

# Innovations

The background of the entire page is a photograph of two female engineering students in a workshop. They are both wearing safety glasses. The student in the foreground is smiling and looking down at a piece of machinery. The student in the background is looking intently at the same machinery. The machinery appears to be a lathe or a similar industrial machine.

THE UNIVERSITY OF TEXAS AT SAN ANTONIO COLLEGE OF ENGINEERING

VOL. 17 | SPRING 2014

**COLLEGE OF ENGINEERING:**

**Providing the hands-on  
experiences that make our  
students successful  
after graduation**

**UTSA** Engineering

# welcome

## A message from the Provost

**John Frederick, Ph.D.**

Provost and Vice President for Academic Affairs

The College of Engineering is an integral part of UTSA's goal to become a Tier One research university. That goal encompasses a number of objectives, but key among them is to enhance the student experience, provide high quality educational programs, expand research efforts, and promote innovation, discovery and entrepreneurship.

In each of these areas, Engineering has proven to be a leader at UTSA. At the dawn of the 21st century, many universities are exploring new paradigms for instruction that call for highly interactive group work in class — our Applied Engineering and Technology Building, opened in 2010, introduced the first such collaborative classrooms to our campus. At the same time, funded research in the college has more than tripled in the last seven years, and we have been fortunate to add some outstanding faculty to the college who bring new perspectives and research projects to engage our students.

The college is also the focus of a major effort by the University of Texas System to expand engineering programs and increase the number of engineering graduates produced system-wide. We are embarking on a path to double the number of engineering students at UTSA in the next few years. This will be a significant challenge, as we will need to match that growth with a corresponding growth in faculty and facilities infrastructure.

For all of these reasons, it is



critical that the college enjoy not only the support of the university, alumni and donors, but also that it be led by a strong, visionary leader who can continue the work begun by our previous dean, Dr. Mauli Agrawal.

Following a yearlong national search, I am very pleased to introduce Dr. JoAnn Browning, who will become our new Dean of Engineering on August 1, 2014. Dr. Browning comes to us from the University of Kansas where she presently serves as Associate Dean of Engineering. She and her husband, Dr. Adolfo Matamoros, will also hold appointments in the Department of Civil and Environmental Engineering. I am immensely grateful to Dr. Mehdi Shadaram, who has provided steadfast leadership for the college over the past year as interim dean.

I know that the future of the college is very bright, and I look forward to working with Dean Browning and all of you to support its growth in the coming years.

## COLLEGE OF ENGINEERING

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### ON THE COVER

**Mechanical Engineering majors Casey Bordelo and Jessica Lovelace use a milling machine to trim the length of a University of Texas at San Antonio hammer the students are making as part of their Manufacturing Engineering class. The class is held in the Machine Shop located on the UTSA Main Campus.**

# editorial

## A message from the Interim Dean of the College of Engineering

**Mehdi Shadaram, Ph.D., P.E.**  
Interim Dean

Engineering and education are two aspects of life that are constantly changing and evolving. When UTSA was founded in 1969, there was hope that the university would evolve and flourish, but I doubt that anyone would have thought that a mere 45 years later, the university would be well on its way to becoming a Tier One institution.

The College of Engineering is contributing in UTSA's journey to Tier One and we here at the college level have implemented several comprehensive and integrated strategies that involve a variety of recognized educational best practices. Among our successful activities are summer immersion camps for high school students, expansion of undergraduate research activities, creation of an engineering residential hall, math tutoring for freshmen, and formative evaluations through "iClicker" technology. The data we have seen so far shows improvement in the college's retention and graduation rates, especially among under-represented groups.

As part of our evolution from being mainly a commuter school when the university opened its doors nearly a half century ago, to now having more than 29,000 students from all over the world, we have implemented new admission criteria in order to improve the likelihood of success of incoming students. The new criteria were put into place in 2012 and preliminary findings indicate that our first year retention rate has increased significantly. We believe our approach will improve the overall graduation rate considerably.

The College of Engineering has also implemented several strategies to improve the quality of graduate programs and enhance diversity among our students. We have been targeting qualified UTSA undergraduates for different programs, developing recruitment pipelines from other institutions of higher education, expanding recruitment of traditionally under-represented groups, and have established several new graduate programs. And we have even more program possibilities in the pipeline! From recent data, it looks like our efforts to improve the quality of our graduate programs have paid off. The College of Engineering has more than 100 graduate student applications for the fall 2014 semester than we had for fall 2013, with more applications coming in every day.

