker was that Chamitoff was 220 miles above Earth aboard the International Space Station (ISS).

Chamitoff, a 1984 Cal Poly electrical engineering graduate and the College of Engineering’s 2008 Honored Alum, flew to the station as a mission specialist on STS-124 shuttle mission. He took up his six-month residency on June 2, and has been busy serving as Flight Engineer and Science Officer.

What does he do in his free time? In answer to that question and others from the students attending the October campus link-up, Chamitoff revealed that he plays guitar and chess, watches “Star Trek” and “Battlestar Galactica” episodes, “jogs” on the ISS treadmill, and enjoys the reconstituted meals.

Students also asked Chamitoff such sophisticated questions as “How does the station protect itself from micro-meteorites and other space debris?” That was from 10th grader Carson Bush. Summer Tauscher from the 8th Grade at Lewis Middle School asked, “While astronauts are in space, what behavioral changes have been noted and do they change for better or worse?” And Josh Rodriguez, also from Lewis Middle School, asked, “how does fire react differently in space relative to Earth?”

In addition to his Cal Poly bachelor’s degree, Chamitoff earned a master’s degree from Cal Tech, a Ph.D. from the Massachusetts Institute of Technology, and an M.S. in Space Science from the University of Houston Clear Lake. He is an AIAA Associate Fellow and received the AIAA Technical Excellence Award, NASA Silver Snoopy Award, and NASA/USA Space Flight Awareness Award.

As a student at Cal Poly, Chamitoff taught courses in circuit design and developed a self-guided robot. While at MIT, he worked on several NASA projects. He performed stability analysis for the deployment of the Hubble Space Telescope, designed flight control upgrades for the Space Shuttle autopilot, and worked on the attitude control system for the Space Station. He was selected by NASA for the Astronaut Class of 1998 and qualified for flight assignment as a Mission Specialist in 2000.

In recognition of his distinguished career as an engineer, scientist and astronaut, Chamitoff was named the College of Engineering’s 2008 Honored Alumnus.

Students of all ages had a chance to ask astronaut Gregory Chamitoff questions in the ATL on a televised link to the International Space Station.

Clinton Initiative

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I was both humbled and inspired by all the leaders working on these issues day in and day out,” said Compas.

Compas was particularly excited to meet Dr. Greg Allgood, the lead scientist for PUR™, maker of the chemical packets that treat contaminated water in the Polytech Waterbag. Allgood is an advisor for the project and although Compas has been on several conference calls with him, it was the first time she had the opportunity to meet him in person.

Compas’ involvement with Engineers Without Borders (EWB) led her to the Polytech Waterbag. For three years Compas worked with EWB on a water treatment system for a village in Thailand. During this experience she was introduced to Dr. Tryg Lundquist, a professor in Civil and Environmental Engineering. He offered her the opportunity to take on the Polytech Waterbag as a master’s thesis project.

“He told me it was just the kind of project for me as it prodded my interest in designing technologies for developing communities, this time focused on disaster relief situations,” said Compas.

Research and development will continue on the Polytech Waterbag with the hopes of assisting 100,000 families during 2009 and 500,000 families in 2010. Although the Waterbag may have won an individual award, this project is truly a collaborative effort.

Compas said, “I would like to thank all of my advisors and team members for the continued efforts and support of this project. It has been a great experience for me and I am thankful for this opportunity.”

Patricia Compas (CE/ENVE), standing at left, shakes hands with President Bill Clinton, after receiving a grant from the Clinton Global Initiative for her work on the “Polytech Waterbag.”

Standards.

Its unique cylindrical shape means it can be filled in as little as three inches of water. Relief organizations can get the bags to survivors quickly and one bag comes with enough water treatments packets to last ten days for a family of four.

Awards were given based on innovation and commitment to a global issue and the ability to create lasting social change. The award came with a grant from the Wal-Mart Foundation that will allow Compas and her team to complete the project and distribute the Polytech Waterbag to relief organizations.

To accept her award, Compas was invited to New York City where she attended a three-day meeting. The recipients got the chance to hear talks and engage in discussions with President Bill Clinton, Barack Obama, John McCain, Bono, Lance Armstrong, Al Gore, Tom Brokaw, Madeleine Albright, and Muhammad Yunus.

“I was honored to represent Cal Poly;
Cal Poly’s CP-6 CubeSat is ready to fly

Even while the student-designed and built picosatellites CP-3 and CP-4 orbit at 700 km above the earth, Cal Poly’s PolySat program has completed work on its “next generation” CubeSat, CP-6, and delivered it to NASA-Wallops Flight Facility in Virginia for launch.

“CP-3 and 4 have been in orbit for a year and seven months, and while they may remain in orbit for as long as 25 to 30 years because of their high orbit, their communications systems are becoming more unreliable,” says Austin Williams, an electrical engineering undergraduate and one of the leads on the CP-6 project.

The new satellite—scheduled to launch in early 2009 on a Minotaur rocket—sports an improved “com” system, which will hopefully relay data back to Cal Poly’s ground station for at least two years. Team member Justin Foley says that CubeSat “speak” “sounds like beeping to other people, but it sounds great to us—and the first beep is definitely the best.”

Foley, a physics undergraduate, reported that at least seven students have worked on CP-6. “We’ve got aerospace majors, computer engineering majors, mechanical engineers—I’ve gotten a lot out of working with other disciplines on this project.”

In addition to CP-6, the Minotaur rocket will launch two Cal Poly-developed P-POD deployers: one will carry a NASA satellite and the other will carry CP-6 along with CubeSats from the Aerospace Corporation and Hawk Institute for Space Sciences.

ME department technician designs and builds his own human powered vehicle

While mentoring the Cal Poly Human Powered Vehicle Team for the past 20 years, George Leone, a senior technician in the Mechanical Engineering Department, always held the dream of designing and building his own human powered vehicle to race, but wasn’t able to build it for various reasons. This year, it all came together with the help of some Cal Poly faculty, staff, students and alumni.

Human Powered Vehicles (called “HPVs”) are streamlined bicycles with two or more wheels. They can be upright but are mostly recumbent. Competitive speedbikes (those that can reach speeds of over 60 mph) all have rider protection from a fiberglass or composite cover, called a fairing.

Every Fall there is a gathering of these speedbikes on a long, flat road near Battle Mountain, Nevada. This event, called the World Human Powered Speed Challenge uses a five-mile, dead flat road for attempts at breaking world records, or at least 60 mph.

Leone’s bike, “Primal” was constructed in only six weeks, and advanced its’ speed from 42 mph on the first day to an amazing 62 mph by the end of the competition.

Primal’s geometry is based on the work of retired Professor Bill Patterson, who pioneered the study of single track vehicle dynamics based on aircraft dynamics. The frame construction was the work of recent ME graduate, welder and mountain bike racer Daniel Baggs.

A huge block of foam was hand-shaped to create a full-scale model of the fairing. Molds were made from the model, which were then used to create the actual fairing, which is 8.5 feet long, 44 inches high and made from Kevlar, carbon and fiberglass.

