PREPARED FOR PROFESSIONAL SUCCESS

College of Engineering leadership programs help develop work-ready engineers. p. 16

RISING STARS
Alumni rise in ranks and make their mark as industry leaders using innovation and management skills. p. 8

CREATIVITY IN MOTION
Engineering students collaborate to design and build annual Rose Parade Float. p. 20
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Cover story photo: Holli Rosdail is an electrical engineering student and president of the Cal Poly Pomona Chapter of Tau Beta Pi, the national engineering honor society. She has received a job offer from Chevron as an electrical engineer to begin upon graduation in 2015.
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In memory of Roger Blaine Humes (1952 - 2014)
In the early 1960s, the founders of Cal Poly Pomona College of Engineering established a fundamental teaching philosophy that continues to resonate over 50 years later—not just in California, but across the nation.

The college was founded on the principle that hands-on training, student focused teaching, and highly educated, industry trained faculty produce the best workforce-ready engineers; and an alumni body of over 25,000 strong has proven this aphorism over and over again throughout the decades. We call this philosophy Learn by Doing, but our proven pedagogy has gained traction nationally and has been adopted in some variation by traditional research universities, who have found a new respect for teaching in the form of conceive, design, implement and operate model.

In this edition, we provide a glimpse into the prowess of our students, past and present. The cover story highlights some of our impressive student leaders whose involvement in clubs, with guidance and inspiration from faculty and alumni, plays a critical role in developing the skills necessary for professional success.

As today’s students prepare to join the workforce, rising stars among our alumni have proven their skills in highly competitive environments and are prepared to take on the mantle of greater leadership. We feature four such individuals who showcase notable and diverse talents and skills.

Many of our alumni have distinguished themselves in a wide range of critically important fields—from designing rockets and spaceships to building roads and bridges, from developing methods to stop corrosion to developing models to stop terrorism, from running sophisticated software companies to running highly influential media companies.

No matter where you look, you will see the positive impact of Cal Poly Pomona’s engineers in our society. The success of these men and women, 22 of whom were inducted into the Hall of Fame last year, can be directly attributed to the training they received in the College of Engineering.

We could not train the best engineers in the world without our outstanding faculty who fully subscribe to the value of undergraduate research and the integration of students in every aspect of engineering research. In this issue, we acknowledge some of these gifted faculty members whose research spans the gamut of engineering and technology.

Without support from members of our community, we could not do what we have been doing so well. For this reason, we recognize Mr. and Mrs. Maio, who continue in the tradition of our many generous alumni. Their investment in our institution has a multiplier effect, as it is aptly argued in an excellent editorial by Kevin Klowski of Milken Institute.

As we reflect upon the rich history of the college and the significant achievements and contributions of our graduates, everyone involved with our remarkable institution should be extremely proud of the past, and even more excited for a brighter future—I know I am.

Dr. Mahyar Amouzegar
Dean, College of Engineering
### Who We Are

**By the Numbers**

| **39%** | **Diversity** | As a Hispanic Serving Institution as designated by the U.S. Department of Education, we are proud to serve the 39% of our students who are historically underrepresented. |
| **450** | **Project Presentations** | At our annual Engineering Project Symposium & Showcase, students present the results of individual and team-based efforts to solve multidisciplinary technical problems. |
| **11** | **Undergraduate Programs** | As one of only seven polytechnic universities in the nation, we offer exceptional undergraduate opportunities. |
| **5,500** | **Students** | We are the largest college of engineering in Southern California. |
| **100+** | **Faculty** | Faculty from across the globe use their academic and professional experience to develop a hands-on curriculum that blends theory and practice. |
| **7th Nationally** | **Best undergraduate engineering program among public universities Master’s Category, U.S. News & World Report.** |
| **9th Nationally** | **Best graduate program for Hispanics, as ranked by Hispanic Business Magazine.** |
| **17th Nationally** | **Largest engineering college, according to the American Society for Engineering Education.** |
| **45+** | **Clubs** | We offer many opportunities for students to hone skills needed to succeed in industry, including communication and teamwork. |
| **1,000** | **Graduates** | By graduating over 1,000 students every year, we serve California as an important pillar for its technical workforce. |
| **1 out 14** | **Engineers** | It is estimated that 1 out of every 14 engineers in the state of California graduated from Cal Poly Pomona. |
| **100+** | **Laboratories** | Our 250,000 square feet of laboratory and instructional space provide an ideal setting for classroom learning and research activity. |
Mechanical engineering faculty member Dr. Yong Gan is doing big things with tiny particles with the help of talented undergraduate students. As a leading researcher in the field of nanotechnology, Gan and four student researchers at Cal Poly Pomona’s College of Engineering are studying ways to use nanoparticles—microscopic objects that can be less than 1/1,000th the width of a human hair—to improve the physical world.

Gan says students represent the future of nanotechnology, and their hands-on research input is how important breakthroughs are made. One such student is a senior mechanical engineering major, Jialun Wang. Wang, who says he studies nanotechnology to help find a solution to humankind’s dependency on fossil fuels, is working with Gan to convert waste heat into electricity.

“Energy is stored in waste chemicals found in common household, industrial and agricultural waste water,” says Wang. “By inserting sheets of nanostructured titanium oxide electrodes into waste water, the stored chemical energy is extracted and converted into electrical energy.”

Wang says this technology has potential to improve energy efficiency inside water treatment facilities. “During the day, the energy generated by fuel cells can be stored and used to power the treatment facility at night,” explains Wang.