As always, our dedicated and innovative professors excel in the classroom and research laboratories. Dr. John Foster (p. 12) has developed a flipped



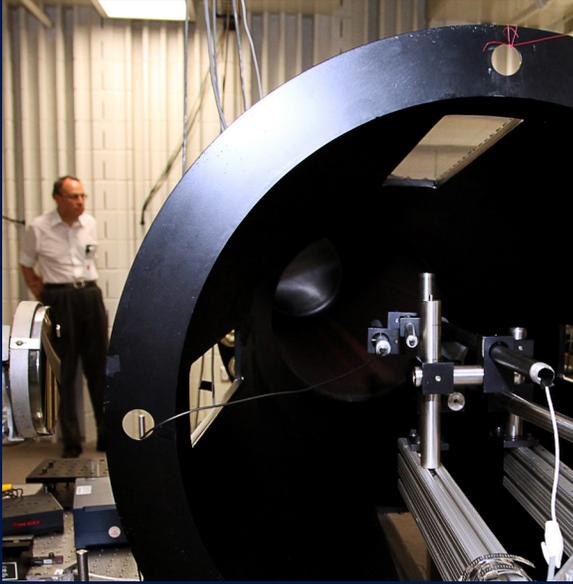
classroom that is ideal for the material he is teaching to his Introduction to High-Performance Computing students. Professors and researchers like Dr. Bing Dong (p. 24) combine research and teaching, and provide opportunities for engineering students to be their best, both inside and outside of the classroom. Dr. Dong is currently leading a study that will set an international standard for measuring energy-related occupant behaviors in buildings, and his students are actively involved in the research being conducted for the study. Under the guidance of professor Corey Hallam, two biomedical doctoral students, Ramon Coronado and Tony Yuan, have developed the first-of-its-kind mobile stem cell company which helps family pets live healthier and more productive lives (p. 16). With outstanding professors and students like this, the College of Engineering is proud to have a positive effect on not only the university community, but the San Antonio community as well.

Research is an integral part to becoming a Tier One university. Fiscal year 2013-2014 grant dollars secured by the College of Engineering are well on the way to surpassing the total received in fiscal year 2012-2013. The current engineering active sponsored project awards total more than \$18 million with an annual expenditure of about \$12 million.

This is an exciting time to be a member of the UTSA community. As we grow and change as a college and as a university, we will continue to keep our focus on the aspects that make us the innovative and diverse institution we are. It is our goal to serve our students and provide them with the best education possible so that when they complete their studies, they will be ready to go out make an impact on the world.

For the past year, I have had the opportunity to serve as interim dean, and now, my time serving in the position is almost complete. It has been a pleasure working with and collaborating with the college's faculty and staff in this position, and I looking forward to welcoming our new dean, Dr. JoAnn Browning, when she joins our college later this summer. I know she has the experience and positive attitude to move the College of Engineering forward in our journey toward Tier One.

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*An alumni of Mechanical Engineering, Griffin and Tami, his wife, recently gave COE a gift to help improve a thermal and fluid science lab*

Steven Griffin believes in the power of hard work. A graduate of The University of Texas at San Antonio Mechanical Engineering program, who by his own admission, basically lived in the lab while he was pursuing his degree...

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### Steel bridge team takes 1st at regional conference

The University of Texas at San Antonio's American Society of Civil Engineers (ASCE) Steel Bridge Team took first place at the ASCE Texas-Mexico conference held January 17-18, 2014, at the Maverick Activities Center on The University of Texas at Arlington campus. Though winning for the second year in a row is quite an accomplishment for the team, especially after a 16-year dry spell, team captain Hiep Nguyen says there is something more rewarding than taking home the first place prize.

"Winning is great, but the most rewarding part of the process is we get to learn more about our fellow classmates," said Nguyen, a College of Engineering senior Civil Engineering major and captain of the Steel Bridge Team. "In the beginning, we barely know each other, but by the end, we are all close. We have lot of fun experiences together."

But the competition is not all fun and games. According to the ASCE website, the purpose of the competition is to provide civil engineering students with a comprehensive project experience involving the design and building of their own scaled-down steel bridge. The students are required to do their own design, fabrication, erection and testing with client specifications.

"A lot of people who join the team at the beginning, they don't know what to do," said Nguyen. "And we are like, 'Don't worry about it, we will teach you.' And it's a great learning experience for me too. The team captain does a lot of stuff in the background, planning the meetings, getting the materials, finding sponsors. And we design the bridge and teach the team as we put it together."

The team will be competing in the national competition May 23-24, 2014 at the University of Akron.

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### U.S. Secretary of Energy Ernest Moniz visits UTSA

U.S. Secretary of Energy Ernest Moniz visited The University of Texas at San Antonio for a town hall meeting on energy issues and job creation on Thursday, February 6, in the Buena Vista Street Building at the UTSA Downtown Campus. Mayor Julian Castro introduced Moniz. UTSA students, local high school students, and community members attended the event and had the opportunity to ask Secretary Muniz questions during a Q&A session. The College of Engineering's Texas Sustainable Energy Research Institute brought Secretary Moniz to campus.





### Roadrunner Racing Sponsorship Appreciation event

The The University of Texas at San Antonio's (UTSA) Society of Automotive Engineers held its Roadrunner Racing Sponsorship Appreciation event at the new UTSA Athletic Center on February 20, 2014. Roadrunner Racing sponsors were treated to dinner and had the opportunity to see and test drive the group's car. Roadrunner Racing competes in Formula SAE, an international collegiate design competition that challenges students to conceive, design, fabricate and race a small formula-style race car. UTSA's interdisciplinary team includes mechanical engineers, graphic design artists, and MBAs.