Time was getting short, but George’s friends and co-workers from Cal Poly stepped in to help him achieve his dream. Professor Hemanth Prounamilla took on the project wholeheartedly and was part of the team every step of construction. Professors Joe Mello, John Ridgely, Andrew Davol, Hans Mayer and staff member Chuck Keezer all arrived at George’s barn at various times to help. Former students Ron Layman and John Pocock became the rider and chief mechanic, respectively, at the race itself.

Cal Poly a powerhouse at World Speed Challenge

If there were an award for most competitors from a single school, Cal Poly would have definitely won:

[Cal Poly graduates Larry Lenn and Tom Amick rode their tandem to a top speed of 67.06 mph, which is only 1 mph off the world record for tandem bikes;]

[Cal Poly graduate Matt Scott had various mechanical problems, but rode his speedbike to a top speed 54.97 mph;]

[Aaron Williams of the current Cal Poly HPV team had chain derailment problems, but managed to ride their entry “Athena” to 54.16 mph. Also there with the Cal Poly team was Team Advisor Kim Shollenberger and students Steffen Hausler, Joe Levysohn-Silva and recently graduate Darryl Fletcher.

The event was won by Sam Whittingham of British Columbia who broke his own world record with a speed of 82.33 mph. But “Team Leone” went home happy to have broken the 60 mph barrier. ]
IME grad wins gold at Beijing Olympics

Cal Poly has its first Olympic gold medalist and she is a College of Engineering graduate. **Stephanie Brown Trafton** earned the gold medal in the women’s discus at the 2008 Summer Olympic Games in Beijing, China.

Brown Trafton, 28, an Arroyo Grande High School and Cal Poly Industrial and manufacturing Engineering graduate who currently resides in Galt, won the Olympic title with a best mark of 212 feet, 5 inches. She reached that mark on her first throw and the rest of the 12-person field couldn’t catch her.

“All through college, and even when I was coming up, my first throw has always seemed to be my best throw,” said Brown Trafton, who was third at the U.S. Olympic Trials. “No one else stepped up in Beijing and I was able to pull off the upset.”

Cal Poly grad student receives sustainable energy fellowship

Materials engineering graduate student **Sean Kaylor** was selected this spring from a highly competitive pool from around the country as a Sustainable Energy Fellow.

Kaylor began the year-long fellowship process at an intensive week-long program to explore technologies and economics of sustainable energy held at Duke University in May.

Researchers from Arizona State University, Cornell, Duke, Massachusetts Institute of Technology, and the University of Michigan designed and direct the Fellowship to be a unique educational and research experience for students to address the global need for the use of energy reduction designs supplemented by renewable energy technologies. During week-long program, students were exposed to research and education in energy production, conversion, storage and sources that are environmentally friendly and renewable such as wind, solar, biomass and geothermal.

Among other activities CE/ENVE student Sean Kaylor is a member of a group designing an environmentally sustainable village on the Chinese island of Chongming.

Cal Poly SHPE earns national “Blue Chip” award

Cal Poly Society of Hispanic Professional Engineers (SHPE) is known to serve as “family” for many of the university’s Hispanic engineering students. The group’s renowned social, academic and professional activities, in conjunction with a strong membership drive and community outreach earned a Blue Chip Chapter Award from the national parent organization.

“Our SHPE Cal Poly Chapter was the only one in the nation to win the Blue Chip Chapter Award for our efforts in 2007-2008,” notes chapter president **Jaime Sanchez**.

“A good example of our activities was our Advancing Careers in Engineering (ACE) outreach program,” says Sanchez. “We provide tutoring at local K-12 schools for English language learners. ACE culminated in an end-of-year barbeque, where we awarded a computer scholarship to a local middle school student.”

Multidisciplinary PolyHouse project builds skills, character and hope

**Students in construction-related majors can make a difference in peoples’ lives while learning their trades, thanks to the fifth-annual PolyHouse program.**

The program allows graduate and undergraduate students majoring in construction management, planning, engineering, industrial technology and other related fields to help local citizens whose homes are in need of improvement.

This year, students chose a disabled Nipomo man who has been confined to a wheelchair for the past several years. Hardly able to move his hands or feet, his wife and their two daughters were living in an unfinished home in need of renovations, generally and in terms of accessibility.

The newly remodeled home features several improvements, making it more comfortable, safe and accessible for the family.

“We’ve done a lot to this house,” said **Dan Hepler**, an industrial engineering senior leading the electrical team. “Before we got here, there were no permanent lighting fixtures, flooring, trim or molding. We’re finishing it up for them and adding a lot of things that will improve their quality of life.”

Just some of the home improvements included new kitchen and bathroom surfaces, a larger and more accessible bedroom and bathroom for the disabled man, and general repairs to the previous construction, which students described as “shoddy.”

Other improvements include new tile flooring with a finer grout line, which minimizes vibration and resistance to a wheelchair. Students also installed wider French doors and an automatic front door. These are just a few examples of the long list of improvements made to the home.

“This project has been awesome to be a part of,” said **Allison Holmgren**, an industrial engineering junior and interior design project manager. “It’s really stressful since there’s a lot of planning and you never know what you’re going to find when you get inside the walls, but we come back every day because it’s worth it.”

Hepler agreed. “Of all the things I’ve done at Poly, this is definitely the most fulfilling and most dedicated project I’ve ever worked on,” he said.

“These students are learning not only the course material, but life lessons,” said industrial and manufacturing engineering professor **Roya Javapour**, who teaches the class that manages the PolyHouse program. “In the end, the satisfaction that comes from knowing they’ve improved the quality of someone’s life is really important.”
Last spring, the College of Engineering announced its 2008 outstanding students. Departmental academic achievers (see chart at left) were determined by grade point averages. College-wide winners for contributions to the College of Engineering, contributions to Cal Poly, and service to the community received special recognition, including $200 bonds from Lockheed Martin.

Chad Pruett (Civil Engineering) was recognized as the College of Engineering’s topmost senior for academic excellence. In addition to making President’s List for four straight years, Pruett played as a Division I-A Baseball Athlete and was the recipient of the Baggett Scholar-Athlete Award.

The college-wide Outstanding Graduating Senior for Contributions to the College of Engineering was Lindsey Bauer from General Engineering. She has been a member of the Student Campus Computing Committee, Poly Reps, the Engineering Student Council, the Dean’s Student Advisory Council, and the ASI board of directors.

Mechanical engineering senior Todd Maki was recognized for Contributions to the University. Maki served on the ASI board of director for three years before his election as ASI president.

Daniel Frost from Environmental Engineering was named Outstanding Senior for Community Service. An active participant in Engineers Without Borders, Frost traveled to Nicaragua, where he helped design and install water storage tanks for the only health clinic in Nueva Vida.

Cal Poly students win national award for design of device to aid disabled workers

Mechanical engineering students Paula Gijon and Chittayong (Jao) Surakitbanharn won the NISH National Scholar Award, which recognizes the design of devices to improve access to the workplace for persons with disabilities.