Another promising application derived from converting waste heat into electricity includes nanostructured cooling units for soldiers. “When operated as a cooler, a thermoelectric generator has a voltage applied across it and, as a result, a difference in temperature builds up,” says Gan. “In extremely hot conditions, personnel can wear a vest containing thermoelectric units that cool body temperature.”

Other highlights of Gan’s nanotechnology work include improving hazardous materials detection and mitigation for homeland security, synthesizing nanomaterials for hyperthermia cancer curing and magnetic resonance imaging, as well as for creating a waste disposal system.

To help pay for this research, Gan has received funding from the National Science Foundation, the Department of Homeland Security and the Environmental Protection Agency.
For the past four years, Edward B. Guzman has worked diligently toward becoming Dr. Guzman. This fall, the 2014 aerospace engineering graduate will find himself one step closer to achieving that goal when he enters the doctoral program at Harvard University, studying biology and bioengineering.

Guzman was aided in this journey by the Ronald E. McNair Scholars Program, a federally funded program that helps prepare underrepresented students for doctoral study and careers in academia through research internships. McNair Scholars participate in study groups and tutoring, get assistance with graduate school applications and exam preparation, and conduct research with faculty mentors from Cal Poly Pomona and other universities exposing them to different types of research. Guzman worked with Dr. Beverly McKeon, a professor in the Graduate Aerospace Laboratories at California Institute of Technology, on low-emissions power generation.

“Want to expand my knowledge as much as possible and utilize it to contribute to the welfare of society,” says Guzman. “I knew the McNair program would get me a step closer to that dream. Not only would it give me the opportunity to do research while being a full-time student, which is crucial to being a competitive applicant to graduate school, but it would provide me with the academic advice and preparation for graduate school.”

Dr. Winny Dong, director of the McNair program at Cal Poly Pomona, is proud of the fact this program has supported dozens of students like Guzman to achieve their dreams through obtaining advanced degrees.

“This is the best program I have been involved with in my 14-year career at Cal Poly Pomona,” says Dong. “We’ve served over 200 students since the program’s inception in 1999, and nearly 70 percent have completed or are in progress on their master’s or Ph.D.”
Alumni rise in ranks and make their mark as industry leaders using innovation and management skills

Cal Poly Pomona’s College of Engineering has trained over 25,000 workforce-ready engineers since its inception more than 55 years ago. These alumni use their comprehensive educational experiences to improve the industry, economy and society every day.

“The college encourages its students to become innovators, who not only learn to appropriately apply engineering techniques, but who also have the entrepreneurial skills to succeed in the global economy and to make significant contributions to society,” says Dr. Mahyar Amouzegar, dean of the College of Engineering.

“We take pride in producing problem solvers and lifetime learners with applicable hands-on experience preparing them to excel in their future careers.”

Maria Martinez (ME ’04) is the director of pipeline integrity at Southern California Gas Company.
Four graduates who are continuing to advance in their careers while making a strong impact on the engineering community are featured below. The employers of these rising stars describe them as results-oriented, lifelong learners, innovators, team builders and outstanding performers.

**Maria Martinez**

**Manages 100 employees and Southern California Gas pipeline integrity programs exceeding an annual budget of $50 million.**

*Director – Pipeline Integrity*

*Southern California Gas Company*

*BS Mechanical Engineering, Cal Poly Pomona, 2004*

Maria Martinez has developed a passion for continuous improvement and commitment to safety while serving in various engineering and management positions at Southern California Gas. Martinez is described by her supervisor as someone who delivers strong results and quickly earns the trust and respect of her co-workers.

She was recently promoted to director of pipeline integrity as a result of her commitment to federally mandated integrity programs that allow operators to explore, innovate and invest in new technology that improves safety and provides reliable service. The focus of Martinez’s work is to provide pipeline integrity strategy and direction to promote overall integrity and safety for over 100,000 miles of pipelines operated in 12 different counties.

“It’s rewarding to see the improvements these federally mandated integrity programs make, and I feel fortunate to be a part of them,” says Martinez. “I am grateful to the College of Engineering for preparing me for a successful career by placing an emphasis on teamwork and providing real world examples, creating a link between practical application and engineering.”

**Felipe Almanza**

**Designer and developer of life-saving, highway safety devices for the largest producer of road safety products in the world.**

*Vice President, Technical Engineering Design*

*TrafFix Devices, Inc.*

*BS Mechanical Engineering, Cal Poly Pomona, 2003*

Inventor of nine patented products related to highway safety, Felipe Almanza joined TrafFix Devices, Inc., just four days after completing his mechanical engineering coursework requirements. Now an equity partner at TDI, Almanza feels fortunate to have started his engineering career at a growing company, which has allowed him to participate in many aspects of the business.

“I will always be passionate about designing and developing products, but actually having the opportunity to engineer devices that save lives has been the highlight of my career,” says Almanza.

Among other duties, Almanza travels internationally training new distributors on the proper installation, use and maintenance of the company’s line of Scorpion truck and trailer-mounted crash attenuators. These highway safety devices protect the traveling public by absorbing the colliding vehicle’s kinetic energy when a construction maintenance vehicle is impacted from the rearward direction.

“Felipe is a Cal Poly Pomona alum superstar who has developed critically important life-saving attenuator products,” says Jack Kulp, Cal Poly Pomona alumnus and CEO and founder of TrafFix Devices. “He is a leader and top performer in our engineering department, and we are pleased Felipe is now further invested in our company’s future as an equity owner.”
Lance Doddridge

Technical leader in supporting metrology research and development efforts for the U.S. Navy.