### Masters Leadership Program COE tour

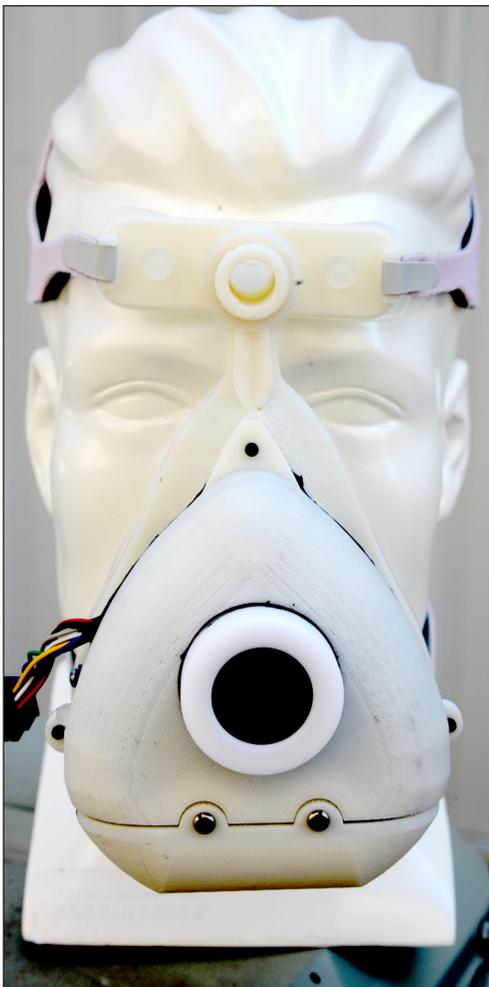
The University of Texas at San Antonio Research invited San Antonio's Masters Leadership Program (MLP) to campus on February 5, 2014. The group took a tour of two College of Engineering labs, and had the chance to hear students and staff members talk about their programs within the college. The MLP provides proven leaders with a unique opportunity to learn firsthand about the issues and needs in Bexar County, while securing their commitment to serve the community through board service and volunteerism.





The Center For Innovation And Technology Entrepreneurship (CITE) 100k Competition winning team was Mediflow. The team consisted of engineering students Joseph Barrios, Eluid Gutierrez, Aaron Mosqueda and Maxim Perkins as well as business students Nancy Perdicho, Spencer Reynolds and Kaleigh Simms.

# 2014 Technology Symposium &



Photos to the right, top to bottom: Each team was judged throughout the Tech Symposium by invited judges as well as visitors to the event. The Mechanical Engineering Department's first place team was MechanYsm, made up of engineering students Andrew Casterlin, Ivana Escobar, Derek Kohlenberg and Noel Manuel. In the Civil Engineering Department, the first place team was The Escape at Evans, made up of engineering students Roaul Morales, Rodrigo Frausto, Kelsey Garner, Tina Cavazos and Kyle Piland. In the Electrical and Computer Engineering Department, the first place team was Steelhead Spartan made up of engineering students Taylor Harper, Kevin Nardo, Eric Birkelbach and Shrey Kodinariya. To the left: Team Mediflow's winning project - a continuous positive airway pressure (CPAP) device that is smaller and more mobile than products currently on the markets, and integrates the blower into the facial mask.





Raid Alqorashi, a senior mechanical engineering student, shows his group's device at the symposium.



Electrical and computer engineering seniors Adrienne Duirden and Laura Garcia present their project, a voice controlled elevator, to the judges.



S.N.App is a project developed by a team of seniors from the Department of Electrical and Computer Engineering.

# CITE Awards

More than 40 senior design teams competed for The University of Texas at San Antonio College of Engineering departmental awards at the 2014 Tech Symposium held on April 29, 2014 at the UTSA H-E-B University Center ballroom on the Main Campus. Ten teams participated in the Center for Innovation and Technology Entrepreneurship (CITE) 100k competition held during the symposium.

The Tech Symposium showcases innovative student projects and provides a public venue where UTSA students present advances achieved in their senior design projects. The ten engineering teams chosen for the CITE 100k Competition are partnered with business students to develop a business plan to market their project.

Team Mediflow was crowned the winner at the CITE \$100k Competition with its prototype sleep apnea device and business plan to market the technology. UTSA competitors Velox Medical and Vitalassure placed second and third respectively in the business planning competition.

The Mediflow team developed a commercially viable business plan for a CPAP (continuous positive airway pressure) device that is smaller, more mobile, and aims to be more comfortable than other CPAP devices currently on the market. It integrates the blower into the facial mask itself and the power supply attaches to the body, eliminating the need for a hose and anchored power supply. Mediflow includes undergraduate engineering majors Joseph Barrios, Eluid Gutierrez, Aaron Mosqueda and Maxim Perkins and undergraduate business majors Nancy Perdicho, Spencer Reynolds and Kaleigh Simms. The Mediflow team won \$2,000 cash



Dell's Vice Chairman of Operations and President of Client Solutions Jeff Clarke, a graduate of The University of Texas at San Antonio, was the keynote speaker at the event.

and several in-kind business resources.