The students designed and built a device to help persons roll silverware into napkins for restaurants. The first place award comes with $10,000 prize for the students and $10,000 matching grant to the Cal Poly Mechanical Engineering Department.

The National Scholar Award for Workplace Innovation & Design was founded by NISH to encourage the development of creative technological solutions for barriers that prevent people with disabilities from entering or advancing in the workplace.

The National Scholar Award is open to any college student or student team at the graduate or undergraduate level.

The National Scholar Award program is a great service learning opportunity for engineering, computer science, industrial design, physical therapy and occupational therapy students. NISH is a national non-profit agency whose mission is to create employment opportunities for people with severe disabilities by securing Federal contracts through the AbilityOne Program, formerly Javits-Wagner-O’Day (JWOD), for its network of community-based, nonprofit agencies.
Cal Poly’s concrete canoe team places fourth in the nation

Cal Poly designed, built and paddled to 4th in the nation at the American Society of Civil Engineers’ Annual National Concrete Canoe Competition. Each year, students from Cal Poly’s Society of Civil Engineers (SCE) pit themselves against teams from approximately 220 colleges across the U.S. and Canada in a year-long contest involving design know-how, project management, engineering expertise, oral and written presentations, endurance, imagination and sheer muscle.

Cal Poly’s fourth place finish bested its fifth place finish last year. During the event held June 18-21 in Montréal, the Cal Poly team won 3rd in Coed Sprints, 3rd in Men’s Sprints, 4th in Design Paper, and 4th in Final Product. University of Nevada, Reno captured their first-ever national Concrete Canoe title; University of California, Berkeley came in second and host school, Ecole de technologie superieure was third.

**Cal Poly ASCE team dominates regional civil engineering contest**

A perennial winner at the American Society of Civil Engineers (ASCE) Pacific Southwest Regional Conference, Cal Poly again dominated the contest with first place wins in six events, including Concrete Canoe. Cal Poly took first place overall at the conference for the eleventh time out of the past 12 years.

The Pacific Southwest Regional Conference held at CSU Northridge pitted 84 Cal Poly civil engineering students against teams from Southern California, Arizona, Hawaii, Nevada, and Japan.

“The conference was filled with many exciting moments, including many close canoe races and the catastrophic failure of our steel bridge,” said Sheila Sideh, executive vice president of the Cal Poly Society of Civil Engineers.

A highlight event, the Concrete Canoe competition involves design, presentation, and racing. The Cal Poly team took first in the Men’s Sprint, first in Men’s Slalom/Endurance, first in Oral Presentation and first in Final Product. They came in second for Design Paper, Women’s Sprint, Women’s Slalom/Endurance, and Co-ed Sprint.

In other conference events, Cal Poly placed first in Surveying, Quiz Bowl, Concrete Frisbee, Wiffle Ball, and Tug of War.

Cal Poly wins unusual bicycle design and race contest

The Parker Hannifin Chainless Challenge is a bike race, with a difference. The engineering student competitors design and build their own bicycles, which must meet criteria for reliability, manufacturability and cost effectiveness. But even more unusual, the motive power must be hydraulic, meaning no chain connection between the chainwheel and the freewheel cogs.

Held July 28-29 in Cleveland, Ohio, the Chainless Challenge is sponsored by Parker Hannifin, which manufactures motion control products. Cal Poly mechanical engineering students Ken Gagner, Ian Plaine, Dimitrii Pokrovskii and Shawn Optiz won the competition’s spring race, road races, and best paper; and, as the overall trophy winners, they also brought home a check for $13,500, which will be used to upgrade the Mechanical Engineering Department Controls Lab. Dr. Jim Widmann, faculty advisor to the team, also made the trip to Cleveland.

According to Parker spokesperson Mary Gannon, “Cal Poly’s speeds topped 40 mph in the short drag race. The team finished the time trial in 1 hour, 17 minutes and 10 seconds, with University of California, Irvine, following behind at just 1 hour, 18 minutes, and 22 seconds. These times broke the record for the race; they are just half of the previous winner’s times from 2007.”

“We built the bike as our senior project,” noted Cal Poly team member Ian Plaine. “We spent three months in design and it took three months to build. We built all the machine components ourselves in the machine shop on campus.”

Right: Cal Poly’s Chainless Challenge team sparkled in Ohio. The team included Mechanical Engineering students Ken Gagner, Ian Plaine, Dimitrii Pokrovskii and Shawn Optiz.
For the third time in the past four years, Cal Poly aerospace seniors flew high above the competition at the national Undergraduate Team Aircraft Design competition, sweeping first, second, third, and, this year, even fourth place.

Cal Poly also came in second in the Undergraduate Team Engine Design category.

According to Dr. Rob McDonald, faculty advisor, Cal Poly consistently dominates the prestigious AIAA (American Institute of Aeronautics and Astronautics) competition because the students work closely with industry.

“Out industry partners run [the students] through the ringer—the teams received six critical reviews by industry engineers this year,” said McDonald. “The way we do design at Cal Poly gives our students better preparation, motivation, and review than any professor could ever hope to match.”

The first place team, Human League, included team leader Kevin Johnsen, Bryan Morrisey, Ryan Nichols, Rory Golden, Eugene Eswonia, and Blaine Bisquera. The group designed “Spraying Mantis,” an agricultural unmanned aerial vehicle (UAV).

Johnsen emphasized the dedication of his teammates to the design project. “There is absolutely no reason we needed to spend 30+ hours a week on a three unit class,” he said. “We worked within our group to produce something better than we could make on our own—each team member carried his weight, outside-the-box ideas were encouraged, and everyone was a valued member of the team. The end result is something pretty impressive.”

The other winning Cal Poly teams included Narwhal Aeronautics led by Matt Kistler (Second Place), Floxen Aeronautics led by Bobby Rocha (Third Place), and Warpath Aeronautics led by Ashley Evans, which took second in the Undergraduate Team Engine Design competition.

Cal Poly IME student wins international technical paper competition

Industrial engineering senior Claire Dooley won a highly competitive international student technical paper contest sponsored by the Institute of Industrial Engineers (IIE).

Dooley, one of 14 finalists, presented her paper, “Surface Mount Technology Optimization for Printed Circuit Board Manufacturing at Alcon Labs,” at the IIE Annual Conference & Expo in May in Vancouver, Canada.

“My technical paper is based on my senior project, which I completed while on a six-month co-op at Alcon Labs,” said Dooley. “The project demonstrated the benefits of using optimization techniques to improve the efficiency of automated surface-mount technology component placement equipment in the printed circuit board manufacturing line.”

Dooley attended the IIE conference with 15 other IE students and two faculty members. The Cal Poly contingent was the largest from any university represented at the conference, which is the most significant event of the year for the IIE.

“After winning the IIE Regional Conference’s competition, held at Cal Poly this winter, I was really looking forward to participating in the International Conference,” Dooley said. “There were a number of outstanding student papers presented by industrial engineering students from all over the world. I was excited and surprised when they announced me the competition winner.”