Physicist/Electrical Engineer
Naval Surface Warfare Center, Corona Division
BS Electrical Engineering, Cal Poly Pomona, 2000; MS Physics, CSU Fullerton, 2006

Recently named Naval Surface Warfare Center Corona’s Employee of the Quarter, Lance Doddridge received a patent award for his Fiber Optic Linearity Calibration Standard (FOLCS) invention and recently submitted another patent application for a different type of fiber optic standard. He is also pursuing future projects to research and develop more calibration standard solutions, including support for high-energy lasers used in directed energy weapons.

A lifelong learner with a strong work ethic, Doddridge began working for the Navy in 2002 while simultaneously earning his master’s degree in physics. Doddridge’s work on the patented FOLCS provides U.S. defense forces with a new capability to accurately and efficiently calibrate multi-mode and single-mode fiber optic power meters. These power meters are used throughout the Navy, Air Force and Army on large carriers, F-18 aircraft, submarines and ground-based telecommunications systems.

“Providing a new capability to the Navy has brought an immense amount of satisfaction to my work, as I was able to develop a solution that saves considerable labor, time and money for the important purpose of defending our nation’s security,” says Doddridge.

Jason Howarth

Results-focused team builder responsible for aligning professionals building multi-million dollar projects.

Program Executive/Preconstruction Director
Tilden-Coil Constructors
BS Construction Engineering Technology, Cal Poly Pomona, 2002

Jason Howarth began his construction career as a student intern, and then advanced in various management positions. Howarth is now a project executive at Tilden-Coil Constructors, a 76-year-old commercial construction firm.

Throughout his career, Howarth has been instrumental in successfully completing hundreds of millions of dollars in
construction projects ranging from a new inpatient tower at Children’s Hospital Los Angeles to multi-program, K-12 school and community college projects. He is currently working on the Coil School for the Arts, a $30 million concert hall at Riverside Community College, which is named after his company’s founder, Henry Coil Jr.

Howarth continues to learn new principles and mindsets to bring value to his business partners. Team building is also a strong focus. “I am responsible to align the talents of others in the company; align those that work on a project which include architects, owners, and consultants; clarify goals and then help the team achieve those goals,” says Howarth. “I have been equipped with many tools and leadership principles to share with others so value is added to them during the journey. My role is not about me; it is about serving the team so they can win.”

Enrique C. Zaldivar was inspired early in his academic career at Cal Poly Pomona by his professors as they instilled him with a desire to pursue challenges and question tradition. “My professors always pushed us and inculcated in us to seek innovation,” says Zaldivar.

Zaldivar’s commitment in this pursuit has brought him great success in the public sector. Zaldivar directs some of the most essential services to Los Angeles as the city’s director of Bureau of Sanitation. With nearly 3,000 staff, Zaldivar oversees the city’s clean water, solid resources and watershed protection programs.
For years, the Cal Poly Pomona Maximizing Engineering Potential (MEP) Program has excelled at fulfilling its mission—to increase the number and diversity of engineering students.

Today, this program is not only the largest in the state, it also boasts high student retention providing the academic support, mentoring and other resources students need to achieve educational success.

And now, the MEP program is better than ever thanks to several new enhancements that are keeping the College of Engineering on the forefront.

One recent change is its focus. The MEP program now zeroes in on attracting and integrating more women, who have been underrepresented in engineering nationwide for years and who continue to account for less than 20 percent of engineering program enrollees in the U.S.

“Our MEP program is one of the few that makes addressing the acute shortage of women engineers a top priority,” says Dr. Mahyar Amouzegar, dean of College of Engineering. “These changes aren’t just important for our program here at Cal Poly Pomona, but rather for the entire nation. We want to be part of that positive change.”

Indeed, that change is already underway. This fall, Cal Poly Pomona’s MEP program welcomed 120 new students from approximately 1,000 incoming freshmen engineers—nearly triple the average yearly admission—and women engineers make up more than half of the cohort. These students will be matched with an upper division mentor, have access to specialized tutoring and labs, receive individual advisement, and learn about internship opportunities providing industry experience before graduation.

Another recent enhancement for the MEP program is new leadership. Earlier this year, after an intense nationwide search, Cal Poly Pomona welcomed a new program director, Lily Gossage, who brings a bold new vision, excellent grant-writing skills and an unwavering dedication to the welfare of today’s engineering students. (See sidebar.)

A relentless commitment to student tracking is another factor that sets the Cal Poly Pomona MEP program apart. Unlike many nationwide programs that tend to be a great first-year-only student experience, College of Engineering’s MEP program tracks student progress and success over the entire four- or five-year university experience, all the way through graduation.

“Engineering degrees are difficult programs, but we’re confident that our MEP program efforts are going a long way to enhancing the overall experience and paving the way for ultimate student success,” says Amouzegar. “By focusing on academic skills and student diversity, we can help produce more exceptional engineering talent to benefit our state and nation.”

EXPANDING AND ENHANCING THE MEP PROGRAM

MEP PROGRAM WELCOMES NEW DIRECTOR: LILY GOSSAGE

Lily Gossage is the new director of Maximizing Engineering Potential at Cal Poly Pomona

Lily Gossage is a returned Peace Corps volunteer—having served in the north-east African nation of Eritrea—she parlayed her leadership and creative problem-solving skills into the world of academia where she spent her early career teaching middle and high school math and science courses. Later, she joined California State University, Long Beach (CSULB), where she most recently served as director of the university’s engineering honors program.