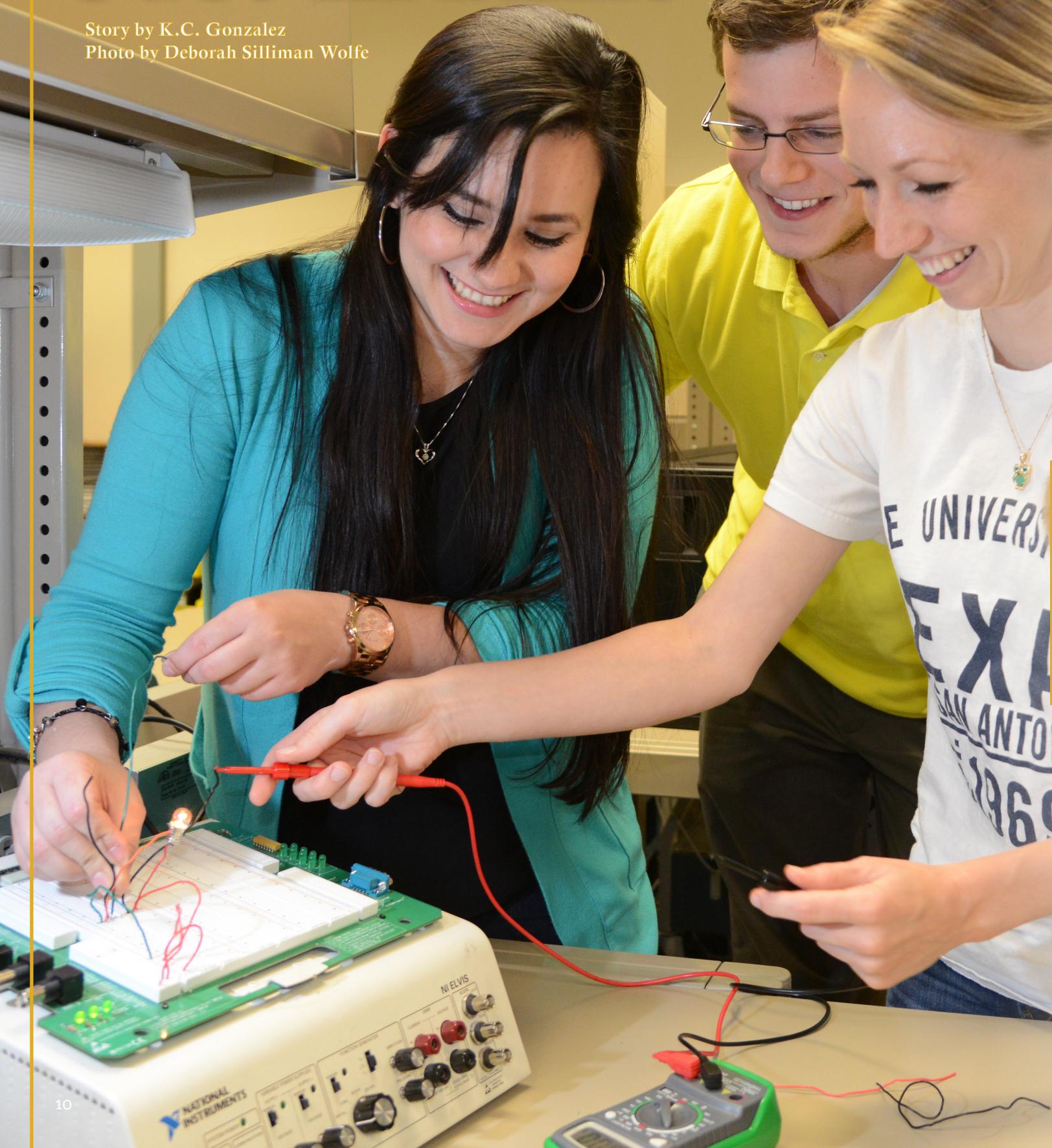
"It feels great that our team won the CITE competition," said Joseph Barrios, senior mechanical engineering student. "There was a lot of hard work that was put into this project and to be rewarded for it is even better. And the collaboration with the business team was great. We respected each other and each other's ideas. Being optimistic goes a long way."

"Mentoring this group was a fantastic experience," remarked San Antonio medical device consultant Mark Standeford, who served as Mediflow's business mentor for the competition. "They identified a good opportunity, structured a good business plan around that opportunity, and even if they hadn't won first place they would have a winning commercial product."

# Just in Time Math

Story by K.C. Gonzalez

Photo by Deborah Silliman Wolfe



# Changes in curriculum improve student retention, grades and graduation rate

*Just in Time Math program creates improvements in just five years*

After a five-year pilot project, The University of Texas at San Antonio (UTSA) College of Engineering has seen measurable improvements in the retention rate and grade point average of students who participated in a freshman seminar course called Just in Time Math (JITM), which was created by curriculum experts within the college's Center for Excellence in Engineering Education.