Claire Dooley (IME) won a student technical paper competition.
Cal Poly Supermileage vehicle are again the top finisher at the Shell Eco-Marathon

CENG team places second in international competition at 2,752.3 miles per gallon

At this year’s Shell Eco-Marathon Americas competition of high-mileage, fuel-saving prototype vehicles, Cal Poly entered as the returning champion and came in second place with 2,752.3 mpg, a 45 percent improvement over last year’s 1,902.7 mpg win. The competition took place in April at the California Speedway track in Fontana, CA.

Cal Poly’s Supermileage Team claimed second between first and third place finisher Mater Dei High School from Evansville, IN. Mater Dei’s first place car reached 2843.4 mpg; their third place car reached 2383.8 mpg. The controversial win was aided by two windy days of competition that helped propel the Mater Dei vehicles. In fact, on some track runs the vehicles clocked over 6000 mpg without having to turn on their engines, although those runs were disqualified.

“The wind hurt everybody but Mater Dei,” said team leader David Ulrich. “They were shaped such that the wind would push them forward. Our car had many technical improvements that increased our mileage over last year. Given no wind conditions, we definitely would have performed better, so next year we hope for better weather conditions and then maybe we can take the title back.”

Shell Eco-Marathon Americas is a three day event consisting of vehicle inspection and competition. The race comprised seven laps with a total distance of 9.7 miles to be completed under 38 minutes and 50 seconds. The minimum average speed was 15 miles per hour.

Cal Poly’s Supermileage Team performed “coast and burns” during which they would only use the engine two to three times to accelerate and then coast up to a mile. This method was used on the first day before competition to find what points of the winding track would be most effective to accelerate. Judges carefully measure fuel before and after a car competes.

This year’s competition consisted of 27 teams from 23 universities and four high schools from the U.S., Canada and Mexico. The test vehicles were powered by combustion engines, fuel cell/hydrogen technology, diesel fuel, liquid petroleum gas and solar power.

With a new top and hardware, Cal Poly’s car, Black Widow, was an improved version of the 92-pound vehicle used last year to win with an impressive 1902.7 mpg. The Supermileage Team has been working on Black Widow since September 2007. The team was started by seven students four years ago. It currently has 14 members total, 12 whom attended the competition this year. All five returning members to the team from last year are graduating this year including Ulrich.

“It’s really a transition year,” Ulrich said. “It started off with a group of friends. We’ve grown up from the dorms over the past five years, and we started the team our third year. Now we have a true team with new members and we’re just trying to pass on our knowledge and improve even more next year.”

Cal Poly HPV peddles to first-place with fastest sprint ever

Cal Poly’s Human Powered Vehicle kicked up some dust at the Western Division HPV Competition hosted in April by the University of Nevada, Reno.

Competing against nearly three dozen other teams from across the Western U.S. — plus teams from as far away as Connecticut — the Cal Poly HPV, a sleek beauty named Athena, took first place in the Men’s Sprint event. Powered by mechanical engineering student Josh Smith, the vehicle reached a top speed of over 46 miles per hour.

Named after the Greek goddess of wisdom, art, industry, and skill, the Cal Poly entry combined state of the art fiber composite design with extensive computer aided modeling and wind tunnel testing. The lightest Cal Poly HPV in the 25 year history of this event, Athena also took second in overall design.

Sponsored by the American Society of Mechanical Engineers (ASME), the Human Powered Vehicle Competition (HPVC) is an international event. Competitions are also held in the eastern United States, as well as in South America.
Faculty Notes

Dean’s Office

George Bekey, Research Scholar in Residence, delivered the keynote address at the IEEE International Conference of System-of-Systems Engineering in Monterey, CA. His talk was on “Intelligent systems of humans, agents and robots as examples of systems-of-systems.”

Ed Sullivan, associate dean, was asked by the Transportation Research Board (TRB) to serve as a member of NCHRP Panel 8-73 to help oversee a national research synthesis project titled “Road Pricing, Public Perceptions and Program Development.” He also presented “Optimizing Traffic Throughput Through Pricing” at the TRB summer meeting held in Baltimore.

Multidisciplinary

Tryg Lundquist (ENVE) and Bruce Golden (Dairy Science) received a $72,000 grant from the CSU Agricultural Research Initiative to study an innovative dairy wastewater treatment process.

Christopher Clark (CSC/CPE), Paul Choboter (Mathematics) and Mark Moline (Biology) received a C3RP grant to develop an Autonomous Underwater Vehicle planning and control system to be integrated within a Central Coast ocean modeling system.

Christopher Clark (CSC/CPE), and Mark Moline (Biology) received a grant from Partnerships in Higher Education Norway - North America to work with colleagues from Rutgers University and partnering universities in Norway to facilitate exchanges, research and education that furthers technology for marine monitoring and ocean observation.

Christopher Clark (CSC/CPE), Pat Fidopiastis (Biological Sciences), and Lynne Slivovsky (EE/CPE) received a C3RP grant to undertake a project to observe nocturnal squid behavior via an underwater robot system. Clark is developing the localization system; Slivovsky is developing an image processing system for the project.

Aerospace Engineering

Dianne DeTurris and Eric Mehiel were appointed interim co-chairs of the department.

Dan Biezad presented “Cal Poly’s Motion Flight Simulator and Motion Algorithms” at the national AIAA Modeling and Simulation Conference held in Hawaii. He also received a two-year, $133,000 grant from NASA Ames Research Center for “Development of Multidisciplinary Flight Control Techniques for the Simulation of Intelligent Unmanned Autonomous Vehicles.”

Dianne DeTurris was accepted to the AIAA High Speed Airbreathing Propulsion Technical Committee.

David Marshall and AERO graduate student Robert Perry presented “An Evaluation of Proposed Formula 1
Harnessing the wind: CENG project focuses on renewable energy

ME professors Patrick Lemieux and John Ridgely built an 80-foot tower to study the wind patterns on Cal Poly’s Escuela Ranch land north of campus.

The powerful winds of change in renewable energy development have pushed Mechanical Engineering professors Patrick Lemieux and John Ridgely to develop the Cal Poly Wind Power Research Center on Cal Poly’s Escuela Ranch six miles north of campus.

Energized by a C3RP grant, the group built an 80-foot tower to hold anemometers to study wind patterns at the site. They plan to design and build a wind turbine there in early 2009. There are currently four MS students working on wind power-related thesis projects on topics that include support tower analysis, blade structure analysis, blade life assessment, and blade manufacturing.

Collaborative effort creates “speaking” periodic table of the elements

A team of Electrical Engineering students directed by EE professor Art MacCarley and Cal Poly chemistry professor Dennis Fantin have designed and built a prototype of an innovative learning tool for visually-impaired students in chemistry and physics. STEVI (Speaking periodic Table of Elements for the Visually Impaired) is the result of an innovative collaborative effort between the College of Science and Math and the College of Engineering.