Along the way, she demonstrated her focus on helping female students. At CSULB, Gossage founded the Women-in-Engineering Outreach Program, a comprehensive series of eight programs (one-day, three-day, and week-long residential programs) targeting girls in grades four through 12. Having spent the last 15 years at CSULB, her latest program, Engineering Girls—It Takes a Village, serves homeless girls and their parents. Her area of expertise is in academic advising, recruitment/retention, productive persistence (for developing academic tenacity), along with community engagement grounded in social equity programming.

“MEP is a program that implements several student success strategies that work for all students. Hence, it should be open to all students who need help, including women of all backgrounds,” says Gossage.
California is the location most widely considered around the globe when people think about innovation. We are not only the leading center of technological change, but also of industrial and organizational design and of numerous other key elements that make up the process of advancement and innovation. In addition, California remains the leading center of advanced manufacturing in the country, with a significant amount of that process now focused on specialized and cutting-edge products for areas such as computers, satellites, aircraft, energy, transportation and environmental technology.

At the core of this role in technology and manufacturing is the state’s tremendous concentration of talented engineers. California continues to be home to the largest population of engineers in the country and the second highest concentration of engineers per capita after Massachusetts. These engineers are essential not only to an effectively functioning innovation ecosystem, but also to being able to design and manufacture integrative products here in the state.

In order to support the California economy’s tremendous demand for engineers, it is vital to have a thriving system of engineering schools and programs to educate and train the engineers of today—let alone tomorrow. In the Milken Institute’s recent publication “California’s Position in Technology and Science 2013,” we note clear concerns that even though we rely on a large population of scientists and engineers, the state fails to produce enough internally to keep up with demand. On a per capita basis, we are 40th in recent bachelor’s degrees in science and engineering. Furthermore, a significant number of engineering graduates require extensive training before they can enter the workforce. California is increasingly finding itself in competition for leadership in engineering innovation and design with Eastern Asia, where the top ten Asian economies are now spending as much in aggregate as the United States on research and development and are only going to continue to grow their programs.

In Los Angeles County, Cal Poly Pomona is the linchpin of the region’s engineering related sectors of the economy. It is not only one of the largest engineering programs in the nation, but also one of the rare programs in the country focused on educating “workforce-ready” engineers. This makes it, arguably, the most important engineering program to Southern California’s economic wellbeing.

Several key industry sectors hire more engineers from Cal Poly Pomona than any other program. Between Cal Poly Pomona and its sister school, Cal Poly San Luis Obispo, over 2,000 workforce-ready engineers are produced each year. In fact, currently one out of 14 engineers in California is a graduate of Cal Poly Pomona’s College of Engineering, and the program has trained over 25,000 engineers since its inception.

However, consistent declines in levels of state funding in higher education have threatened California’s ability to continue to produce the engineers needed by the state’s economy. The state’s engineering programs already have difficulty meeting demand, and declines in funding levels over the past two decades are only exacerbating issues. Even before the Great Recession began to cause dramatic budgetary issues for California starting in 2007, the state had been cutting higher education funding for more than two decades while shifting more funds to the prison system and other state legacy costs.

What does this mean for Cal Poly Pomona? The College of Engineering’s Learn by Doing model is not sustainable as it stands under the current state fiscal system and certainly cannot grow enough to meet the overwhelming demand for its graduates. The college needs partnerships with the private sector not only to provide the capital investment the school so readily needs, but also to increase the ability of the college to produce the skilled graduates that private industry so clearly demands.

President Barack Obama, in the 2014 State of the Union address said, “We know that the nation that goes all-in on innovation today will own the global economy tomorrow. This is an edge America cannot surrender.” America’s future and our economic competitiveness depend on our engineering schools producing well-prepared students. They are the inventors, entrepreneurs, and critical thinkers of tomorrow.

Kevin Klowden is the director of the Milken Institute, California Center and managing economist. His focus is on labor, business and distribution of resources, as well as the effects of public policy on the impact of job creation, particularly in California. He also serves on the Dean’s Leadership Board for the College of Engineering at Cal Poly Pomona. Klowden holds graduate degrees from the University of Chicago and the London School of Economics.
Mirzaei and her team were among 15 other teams invited to the White House Champions of Change event for her work on UrbanFruit.ly, a mobile app and website platform for urban gardeners to exchange their homegrown fruits, vegetables, and herbs through a social network.

Aliyazicioglu is faculty advisor for the student chapter of the Institute of Electrical and Electronics Engineers, the Jet Propulsion Laboratory Student Independent Research Internship program and interdisciplinary undergraduate student research projects, supported by Northrup Grumman and The Boeing Company.

Palomo is a faculty fellow of the John T. Lyle Center for Regenerative Studies for her research in lead contamination mitigation in urban sites and has been involved in numerous successful grant funding efforts, including an NSF International Research Experiments for Students grant.

Bhandari leads the college’s unmanned aerial systems activities and research while guiding students who participate in his research. His research has brought in more than $600,000 of external funding from industry, agencies and government. Bhandari has successfully published more than 20 research papers and they have been distributed amongst peers internationally.
FACULTY

Bentley Educator of the Year Award
Dr. Francelina Neto, Civil Engineering
Neto earned international recognition for integrating 3D modeling and spatial analysis techniques into the college curriculum and for leading outreach activities for K-12 schools serving minorities and socioeconomically disadvantaged communities. George Church, senior vice president of Bentley LEARN services, says Neto was awarded for “advancing educational development among students of all ages on an exemplary scale.”