In 2009, the UTSA College of Engineering introduced a new math sequence to the undergraduate engineering curriculum

math sequence has required students to take up to three or four semesters of math prerequisites before they can enroll in introductory engineering courses," said Mehdi Shadaram, Briscoe Distinguished Professor and interim dean of the UTSA College of Engineering. "During this period, students have no significant interaction with the engineering faculty and engineering schools suffer egregious retention problems. In just five years of revamping our curriculum, we have seen more enthusiasm about engineering among the

students and substantial improvements in retention and graduation rates."

The college has offered the Just in Time Math seminar to cohorts of about 25 engineering freshmen every fall on a voluntary basis since 2009.

At the conclusion of this five-year study, the data shows that on average, the retention

rate of the project cohort was about 20 percent higher each year than the traditional cohort. In the first year, the GPA of the project cohort was 55 percent higher than the traditional cohort and over the next three years, it was an average of 12 percent higher.

Support for these curriculum changes initially provided by the National Science Foundation through a subagreement with Wright State University. Continued funding has been provided by the University of Texas System and the U.S. Department of Education.

So far, more than 250 students have benefited from the classes, stipends and tutoring made available through these grants.

"JITM offered more in-depth teaching of introductory vector calculus and differential equation solving so that I felt prepared to do this sort of math in my basic engineering courses," said mechanical engineering senior Peter Mancuso. "Also, it got me on track to finish in four years. I would say its personal profound effect was that I could take courses simultaneously, rather than as prerequisites, and taking JITM at the start of college boosted my skills in all my engineering coursework."

"JITM provided me with an early understanding of engineering mathematics that I truly believe gave me a leg up compared to my peers," said mechanical engineering senior Jacob James. "In fact, I would credit much of my success at UTSA to the JITM course and instructors involved with it."

Ultimately, the curriculum changes shift the traditional emphasis on math prerequisite requirements to an emphasis on engineering motivation for math. UTSA is one of roughly two dozen universities across the country dedicated to creating a new national model for engineering mathematics education.

The Center for Excellence in Engineering Education provides a holistic approach for improving the quality of engineering education at UTSA. The center strives to improve the preparedness and marketability of the students in the College of Engineering for challenging and rewarding careers.

"JITM provided me with an early understanding of engineering mathematics that I truly believe gave me a leg up compared to my peers."

-Jacob James  
mechanical engineering senior

aimed at shortening the time it takes students to begin taking engineering core courses. The Just in Time Math seminar course exposes first-year students to lab experience and math topics most heavily used in core engineering courses such as statics, dynamics and electrical circuits. Additionally, engineering applications have been incorporated into traditional calculus so students are prepared to take core engineering courses up to a year earlier than in the traditional degree plan.

"For decades, the traditional

# Flipped Classroom

*Foster flips his teaching method, sees positive results*

STORY AND PHOTOS BY  
DEBORAH SILLIMAN WOLFE

Engineers are not known for their fashion sense. My brother is a computer engineer and his casual jeans and T-shirt fashion is the kind of clothing I associate, maybe stereotypically, with engineers. When I met Dr. John Foster for the first time, I thought he looked like he belonged in a men's fashion magazine. A freshly pressed dress shirt underneath an immaculate suit, his shoes (and buttons) shining. He looked nothing like my code-writing, jean-wearing brother. Foster's fashion sense is forward thinking, and so is his teaching style. This innovative professor is using a flipped classroom teaching method that maximizes Foster's, and his students', time.

"The idea of a flipped classroom is that all the traditional lecture material is covered outside of the scheduled class time," said Foster, an assistant professor in the Department of Mechanical Engineering. "The difference is that what would typically be a 60-75 minute lecture is cut down to two or three 7-10 minute video lectures."

Foster, who himself learned about the flipped classroom approach from educator Salman Khan and his Internet-based learning community Khan Academy, recorded two to three short video lessons per class period when he started teaching Introduction to High-Performance Computing in 2013.

"I did 500 percent work up front

when I started teaching this flipped class," he recalled. "But now, after three semesters of teaching the class, I am just tweaking the material, and it really helps with my workload at this point."

Foster's students are required to watch the videos and respond to quiz questions before they come into the classroom. The videos, which are located on a website specifically designed by Foster, are accompanied by slides and the students can stop, rewind and pause the videos if they need clarification on any of the topics shown.

"This class is perfect for a flipped model because the only way you can get better at programming is by actually writing code," said Foster. "Students don't get better at coding sitting and listening to someone talk about it. That is not effective at all. If I can deliver all the background material and all the reference material outside of class, then when they come to class, we can write programs together. That is how they get good at it."

When the students come to class, they have to apply the concepts they learned in the videos to the class lesson. Foster gives them a problem in class, which in a typical class would have been given as homework. Instead of having the student struggle alone working on the assignment, Foster uses the class time to guide his students through the problem.