The project was conceived by Professor Fantin, who is visually impaired, seeking a Braille-audio interface for this chart, which is fundamental to all fields of science. After Fantin and MacCarley brainstormed multiple preliminary designs and worked through implementation challenges, EE students Erin Bonenfant and Christine Corbett were recruited to work on the physical interface of STEVI as their senior projects during the Fall and Winter quarters, 2008.

The software elements of the project were completed during the following summer by Stephan Russ working as an intern with Prof. MacCarley under an NSF Research Experience grant, obtained to support robotics-related research largely through the efforts of Dr. George Bekey, CENG scholar-in-residence.

The tactile interface of STEVI is a matrix of pushbutton switches laid out in the shape of the Periodic Table of Elements, to best communicate the visual relationships between the elements. Each key is labeled in Braille (a system of writing for the visually impaired, consisting of patterns of raised dots read by touch) with the element symbol and atomic weight. Pressing a key causes STEVI to audibly provide information about the element, ranging from physical properties to ionic charge, depending upon the many modes that can be activated by the user via several “mode” keys. STEVI contains a Freescale 68HC12 microcontroller, which communicates over an RS232 or USB connection to any MS Windows™ computer, which runs a custom speech generation program coded in MS Visual Basic.
Four CENG professors receive honors from industry

Cal Poly’s College of Engineering announced the recipients of three annual industry-sponsored faculty awards and an endowed professorship. Industrial and Manufacturing Engineering professor Roya Javadpour won the Northrop Grumman Excellence in Teaching Award. Computer Science and Computer Engineering professor Chris Clark won the Northrop Grumman Excellence in Research and Development Award, and Mechanical Engineering professor William Murray won the Raytheon Excellence in Teaching and Applied Research Award. In addition, Aerospace engineering professor Rob McDonald received the two-year Lockheed Martin Endowed Professorship award.

Javadpour, an associate professor in industrial engineering, is well known for PolyHouse, an annual home improvement project for a local economically disadvantaged and physically disabled family. She initially pursued this highly creative, innovative, and high-risk approach to teaching project management skills in her graduate level industrial engineering course in 2004. The service learning course has been successfully offered every spring since then, with each year’s project being more complex. This year, Javadpour’s student project managers raised more than $100,000 from community donors. In recognition of this work, Javadpour received the President’s Service Award and was named one of the San Luis Obispo Tribune’s “Top 20 Under 40.” Javadpour earned two masters and her Ph.D. from Louisiana State University.

Clark, who joined Cal Poly in 2007, has established an ongoing record of interaction with government and private industry. An expert in autonomous mobile robots including the cutting-edge research area of localization and mapping, Clark is currently working with VideoRay, a leading producer of Remotely Operated Vehicles, to enable their underwater robots with autonomous capabilities. VideoRay has sponsored Clark’s capstone design team and provided funding for the students to develop embedded autonomous control of these underwater vehicles. He has also received a grant from Lockheed Martin to build a Mars Sandbox in which multiple scaled-down versions of mobile robots will be operated. Clark holds a Ph.D. from Stanford University.

Murray joined Cal Poly’s Mechanical Engineering Department in 1999 and has been a leader in updating the mechatronics concentration to reflect more current technology. By revamping the senior level mechatronics course and establishing a new junior level course, Murray has promoted and enhanced student learning of core principals before they advance to the design stage of the field. Murray has also been a prime driver for the establishment of several new graduate courses in system dynamics and fluid power. In addition to his curricular development contributions, Murray has undertaken an impressive array of applied research project concentrating on “Thrust Vectoring of an Annular Aerospike Nozzle.” Murray holds a Ph.D. from the Massachusetts Institute of Technology.

In only his second year at Cal Poly, McDonald has established an exemplary record of research, teaching and service. He is the recipient of two notable research grants, including a three-year, $1 million NASA grant that will facilitate the design of future aircraft. In addition, he has undertaken cutting-edge work in the area of unmanned aerial vehicles. Currently director of the Aircraft Design program, McDonald has also been appointed to the national AIAA Aircraft Design Technical Committee, a position that will maintain Cal Poly’s leadership in the field. McDonald advises numerous clubs and initiated a chapter of The Order of the Engineer, the national engineering ethics society. He received his Ph.D. from the Georgia Institute of Technology.

Aerospace Engineering

Dianne DeTurris and Eric Mehiel were appointed interim co-chairs of the department.

Dan Biezad presented “Cal Poly’s Motion Flight Simulator and Motion Algorithms” at the national AIAA Modeling and Simulation Conference held in Hawaii. He also received a two-year, $133,000 grant from NASA Ames Research Center for “Development of Multidisciplinary Flight Control Techniques for the Simulation of Intelligent Unmanned Autonomous Vehicles.”

Dianne DeTurris was accepted to the AIAA High Speed Airbreathing Propulsion Technical Committee.

David Marshall and AERO graduate student Robert Perry presented “An Evaluation of Proposed Formula 1
New CENG faculty for 2008-09

Kira Abercromby
Assistant Professor, Aerospace Engineering
- Ph.D./M.S. University of Colorado, Boulder (Aerospace Engineering)
- B.S. U.C. Los Angeles (Astrophysics)
- Research Expertise and Interests: Applied astronomy, specifically in orbital debris, orbit determination, and satellite characterization

John Chen
Associate Professor, Mechanical Engineering
- Ph.D./M.S. Stanford University (Mechanical Engineering)
- B.S. University of Virginia (Mechanical Engineering)
- Research Expertise and Interests: Diagnosing and addressing hindrances to student learning in engineering via technology, heat transfer, nondestructive inspection of industrial components

Kristina Jameson
Assistant Professor, Aerospace Engineering
- Ph.D. U.C. Los Angeles (Aerospace Engineering)
- M.S./B.S. Cal Poly (Aerospace Engineering)
- Research Expertise and Interests: Heat and mass transfer, aerospace propulsion

Christopher Lupo
Assistant Professor, Computer Science/Computer Engineering
- Ph.D./M.S. Computer Engineering
- B.S. California State University, Fresno (Electrical Engineering)
- Research Expertise and Interests: Code generation, compilers, computer architecture, embedded systems

Misgana Muleta
Assistant Professor, Civil & Environmental Engineering
- Ph.D. Southern Illinois University, Carbondale, (Civil Engineering)
- M.S. National University of Ireland, Galway (Hydrology)
- B.S., Arba Minch University, Ethiopia (Water Resources Engineering)
- Research Expertise and Interests: Water resources, hydrology, hydraulics, stormwater management, watershed management, optimization, watershed modeling

Anurag Pande
Assistant Professor, Civil & Environmental Engineering
- Ph.D./M.S. University of Central Florida (Civil Engineering-Transportation)
- B.Tech. Indian Institute of Technology, Bombay (Civil Engineering)
- Research Expertise and Interests: Intelligent transportation systems, traffic safety, vehicle infrastructure integration, traffic simulation, statistical/data mining applications in transportation engineering