Innovative Teaching Program Recognition
Dr. Kamran Abedini, Industrial & Manufacturing Engineering
Abedini was invited to present his innovative teaching program, “Puzzle Principles,” at the 2014 American Association of State Colleges and Universities meeting. He was the only CSU faculty member and the only engineering professor in the U.S. to be nominated and chosen to present at this event. His program simulates real-life projects and is well-known among recruiters, who often ask graduates if they have taken and passed Abedini’s course.

Teaching Innovation Award
Dr. Paul Nissenson, Mechanical Engineering
Nissenson taught Cal Poly Pomona’s first massive open online course (MOOC). The free 10-week course taught students computer programming essentials via pre-recorded video lectures and weekly online quizzes and homework, establishing a precedent for future MOOCs on campus. Nissenson has transferred these techniques into his curriculum, providing video lectures and tutorials online, so his students can learn anytime and anywhere.

Outstanding Teaching Award
Dr. Mohammad Izadi, Mechanical Engineering
Izadi has been teaching at Cal Poly Pomona for more than 20 years, and has consistently garnered exceptionally high student evaluation scores in the college. Evaluations commonly cite Izadi’s course was challenging but nonetheless extremely worthwhile, with one evaluation stating, “Thank you for changing my whole outlook on engineering.”
producing well-qualified engineering graduates prepared for immediate and productive entry into the workforce is a primary mission of Cal Poly Pomona’s College of Engineering. Developing leadership skills such as team building, strategic planning, communication and creativity in students is an integral part of this mission.

“Employers consistently tell us they are looking to hire engineering graduates with strong technical skills, as well as qualities of leadership,” says Dr. Mahyar Amouzegar, dean of the College of Engineering. To further address this need, the college has developed a major initiative to enhance its existing leadership programs.

The Learn by Doing teaching and training approach at Cal Poly Pomona’s College of Engineering is a time-tested method that undoubtedly produces the best engineers in the world and is a primary reason its engineering students are highly recruited by public and private sectors alike. In addition to one-to-one pairings of lectures with laboratories and activities, this comprehensive approach involves dozens of student projects, club activities and competitions to develop leadership skills essential for success in today’s global economy.

At every level, from freshman to senior, the college is cultivating future leaders with over 45 student clubs, leadership training opportunities, alumni speaking engagements and other events and programs. Plans are also in place to increase funding and support for a Student Leadership Institute to further enhance these existing programs.

A Governing Organization Ensures Club Success

Each college at Cal Poly Pomona has a student council that facilitates governing campus clubs. The Engineering Council (E-Council), which consists of a seven member executive board and student representatives from each of the engineering clubs and project teams within the College of Engineering, acts as the central body to reflect the ideas, promote the interests, and support the activities of all participating groups. E-Council also serves as the link between the engineering student organizations, the College of Engineering and Associated Students Inc.

Furthermore, the E-Council holds events connecting the student body with the many engineering organizations in the College of Engineering and provides training for organization leadership. Some of these events...
include the Engineering Club Welcome Fair, National Engineers Week and the Engineering Club Leadership Retreat (ECLR).

ECLR is hosted by the E-Council under the guidance of Dr. Cordelia Ontiveros, associate dean for academic programs & student services, and is essential to the success of the many clubs within the College of Engineering. More than 300 student club leaders attend this day-long retreat, which was founded by the college over 15 years ago.

Featuring an industry keynote speaker, the retreat includes several workshops designed to help officers successfully lead their respective organizations by teaching leadership skills such as public speaking, managing club budgets and time management. The event also helps incoming officers transition to their new roles by giving them an opportunity to work with outgoing officers to discuss previous challenges and future plans.

“ECLR provides the essential framework for College of Engineering organizations to hit the ground running each year, providing better year-to-year continuity, as well as useful information to build on prior successes,” says Alex Bielawiec, former E-Council president and College of Engineering mechanical engineering alumnus.

Bielawiec, who worked part time his junior and senior year for the NASA Jet Propulsion Laboratory (JPL), is now a full-time mechanical engineer at JPL. He credits College of Engineering club leadership roles, including western region president of the National Association of Engineering Student Councils in 2012/2013, as well as treasurer and president of the E-Council during his sophomore and junior years, for helping him secure a position with JPL after graduation.

“E-Council further developed my professional interpersonal skills in an accelerated environment,” says Bielawiec. “I look forward to using the academic and leadership skills I acquired while in the College of Engineering to make a difference within the engineering community and during my career at NASA.”

Like Bielawiec, many students actively involved in college clubs say the College of Engineering’s support of their early involvement in these organizations is helping them achieve fulfilling academic careers as well as providing them with leadership development skills setting them on course for professional success.

Involvement in college clubs is critical to the development of leadership skills necessary for professional success.

Civil engineering student Michelle Wangwa is membership chair for the Society of Women Engineers (SWE).

Like Bielawiec, many students actively involved in college clubs say the College of Engineering’s support of their early involvement in these organizations is helping them achieve fulfilling academic careers as well as providing them with leadership development skills setting them on course for professional success.

Involvement in college clubs is critical to the development of leadership skills necessary for professional success.