"They [the students] have figured out that if they come to class, they can get help and figure out a problem in the class period," he said. "If they don't

come to class, they are going to get stuck and it could take them three to four hours to get through the task."

The amount of students taking the course since Foster started teaching it in 2012 has grown from an average of 20 students to 40 students. And the reviews Foster receives at the end of the semester are extremely positive.

"I thought the class style was very beneficial. I work while taking my courses and it made the lecture and homework time much more flexible," said Jason Crandall, a senior Mechanical Engineering major who took Foster's class last semester. "I could retain a lot more of the information since it was completely at my pace."

Crandall said that he thinks the flipped classroom is a much better way to learn because the method gets the students more involved with the professor when they are in the classroom. In a lecture setting, Crandall said he feels the professor just talks to the students with little interaction.

"I find that a lot of times lectures don't leave room for real-world questions and experiences," said Crandall. "When the class is reversed as Dr. Foster's was, the time that would be a lecture provided the perfect opportunity for questions since we already had the basics; it let me get a lot deeper into the subject matter."

Nathan Crosby, a graduate student in Mechanical Engineering, is taking High Performance Computing class this spring 2014 semester and is also a fan of the flipped method.

# Flip

“With the flipped classroom approach, I won’t waste a lot of time looking for the wrong answer if I get on the wrong track,” said Crosby. “After that first run-through, I’ll have a working example I went through step-by-step to reference, and an understanding of anything that gave me trouble before.”

And Foster’s UTSA students aren’t the only ones benefiting from the course material. Foster has posted the videos to YouTube, and over the past year and a half, the videos have been viewed 60,000 times, with only 9,000 of those hits coming from the class website <http://idl.utsa.edu/me5013>.

“As an unintended consequence of putting this course online, I have garnered a reputation in this area,” said Foster. “I have gotten emails from people all over the world asking me questions and wanting to collaborate on projects.”

High-Performance Computing is the only class Foster is currently teaching with a fully flipped model, and he says that the material lends itself to this approach.

“I would encourage every professor to do something different and take advantage of the technology we have,” said Foster. “It doesn’t have to exactly mimic what I am doing. Heck, I borrowed a lot of what am using from this guy Khan. I learned from him, and am not reinventing the Internet. I am just innovating and figuring out how I can use technology to my —and my students’ — advantage.”





**M**eeet Ricco Aceves. He is one of only 150 students from 70 universities in the country who has been accepted into the prestigious NASA Pathways Intern Employment Program.

Over the next two fall and summer semesters, he will move to Houston to work alongside professional engineers at the Johnson Space Center. The NASA Pathways

internship gives undergraduates the opportunity to explore federal careers while still in school with the possibility of being hired upon graduation.

“NASA is home to many of the best engineers and scientists and my goal is to be part of that group,” says Aceves. “NASA’s vision states, ‘To reach for new heights and reveal the unknown...,’ which is the same vision that I have for myself. To be part of a team that benefits humankind was a dream — now it’s becoming a reality.”

This isn’t Aceves’ first encounter with NASA. As a senior in high school, he was accepted into NASA’s Career Exploration Program and worked with a team to engineer and program a speech-dependent robotic arm that is now utilized as a prototype tool for astronauts.

# Reaching *for the* Stars

*COE undergrad lands prestigious internship with NASA*

STORY BY K.C. GONZALEZ/PHOTO BY DEBORAH SILLIMAN WOLFE

A junior in electrical engineering, Aceves is vice president of the UTSA chapter of MAES, a national organization for the development of Latinos in science and engineering. Through MAES, Aceves participates in many outreach programs in area high schools.

Aceves is proud to represent UTSA, not only at NASA but also when he's speaking to students in the community about the exciting careers a degree in engineering, math or science affords.

"The atmosphere at UTSA is remarkable. I feel as though I belong here and it's a home away from home," he said. "What I really like about being at UTSA is that I can be a part of the growth that is

taking place at this institution. We're on our way to become a top tier university, and I'm glad I can help move us in that direction."

Aceves credits his mentor, Manuel Maldonado, program manager for the UTSA Office of P-20 Initiatives, as the person who inspired him the most.

"Ricco has been one of the best student leaders that we have had within our office," said Maldonado. "I believe that he exemplifies the Top Scholar student that the university is attracting and will continue to attract in the future. He is a true ambassador of UTSA, and it has been a pleasure watching him grow as a student leader, a researcher and as a young man."

# Fighting for Fido

COE Ph.D. students launch mobile stem care company

In this day and age, pets are no longer just animals used for practical purposes like herding sheep or guarding a home. Now, it is not unusual to see owners dress their fur babies in miniature sweaters when the weather gets too cold, and feed them top-of-the-line food, made from meats that would normally be

found on a child's dinner plate. Pets are an integral part of a family, and that is one reason why two biomedical engineering doctoral students, Ramon Coronado and Tony Yuan, launched Mobile Stem Care LLC, a company that will help veterinarians treat their patients with the latest advancements in stem cell therapies.