Hemanth Porumamilla
Assistant Professor, Mechanical Engineering
- Ph.D./M.S. Stanford University, Digest (Aerospace Engineering)
- B.S. Washington State University (Mechanical Engineering)
- Research Expertise and Interests: System dynamics and controls, vibrations, mechatronics, bioengineering

Bing Qu
Assistant Professor, Civil & Environmental Engineering
- Ph.D. University at Buffalo, SUNY (Structural Engineering)
- B.S./M.S. Tongji University, Shanghai (Structural Engineering, Building Engineering)
- Research Expertise and Interests: Behavior of structural systems, with emphasis on earthquake resistant design and dynamic response of steel and other structures

Russell Westphal
Professor, Mechanical Engineering
- Ph.D./M.S. Stanford University (Mechanical Engineering)
- B.S. Washington State University (Mechanical Engineering)
- Research Expertise and Interests: experimental research on flow phenomena responsible for drag and heat transfer with applications to energy-efficient transportation and energy production including development of novel and low-cost measurement methods

Aerodynamic Regulations Changes Using Computational Fluid Dynamics at the 26th AIAA Applied Aerodynamics Conference in Honolulu. Marshall and AERO graduate students Scott Turner and Tyler Ball presented “Gaussian Process Metamodeling Applied to a Circulation Control Wing” at the 38th Fluid Dynamics Conference and Exhibit in Seattle. Rob McDonald took 45 students on a trip to the Boeing Commercial Aircraft facility in Seattle and advised teams in AIAA Undergraduate Team Aircraft Design Competition, which came in 1st, 2nd, 3rd, and 4th place. He co-hosted the Aerospace Engineering Department Industry Design Symposium, which was attended by more than 60 members of industry, academia, government, and alumni, and consulted for Hawker Beechcraft on project PD413. He also conducted independent review of clean-sheet aircraft design.

Biomedical & General Engineering

Lanny Griffin was appointed department chair; Robert Crockett was appointed director of General Engineering.

Kristen O’Halloran Cardinal attended the annual Biointerface conference sponsored by the Surfaces in Biomaterials Foundation and held in Minneapolis, MN. Accompanying her were graduate students Colby James, Marc Dawson, and Dimitri Delagrammaticas, who presented posters on tissue engineering projects underway in the Blood Vessel Mimic Lab.

Trevor Cardinal gave an oral presentation at the 2008 Biomedical Engineering Society meeting in St. Louis on “Teaching Physiology to Biomedical Engineers Using Team Based Learning and Inquiry Research.”


Civil & Environmental Engineering

Rakesh Goel was appointed department chair.

Alypios Chatzianou served as resident director of the CSU international program in Florence, Italy for 2007-008 responsible for hiring faculty for the new concentration of classics, reorganizing the architecture teaching assignments, and other administrative oversight duties.

Jim Hanson co-chaired the first U.S.-Japan Geoenvironmental Engineering Workshop in New Orleans and the NSF-funded United States Universities Council on Geotechnical Education and Research Workshop in Sacramento.

He served on the Executive Board of the Civil Engineering Division at the ASEE Annual Conference in Pittsburgh, where he presented “International Collaboration for Geotechnical Engineering Laboratory Exercises.” At the Global Waste Research Symposium in Copper Mountain, Colorado, he presented “Spatial Variability of Waste Temperatures in MSW Landfills” and “Determination of Cover Surface Temperature Functions at MSW Landfills.” Both papers were co-authored by Nicolas Oettle (MS CENVE 2008) and Dr. Nazli Yesiller. At the Intercontinental Landfill Research Symposium in Copper Mountain, Hanson gave an invited overview of ten years of research on Thermal Analysis of Landfills.

Hanson received $239,000 from the National Science Foundation for a collaborative research project on “Innovative Learning Styles and Universal Access for Geotechnical Engineering Education.” Joining Hanson for the three-year study is Trey Duffy, director of Cal Poly’s Disability Resource Center, Auburn University and Nippon Koei Co., Ltd. of Tokyo.

Hanson also visited Corralitos Regional Landfill in Las Cruces, NM, with CENVE master’s student Wilson Wong and Dr. Nazli Yesiller to install field monitoring equipment related to landfill barrier performance.


- “Comparison of Liquefaction Procedures in the US and China” and “Re-investigating liquefaction case histories from the 1976 Tangshan Earthquake” presented at the 13th World Conference of Earthquake Engineering in Beijing.


Moss received a $375,000 NSF- Network for Earthquake Engineering Simulation Research (NEESR) grant for a joint UCLA-Cal Poly project to evaluate seismic levee deformation potential of levees founded on peaty organic soils in the Sacramento - San Joaquin Delta area. He also received a $216,000 grant to research the risk of levee failures in the Western U.S. sponsored by a new Center of Excellence on Coastal Hazards at the University of North Carolina.

Harris honored by ASEE

Computer Engineering

Christopher Clark received a grant from Cal Poly’s Center for Teaching and Learning to develop a graduate course in “Probabilistic Robotics” that focuses on the use of probability theory in robot mapping and localization algorithms.

Clark published numerous papers, including the following:


See http://users.csc.calpoly.edu/~cmclark/publications.html for a complete list of Clark’s publications.

John Clements co-authored “Implementing Continuation Marks in Javascript” published at the 2008 Scheme and Functional Programming Workshop held in Victoria, British Columbia. As part of a $500K NSF grant, Clements led a week-long workshop for college and high-school instructors to introduce the TeachScheme, ReachJava! first-year curriculum.

Al Liddicoat (EE/CPE), and D. DalBello.
Michael Haungs, John Clements, and David Janzen presented “Improving Engineering Education through Creativity, Collaboration, and Context In a First Year Course” at the American Society for Engineering Education (ASEE) Annual Conference in Pittsburgh, PA.

David Janzen co-authored “Test-Driven Learning in Early Programming Courses” presented at the Technical Symposium on Computer Science Education (SIGCSE’08) in Portland, OR; and “Teaching Object-Oriented Software Engineering through Problem-Based Learning in the Context of Game Design,” and “Seeds of Evidence: Integrating Evidence-Based Software Engineering” at the Conference on Software Engineering Education and Training in Charleston, SC.


**Electrical Engineering**

Dean Arakaki has focused on several on- going projects in RF/antenna area. Along with EE students, he is simulating and building metamaterials and constructing an additional anechoic chamber to measure “radiated emissions” or unwanted noise from electronic devices.

Jerome Breitenbach, Al Liddicoat, John Saghari, and Zahed Sheik participated in the final project demonstrations of ViaSat’s Summer Team Internship Program.

Dennis Derickson and graduate students Mike Bernacil and Shane O’Connor presented “Microwave Signal Generation Using Self-heterodyning of a Fast Wavelength Switching SG-DBR Laser” at the IEEE International Microwave Symposium in Atlanta, GA.

Xiomin Jin worked as a research fellow at Peking University in Beijing, China from June to August 2008. Her work there on GaN LED/LD solid-state lighting development was part of an international research collaboration sponsored by the Chinese Ministry of Education.