Club Involvement Connects Undergraduates Forming Essential Bonds

College of Engineering organizations like the Society of Women Engineers (SWE) help undergraduates meet and learn from others with similar academic and professional challenges. SWE is a partner of the newly established Cal Poly Pomona Women in Engineering program and, together, they seek to increase the number of females in engineering through outreach and retention activities. As a result of these collaborative activities, the percentage of female students has risen from 12 to 17 percent since the program’s inception in 2011.

Contemplating whether she may seek a career in structural design and water, or change direction, civil engineering major Michelle Wangwa joined SWE her freshman year to learn more
about her major and future opportunities as a woman in a traditionally male industry. Wangwa became an active leader early on as a freshman representative in SWE and she will continue to serve in 2014/2015 as the membership chair.

“I was introduced to the importance of becoming active in clubs at Cal Poly Pomona through many College of Engineering events where alumni in the engineering field spoke about how they benefitted from getting involved while in college,” says Wangwa. She later was mentored by a SWE board member, who she says played a big role in further motivating her to become involved.

“Learning from the real world experiences of women in engineering through SWE alumni speaker forums and connecting with students facing similar obstacles and goals are providing the support I need now as a student and later as an engineering professional,” she says. “The engineering students I have met in SWE have become my closest friends, mentors and role models.”

Club Collaboration with Faculty Ensures Academic and Professional Success

Every student club is guided by a faculty or staff advisor, who works with the student leaders to provide mentorship, plan events and activities, and promote new membership.

“College of Engineering faculty guidance and support for our programs is a big part of our club’s success,” says Ryan Luna, a senior mechanical engineering major and president of the Society of Hispanics in Science and Engineering (SHSE).

“With their assistance for events such as our Breakfast with Industry, we are able to garner stronger attendance and learn more about our fields of interest by networking with industry professionals. Faculty also partner with us to develop leadership skills that complement our technical knowledge preparing us to enter the workforce,” says Luna.

SHSE boasts more members than any other engineering club and is among the most active student organizations on campus.

“Our club is one of the largest and most active because we offer many programs and events plus we have nearly 20 committees ranging from Advancing Careers in Engineering to Industry Relations and Fundraising,” says Luna.

The main goal of SHSE and its national organization is to support Hispanics as they strive to reach their maximum potential and become confident and influential members of society.

Helping students excel in academics, as well as leadership, is at the heart of this goal. One of Luna’s plans as SHSE president is to work with college faculty and SHSE members to create a SHSE network where upper division students can mentor younger students, who are struggling in their most challenging courses. In turn, the students receiving mentorship will later become mentors to other students needing similar help.

Clubs Encourage Excellence and Develop Industry Leaders

Recognizing students, alumni and faculty for their outstanding character and achievement is also an important part of the College of Engineering clubs. Tau Beta Pi, the national engineering honor society, does just that and more.

To become eligible for membership in Tau Beta Pi, an undergraduate engineering student must place in the top eighth of their junior level class or the top fifth as a senior. Outstanding engineering faculty and the top fifth of graduate students also can join. Currently, there are 130 students and 75 faculty members in the organization.
Holli Rosdail, an electrical engineering student, is president of Tau Beta Pi.

Holli Rosdail, senior electrical engineering major and president of Tau Beta Pi, professes that although undergraduate and graduate studies are important, academics alone cannot develop a student for a career.

“Students must get involved in an on-campus community and hold leadership positions to prepare for a future career,” says Rosdail. “College of Engineering is a great school with many club opportunities like Tau Beta Pi.”

This past spring, Tau Beta Pi initiated more new members than ever before, setting a new record and gaining attention from the national organization. With plans to keep growing, Rosdail has set a goal to further increase awareness of the society on campus.

“When I received the invitation to become a member, I saw it as a great opportunity to network with a community of hardworking ambitious engineers from every engineering discipline,” says Rosdail. “The organization is also highly regarded by recruiters and engineers, so it will provide members an advantage over other job seekers.”

Rosdail has already received a job offer from Chevron as an electrical engineer to begin upon graduation in 2015.

Rosdail says that becoming involved in this prestigious academic organization is one of her best decisions. “Tau Beta Pi has helped to uncover some of my own strengths and weaknesses, and has provided me with leadership skills such as teamwork, time management and public speaking, which will be invaluable in my future career.”

BOEING VP TO SPEAK AT Distinguished Lecture

Joan Robinson-Berry (ET: Manufacturing ‘82), vice president of Supplier Management, Shared Services Group, The Boeing Company, will discuss innovative engineering and technology as part of the college’s Distinguished Lecture Series.

Tuesday, Nov. 18, 2014
4 p.m. to 6 p.m.

The Distinguished Lectures Series aims to encourage thought-provoking discourse among students, faculty, staff and the community by hosting influential engineers. The series broadens the college’s educational experience and is part of the college’s comprehensive approach to engineering education.
Creativity in Motion

Engineering Students Collaborate to Design and Build Annual Rose Parade Float

Every January 1, over 100 million viewers celebrate the New Year by watching a festival of flower-covered floats, marching bands and equestrians during the annual Rose Parade. Yet behind the pageantry, the parade and the countless roses are the floats themselves—marvels of modern-day engineering. And every year since 1949, the work of Cal Poly Pomona students is front-and-center on this global stage.