“When a pet is hurting and not living the best quality of life, that affects their owners,” said Coronado. “We want to provide a better standard of life for the pet in need and we want to make it affordable for a typical pet owner.”

The first of its kind in Texas, Mobile Stem Care is a mobile service that offers adipose stem cell and platelet rich plasma (PRP) isolation to veterinarians for treatments in dogs, cats and other animals suffering from degenerative diseases such as osteoarthritis or hip dysplasia, ligament and tendon injuries or non-healing wounds.

Mobile Stem Care takes adipose tissue, also known as fat, collected from the affected animal by the veterinary doctor and isolates the adult stem cells onsite in less than 90 minutes. A concentration of the animal’s stem cells and other immune-regulatory cells are returned to the doctor and injected into the damaged area of the animal to stimulate growth of healthy cells and aid healing.

Steven A. Davis, M.D., founder and director of the Dermatology & Laser Center of San Antonio, clinical professor at the UT Health Science Center at San Antonio and co-founder of privately held StemBioSys, Inc., is an investor in Mobile Stem Care.

“The first thing you invest in is people, and I’m very confident in Tony and Ramon. They are energetic, bright, and they have proven themselves in a degree program with a lot of credibility,” said Dr. Davis. “The

stem cell arena is exciting from both a scientific and commercial standpoint. Mobile Stem Care is a unique idea and its services have value in the biomedical sphere. I think it can be successful.”

Coronado and Yuan began the Ph.D. program in Biomedical Engineering in 2011 and became fast friends, sharing a common passion for science, helping others, rock climbing and now business. Since 2012, they have worked in the laboratories of the U.S. Army Institute of Surgical Research where they have been exposed to advancements in stem cell research and treatments.

The company idea came to fruition in August 2013 when Coronado and Yuan started the Graduate Certificate program in Technology Entrepreneurship and Management offered through the UTSA College of Business and led by Cory Hallam, UTSA chief commercialization officer and director of the Center for Innovation and Technology Entrepreneurship. The 12-hour certificate is designed to help current UTSA graduate students unlock their inner entrepreneur and equip them with the fundamental skills required to start a technology company.

“When we started the first class in the certificate program, we knew nothing about starting or running a business,” said Yuan. “Thanks to UTSA, we have been able to pursue our dream of taking this scientific research and bringing it to industry in a way that will directly benefit society.”

“To my knowledge, there has never been a UTSA biotechnology company that has secured fund-

ing and launched their business this quickly,” said Hallam, who, in addition to his role in the College of Business, teaches courses in the College of Engineering. “Mobile Stem Care shows exceptional promise and it has been exciting for me to watch these young men develop into savvy entrepreneurs in a very short time.”

Bringing the clinic to the patient and providing the service in 90 minutes sets Mobile Stem Care apart from similar companies that offer stem cell isolation services. It allows the company to avoid shipping delays, which can cause transported stem cells to degenerate or die and lose effectiveness before they ever reach the patient. Additionally, because Mobile Stem Care is a completely portable service, veterinary clinics do not need to purchase equipment, hire staff or factor in overhead costs associated with the stem cell therapy process.

Adult stem cell therapy has been available commercially for animals since 2002. Research on adult stem cells, however, began in the 1950s. Adult stem cells – which come from animals already born, not from embryos – offer the possibility of a renewable source of replacement cells and tissues to treat a myriad of diseases, conditions and disabilities.

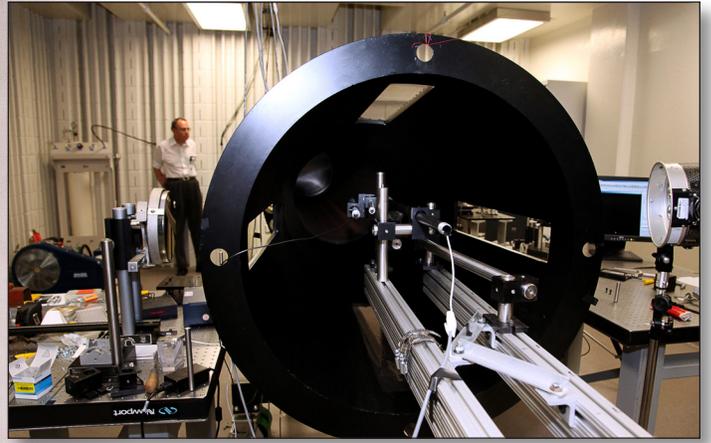
Mobile Stem Care joins the ranks of the many companies and organizations that are helping put San Antonio on the map for stem cell research, tissue engineering and regenerative medicine. Those organizations include UTSA, the UT Health Science Center San Antonio, Southwest Research Institute, Texas Biomedical Research Institute and its Southwest National Primate Research Center, the U.S. Army Institute of Surgical Research, the National Trauma Institute, South Texas Blood and Tissue Center and RegenMed SA.

Visit Mobile Stem Care online at [www.mobilestemcare.com](http://www.mobilestemcare.com).