She also co-authored conference papers:
- “Design and Implementation of Mobile Free Space Optical Communication System” and “A Pressure Sensing System using Fiber Optic Sensors and Artificial Neural Networks” were presented at the 2008 Avionics, Fiber-Optics and Photonics Conference (AVFOP2008) in San Diego.
- “Improvement of light transmission using photonic lattices for solar- cells” was given at a workshop on Solar Energy: New Materials and Nanos- tructured Devices for High Efficiency at Stanford.
- “Thermal Annealing Effects of Obliquely Evaporated Silver Doped Chalcogenide Glass Thin Films,” which included co-authors Dr. Richard Savage (MATE) and Cal Poly EE master’s students William Dunn and Mukul Jain, was presented at the 2008 Material Research Society (MRS) Spring Meeting in San Francisco.

**Industrial & Manufacturing Engineering**


Roya Javadvand was runner up for the 2008 Institute of Industrial Engineers (IIIE) International Innovation in Curriculum Award, which recognizes outstanding curriculum innovation. She again directed a successful PolyHouse project, in which students raised over $110,000 in contributions. The multidisciplinary 2008 PolyHouse course included collaboration with classes in the College of Architecture & Environmental Design and the College of Liberal Arts.


Xiao-Hua (Helen) Yu presented “A New Pruning Algorithm for Neural Network Dimension Analysis” (co-authored with Devin Sabo, MSE’07) at the IEEE International Joint Conference on Neural Networks held in Hong Kong, China. She also presented “Optimize Neural Network Controller Design Using Genetic Algorithm” co-authored with EE graduate student Ariel Kopel and presented at the World Congress on Intelligent Control and Automation in Chongqing, China. Yu gave two invited lectures on “Progress and Applications in Nature Computing” at Tianjin University (Tianjin, China) and Dalian University of Technology (Dalian, China).
The efforts of the Materials Engineering Department (MATE) to incorporate service learning into the curriculum have netted a President’s Service Award. The President’s Service Award recognizes students, faculty and staff for their contributions to the quality of life in San Luis Obispo and spirit of civic involvement. Professors Kathy Chen, Linda Vanasupa, Will Hughes, Trevor Harding, and Rich Savage received the award at the 22nd Annual President’s Community Service Awards in May.

In presenting the award, Cal Poly President Warren Baker said, “Collectively, these faculty members have transformed their department by integrating service-learning and project-based learning in half the courses that the department offers, setting a new standard for a service-learning-engaged department.” Spurred by a $1 million grant from the National Science Foundation Grant, MATE developed and adopted a revamped curriculum that recognizes the need for engineers to serve as agents of change.

Jianbiao Pan, Andrew Farris (MS EE’08), and Albert Liddicoat (EE/CPE), along with additional co-authors, published “Drop Test Reliability of Lead-free Chip Scale Packages” in the Proceedings of the 38th IEEE Electronic Components and Technology Conference held in Lake Buena Vista, FL. Pan, Liddicoat, James Harris (EE/CPE), and D. Dal Bello published “A Project-Based Electronics Manufacturing Laboratory Course for Lower-division Engineering Students” in the Proceedings of the ASEE Annual Conference & Exposition in Pittsburgh.

Pan gave a variety of presentations and invited talks on topics that included design for reliability, gold wire bonding, and curriculum development. The talks were given at the Thin Film Users Group (TFUG), American Vacuum Society Northern California Chapter, in San Jose; the ASEE Annual Conference; Teledyne Microelectronics in Los Angeles; Philips Lumileds Lighting Company in San Jose; and the 8th International Business & Technology Summit for Thermal Management of Electronics in Natick, MA.

Pan served as chair of Stacked die, copper, and reliability session at the IMAPS (International Microelectronics And Packaging Society) Advanced Workshop on Wire Bonding in San Francisco, and chair for 2007-2008 of SME Total Excellence in Electronics Manufacturing (TEEM) Award Committee. He was a member of Electrical and Electronic Engineering Program Outcome Assessment Management Committee, IEEE and SME, 2008-2009.

Dan Waldorf supervised a team of Engineers Without Borders (EWB) students on an exploratory trip to Thailand and Laos. The purpose of the trip was to survey needs in rural villages for potential projects and to study compressed earth block production and construction. The group also designed and installed a “dry” composting toilet and researched sustainable technologies involved with water storage and non-asbestos roofing materials.

Materials Engineering

Kathy Chen, chair, gave an invited talk on “Learning Opportunities in Nanoscience & Engineering with a Materials Perspective” at the Materials Research Society (MRS) Spring Meeting, San Francisco. At the International Union of Materials Research Societies in Sydney, Australia, Chen spoke about “Creating a project-based curriculum in Materials Engineering.” Co-authors included all MATE faculty and Jon Stolk from Olin College. “Teaching Strategies and Resources in Nanotechnology” was the topic of a talk Chen gave at the California NanoSystems Institute Educators Workshop held at UC Santa Barbara.

Trevor Harding served as Principal Investigator for a multi-university project examining ethical development in undergraduate engineering. He co-authored several articles, including: “Using structural equations modeling to validate the theory of planned behavior as a model for predicting student cheating with implications for researchers interested in transitional versus consolidated phases of moral reasoning development” published in Research in Higher Education (08/10/08); and “The additional of loading profile transitions during artificial hip wear testing alters the amount and morphology of wear particles” published in Proceedings of the Institute of Mechanical Engineers, Part H: Journal of Engineering in Medicine.

Harding presented “The Psychology of ‘Ought’” at the 38th Frontiers in Education Conference in Saratoga, NY, and he gave workshops on ethics and student motivation as part of UCSB Summer Research Intern Seminar Series, at the ASEE Annual Conference and Exposition in Pittsburgh, PA, and at Witwatersrand, Pretoria, and Northwestern Universities, South Africa.

Harding serves as Associate Editor of Advances in Engineering Education and ASEE program chair for three committees.

Richard Savage gave a talk on “Process Development and Characterization of MEMS Cantilever Structures Based on NiTi Shape Memory Thin Films,” which represented the work by recent masters students Dustin Dequen (BMED) and David Getchel (MATE) at the 2008 Society of Vacuum Coaters Technical Conference in Chicago, IL. He also presented “Characterization of Nanoscale Vapor Barrier Glass Coatings on Polymer Substrates by Ellipsometry” at the Federation of Analytical Chemists and Spectroscopy Societies in Reno, NV. The presentation was co-authored with graduate student Daniel Helms and John Felts, and covered work done by Helms that was sponsored by Nano Scale Surface Systems.


Mechanical Engineering

Russ Westphal has undertaken a project with Northrop Grumman to develop small, self-contained instruments capable of high altitude in-flight measurement of flows near aerodynamic surfaces. The resulting data will allow development of criteria for wing manufacturing tolerances and provide information needed to deploy effective low-drag technologies.