The 2013 Cal Poly Universities Rose Parade float, Tuxedo Air, was awarded the Bob Hope Humor Trophy.
Facing intense deadlines and complex engineering challenges, teams from Cal Poly Pomona and Cal Poly San Luis Obispo collaborate to create the two universities’ joint annual Rose Parade float. Not only do they participate in a goliath competition, but they also develop valuable teamwork skills and become more workforce-ready along the way.

“Today’s employers want more than just technical skills,” says Joseph Berk, mechanical engineering faculty member. “They are looking for people who not only give the right answers, but can help formulate the right questions. They want employees who can see the bigger picture, demonstrate leadership and communicate clearly.”

For many students, there’s no better training ground than working on the float project, which develops technical and leadership skills through the creative process of designing, testing, building, and managing the float as well as contributing to the decoration of the final product.

Each campus has a team of nearly 150 students, including a leadership team of 30 students, half of whom are from the College of Engineering. And, the lessons they learn are priceless.

“Because of this project, I’ve gained real-world experience that I simply wouldn’t have had otherwise,” says John Catalano, a third-year mechanical engineering student at Cal Poly Pomona and chair of this year’s construction committee.

“I’ve learned to work with many different personalities, how to be a leader, and how to get things done on time. I’ve also learned what a big impact I can have—no matter how small the task—and how what I do affects the entire project as a whole.”

As the only student-built float in the parade, the structure is created in two parts—one half built by the San Luis Obispo team and the other half by Cal Poly Pomona students. Every October, the two halves come together in Pomona where the final assembly is done. It’s a fast-paced project with unique challenges every year, yet student teams always rise to the challenge and often garner noteworthy results.

Over the years, student teams have won over 40 awards, including the Princess...
Award for best display of animation, the Founder’s Trophy for most outstanding self-decorated float, the Humor Trophy and theme prizes. Last year, the float captured the coveted City Innovation Award for its use of a new effect called “animated echo.”

Perhaps the best rewards, however, are the non-tangible benefits students receive, simply by participating in the experience.

“What I love about this project is it requires engineering teams to work closely with two other teams—the design team and the decoration team—to solve practical real-world problems,” says Greg Lehr, director of the Rose Float Program.

“It’s not textbook learning and it’s no longer theory,” says Lehr. “Students may need to move an 8,000-pound arm within certain height restrictions and make it all look natural. It puts appropriate pressure on our engineering students to work in concert with the rest of the team. Plus, it lets them showcase their excellence to the world.”

Senior Director of Development Accepts Position in London

Patrick Stewart, senior director of development for the College of Engineering, has accepted a management position at the Imperial College of London.

“Inarguably without him the college couldn’t have achieved what it has indeed accomplished thus far,” says Dr. Mahyar Amouzegar, dean of the College of Engineering.
Alumnus and Wife Find Joy in Supporting the Programs They Love

Donations are often as unique as the individuals who give them. That's certainly true for Gerald and Cybel Maio, who recently pledged a generous estate gift to support Cal Poly Pomona—in two very different ways.

Gerald, a College of Engineering alumnus, wanted to support his alma mater, where he earned his undergraduate degree in electrical and electronics engineering in 1972 and his master’s degree in engineering technology in 1974.

His education prepared him well to serve a six-year term as U.S. Naval officer aboard nuclear-powered submarines and, later, as he worked in commercial power plants, including San Onofre until it closed in 2013.

Part of the couple’s gift will support the College of Engineering Student Competitive Design Team Labs, where students leverage their engineering knowledge to create and implement effective technical solutions. These labs are used by the nationally and internationally ranked Society of Automotive Engineers (SAE) Formula and Baja race car teams, groups participating in the Concrete Canoe and Steel Bridge competitions, as well as student teams that create different types of vehicles powered by alternative energy sources.

“These competitions are very instrumental in giving students an idea of what engineering is actually like—both the thrill of victory and the agony of defeat when things don’t work out,” says Gerald. “It’s one thing to learn in the classroom, but it’s also important for engineers to be able to actually fabricate, experiment and see how things work in a real environment because, when they get out of school, that’s what future employers expect them to do.”

Gerald’s wife, Cybel, a devoted animal lover, had slightly different priorities. She chose to support the College of Agriculture and its planned veterinary clinic that will focus on the health and welfare of pets. She’s been rescuing cocker spaniels for the past three decades, particularly older dogs with medical needs, and currently has four of her own.

Both agree that Cal Poly Pomona is the right choice for their estate giving and look forward to benefitting future generations of students through their gifts.

Cal Poly Pomona’s Society of Automotive Engineers Formula Car team (FSAE) placed ninth out of 118 teams at Formula Student Germany. The team competed on the Hockenheimring motor racing circuit, which frequently hosts the Formula One German Grand Prix. As arguably the most difficult student design competition in the world, the team was the only one from California to compete in the event. Prior to this, FSAE placed fourth in the world and first in California out of 80 teams at an international competition in Nebraska.

Gerald Maio (BS EE ’72, MS ET ’74) with his wife, Cybel.
A team of College of Engineering students traveled to NASA Johnson Space Center’s Ellington Field in Houston in June 2014 to conduct satellite research aboard a reduced gravity aircraft. The team was one of a handful from throughout the nation to be selected by NASA to conduct experiments in a near zero-gravity environment as part of its Reduced Gravity Education Flight Program.

The team tested its minisatellite technology aboard NASA’s Weightless Wonder, a “microgravity” aircraft that can produce periods of weightlessness lasting up to 25 seconds by flying a series of approximately 30 parabolas—a steep climb followed by a free fall—over the Gulf of Mexico. The team used this weightless environment to assess their satellite’s ability to eliminate any tumbling motion and to point itself in a given direction in space.