Jim Widmann attended the 2008 ASEE Annual Conference in Pittsburgh, PA and presented two papers: “Enhancement of Capstone Industry Sponsored Senior Projects Through Team-Based, Product Realization Activities” and “Integrating Experiment, Modeling and Design using a Hands-on Hydraulic Positioning Laboratory for Mechanical Control Systems Education.”
Fetz elected to Video Electronics Standards Association (VESA) board

With his election, Brian Fetz (EE ’83), DisplayPort program manager for Agilent Technology’s Digital Test Division, joins the standards group that oversees DisplayPort specification and many standards related to computer video displays. Fetz has been active in VESA’s Physical Layer Subgroup, where test processes for the DisplayPort compliance test specification are defined and demonstrated. Previously, Fetz worked on Agilent’s Bluetooth(r) and signal integrity solutions as well as in manufacturing where he worked as a production engineer and test engineer for base station and mobile testing products.

Luzuriaga appointed to board for Professional Engineers & Land Surveyors

A 1993 civil engineering graduate, David Luzuriaga has been a licensed civil engineer in California since 1997. He has served as president of Luzuriaga Taylor, Incorporated since 2000. Prior to that, Luzuriaga served as president of David Luzuriaga Associates Civil Engineers from 1998 to 2000. He worked as a project engineer for Brian Kargas Faulk from 1995 to 1998 and for Treadwell and Rollo, Incorporated from 1993 to 1995.

Cypress appoints Lee Senior Vice President of Worldwide Sales

Electronic Engineering alumnus Ben Lee (‘89) has had 20 years of experience in sales, marketing and executive leadership in the semiconductor industry, having worked with companies specializing in programmable solutions, as well as broadline suppliers. His previous positions include Vice President of Worldwide Sales for Trident Microsystems, Chief Operating Officer at Apexone, and vice president of Altera’s Asia-Pacific Sales and managing director of Altera International Ltd.

Johnson named President of Enerplus U.S. Operations

Over the past 25 years, Dana Johnson (MET ’82) has worked in the oil and gas industry in managerial, operations, business development and engineering positions. Johnson served 22 years in a variety of senior management and engineering positions with Shell Explora-
CENG alum wins international Energy Globe award

A panel of international jurors has awarded the prestigious Energy Globe award to Cal Poly mechanical engineering alumnus Frank J. Levy and his colleague Sergio Dell’Orco for developing Post Consumer Carpet (PCC) Processing Technologies.

PCC was selected out of 853 projects from 109 countries as the United States winner and one of three winners in the international Earth category.

Used carpet poses a major challenge for the United States, as more than five billion pounds of non-biodegradable carpet are dumped into the nation’s landfills each year.

“If incinerated,” said Levy, “the carpets will release several toxic chemicals. If accumulated, they never will disintegrate, posing terrible problems for future generations.”

PCC developed an innovative and sustainable solution to this problem. The equipment separates petrochemical components that make up the carpet, which enables manufacturers to recycle the components, save oil and reduce the impact on landfills. Each line of PCC machinery can reclaim up to 30 million pounds of carpet annually.

PCC has licensed its technology to Interface, Inc., the world’s third-largest carpet manufacturer. The partnership aims to remove any negative impact it has on the environment by the year 2020. The first line of PCC machinery has been running in LaGrange, GA. since Sept. 2007, with additional lines planned in the near future.

Unmanned aircraft business soars in San Luis Obispo

Nine years ago, AERO alumnus Thomas Akers (2001) and fellow model sailplane enthusiast, Norm Timbs (ME ’88, ET ’92) pooled their cash (which amounted to less than $1,000) and founded Aero-Mech.

The company eventually moved out of Norm’s garage and into 45,000 square feet of industrial space in San Luis Obispo, and now employs 85, 29, of whom are Cal Poly Engineering alumni. Nine current students also work for AeroMech. One of the larger producers of small unmanned aircraft in the nation, AeroMech’s customers include the U.S. military and major defense companies, such as Lockheed Martin.

AeroMech’s “eye in the sky” airplanes help provide protection to soldiers and bases from ambush and attack. The company also makes jet-engine-powered target drones used to test radar systems and missiles.

“AeroMech is an exciting place to work,” says Akers. “[We support] our troops overseas with a quality product that they can depend on to help save lives.”

According to CEO Akers, AeroMech’s astounding growth pace is due to its ability to keep up with new technologies and products in an industry that is undergoing rapid development. “We are diversifying by providing more types of aircraft and also expanding to provide more of the subsystems and payloads for other manufacturers in the industry,” he explains. “We are also looking at a number of domestic and international opportunities that are on the horizon.”

When speaking about the development of his company, Akers sounds the “learn by doing” themes familiar to Cal Poly-educated engineers: “When we started, we were just two engineers. As the business has grown, I’ve had to grow and adapt with it in order to lead the company to the next level. There are many levels in front of us, and likewise, I have much to learn on professional and personal fronts to help the company achieve its goals.”

Alumni provide engineering support for pipe mill

When Rod Simpson (ET ‘76), division manager of Technology for USS POSCO Industries (UPI) was tasked to assemble a team to lead the construction of a new, state-of-the-art, $137M American Petroleum Institute (API) line pipe manufacturing plant in Pittsburg, CA, he came up with a “dream team” of fellow Cal Poly alumni.

LFR Inc., an environmental consulting firm based in Emeryville, CA prepared environmental documents and provided civil and geotechnical engineering support. LFR Client Director Douglas Wolf (ENVE ‘78) managed a team of engineers and scientists for the environmental efforts, including preparation of air permits and planning documents.

Meanwhile, Rex Ramsey (Architecture ’77), founder and principal architect of Ramsey Architectural Group, headed up design and graphics support during initial planning. The company now provides permit management and design services. In addition to alumni Simpson, Wolf, and Ramsey, Ruben Magana (EE ’05) oversees the design and commissioning of the high-voltage distribution system switch gear and transformers.

United Spiral Pipe, LLC, a joint venture between US Steel Corporation, POSCO, and SeAH Steel Corporation, owns and operates the plant, due to open Spring 2009. Once operational, the plant will have the capacity to manufacture approximately 300,000 tons of oil and natural gas line pipes per year.
Celebrate Cal Poly memories

What does your Cal Poly connection mean to you?
- Memories of inspiring professors
- An alumni family of friends
- A professional network
- Pride in your Cal Poly degree

The College of Engineering wants to help you celebrate and nourish these important connections through CENG-Connect, a program that facilitates alumni events.

Held in private homes, businesses, or public venues, CENG-Connect events offer you an opportunity to see old friends and expand your circle of Cal Poly acquaintances, build your professional network, and stay in touch with exciting college news and updates.

Please consider hosting a CENG-Connect event. You can register online at http://ceng.calpoly.edu/alumni/ceng-connect/ or contact Donna Aiken (805-756-6601) for more information.

Whether you graduated decades ago or recently, your Cal Poly connection can enrich your life personally and professionally. We’d love to strengthen that connection through CENG-Connect.

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.