“Once we had submitted our proposal and our team was selected, we spent nearly a year designing, experimenting, constructing and testing the satellite—not to mention filling out lots and lots of paperwork,” says electrical engineering senior Kyle Stovner, the team’s leader. “All in preparation for those few precious moments of weightlessness.”

The student team consisted of seven students who actively participated in the extensive research and preparations. Five of them traveled to Houston to participate in the in–flight testing. The team received advisement from aerospace engineering professor Dr. Donald Edberg as well as several other college faculty members, with additional mentoring being provided by several college alumni, who had participated in satellite research while they were students at Cal Poly Pomona.

“I’m so grateful to our professors and to the alumni volunteers who helped us to reach this goal,” says Stovner. “I plan to volunteer to assist next year’s team in the hopes that they will be able to have this indescribable, once-in-a-lifetime experience as well.”
College of Engineering Collaborates with Project Lead The Way to Spark an Interest in STEM in Young Learners with Outstanding Results

For more than 15 years, Project Lead The Way (PLTW) has worked with public schools, private organizations, colleges and universities to get school children interested in and prepared for science, technology, engineering and mathematics (STEM) careers. The nonprofit national organization’s hands-on programs are offered at more than 5,000 elementary, middle and high schools across the country in an effort to increase the number of qualified STEM workers in the United States. These schools are referred to as PLTW schools.

Cal Poly Pomona has developed a close partnership with PLTW since 2008. The College of Engineering has since facilitated the program’s Core Training every summer as one of only three regional engineering training centers (and the largest) in California and has trained over 650 teachers since its inception. The hands-on training is offered to middle and high school teachers, who are effectively students in the program, and are taught by PLTW instructors through activities on topics such as aerospace, medicine, robotics and electronics.

The middle and high school teachers take their training back to their respective schools and teach their students in PLTW courses to further educate them in science and technology and to ignite interest in pursuing a STEM education and career.

“We researched various programs to increase participation in STEM activities for middle and high school students and educators, and PLTW was the most comprehensive program we found,” says Dr. Cordelia Ontiveros, associate dean for academic programs & student services in the College of Engineering and PLTW affiliate director. “It offers a unique combination of curriculum and professional development that is hands-on and project-based, which is similar to the engineering curriculum at Cal Poly Pomona.” The program at Cal Poly Pomona is supported by funding from The Boeing Company and Sempra Energy Foundation.

The College of Engineering’s involvement as a facilitator for the Core Training program has spurred growth in the number of PLTW schools in Cal Poly Pomona’s service area by a factor of ten since 2008.

One such student to benefit from the program is Rene Bagaygay, a senior civil engineering major at Cal Poly Pomona. Bagaygay took PLTW classes at Warren High School in Downey, one of the many schools to register for the PLTW program within Cal Poly Pomona’s service area since the college became a Core Training center.

The program helped clearly define Bagaygay’s college aspirations. Working on projects including bridge building and trying his hand at computer-aided drafting convinced Bagaygay that a career focused on infrastructure and how it helps people was the right choice for him. PLTW also influenced his decision to attend Cal Poly Pomona.

One out of every four incoming Cal Poly Pomona engineering, first-time freshmen is from a PLTW school.

“Something I really liked about PLTW was that not only was it about lecture and the concepts that they introduced, but we also had the chance to perform activities for those concepts,” says Bagaygay.

“You learn from a lot of failing and succeeding as well as working together in a group setting.”
In February 2014, a select group of 10 engineering students served as student ambassadors at the inauguration of Cal Poly Pomona’s Engineering Hall of Fame, which was founded as part of the university’s 75th anniversary celebration. The Hall of Fame’s mission is to inspire current and future engineering students by showcasing the College of Engineering’s most distinguished alumni and their stellar career achievements.

The inauguration festivities included a black tie gala at which each of the 22 Class of 2014 inductees were recognized, and a public unveiling of the Hall of Fame on the following day. The student ambassadors served vital roles at both events by assisting behind the scenes and by welcoming and accompanying the inductees.

“These student volunteers did more than help significantly with event logistics,” said Dr. Mahyar Amouzegar, dean of the College of Engineering. “They also engaged at length with our eminent inductees during both events, enabling us to begin in earnest to fulfill the Hall of Fame’s central mission of inspiring our students to dream big.”

Charisse Garrido, a senior civil engineering student, said, “I am so grateful to have had the opportunity to spend time with these distinguished alumni and to hear about their experiences. Participating in this event has certainly inspired me to strive for excellence in my engineering career and to give back to Cal Poly Pomona in the future.”
Maria Medina-Alva, a senior in industrial engineering, expressed similar sentiments. “I am so honored to have participated and to have met so many successful individuals. These events have provided me with the confidence that I can be an inductee to the Hall of Fame after having a successful career.”

Hall of Fame inductees are selected based on their distinguished achievements in engineering, with special attention being paid to candidates who are outstanding role models in the community, particularly those who are from historically underrepresented groups. Inductees are featured throughout the engineering buildings in large framed photos accompanied by their bios.
Your gift can make a difference. Donate today.

Gifts in all forms are important to the College of Engineering. With your support, we can help students achieve their dreams. Your gift can be directed to any area of the college that is of interest to you.

For more information contact 909.869.2513.