**“When a pet is hurting and not living the best quality of life, that affects their owners. We want to provide a better standard of life for the pet in need and we want to make it affordable for a typical pet owner.”**

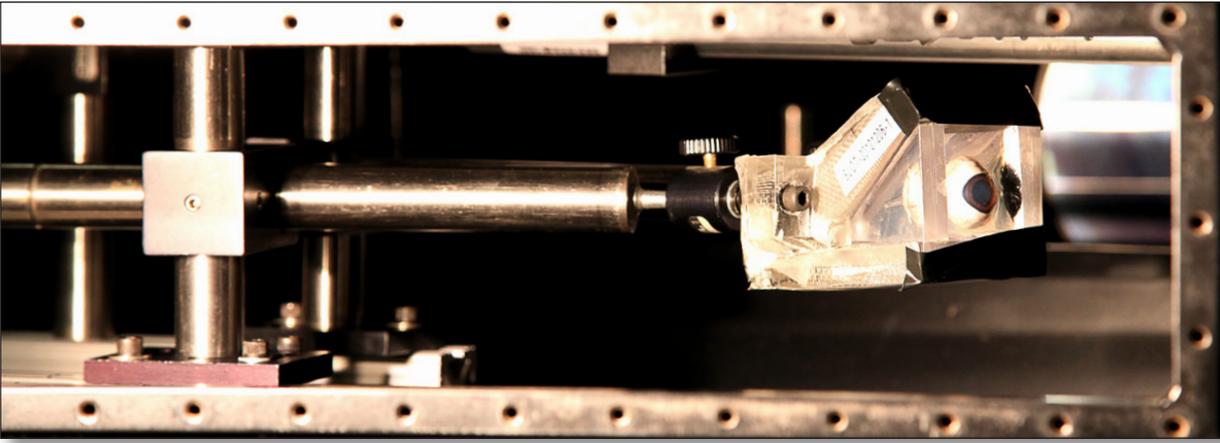
- Biomedical Engineering doctoral student Ramon Coronado

# Eye *on the* Prize



In 2012, Dr. Matthew Reilly, assistant professor in the Biomedical Engineering Department, was named as a co-primary investigator with Walter Gray on an award from The Army Medical Research and Materiel Command titled “Sub-Lethal Ocular Trauma (SLOT): Establishing Standardized Blast Thresholds to Facilitate Diagnostic, Early Treatment, and Recovery Studies for Blast Injuries to the Eye and Optic Nerve.” And in February 2014, Reilly and the team had an article published in a top ophthalmology journal. *Innovations* had a chance to sit down with Reilly and check on the progress of the team’s research.





**Q: What findings have you discovered so far over the course of your research?**

We've shown that the shockwave alone (i.e. in the absence of shrapnel or other particles) can cause significant eye injuries which could cause total or partial blindness. These injuries include damage to the retina and choroid (the soft layers which convert light into neurological signals), compromise the eye's ability to maintain intraocular pressure (i.e. such an injury would lead to glaucoma), and others. Perhaps the most striking and reproducible is damage to the optic nerve which transmits all of the information from the eye to the brain: these injuries occurred even at low pressures and could be the cause of lots of visual deficits which have thus far been assigned to traumatic brain injuries.

**Q: Did any of these findings surprise you or were they what you expected?**

There has been considerable controversy surrounding whether this type of injury could damage the eye. No one had shown it before, though perhaps because they weren't looking in the correct way. We had some idea of what to look for based on results from computational models. Perhaps the biggest surprise is the optic nerve injury.

**Q: How has the collaboration been between the Army, UTHS and Sponcel?**

The collaboration has worked very well. We had some hiccups at the beginning due to some legal issues and more problems last year because of Department of Defense budget cuts, but we stuck it out. None of us could have made any headway without the entire team working together. We've put in a couple of additional big grant proposals recently to try to continue the collaboration beyond the current three-year arrangement.

**Q: I hear that you and your team just had a paper published in one of the top ophthalmology journals in the nation?**

Yes, our paper, which detailed anatomical descriptions of the blast injuries, was published in *Investigative Ophthalmology and Visual Science*. It's the official journal of the Association for Research in Vision and Ophthalmology – the largest ophthalmic research society.

**Q: How will the findings of this research study positively impact society/people with eye injuries or with the potential to get these types of injuries?**

The goals of the study are to identify potential injuries that physicians should screen for following a blast injury, develop diagnostic tests, and develop a computational model which will allow us to design improved protective devices. These types of injuries occur primarily in battle-field scenarios but also in terrorist attacks (e.g. Oklahoma City bombing) and other explosions.

**Q: Why did you decide to do this type of research on eye injuries?**

I have a lot of friends and family who are, or were, in the military and have had various injuries. I wasn't in the military, but I would like to better protect those people when they are in the field or give them better diagnostics when they are injured. I want to make sure their quality of life is as high as possible after they have been deployed. I am just trying to give back.

**Q: What is the next stage of your team's research?**

The idea for the next part of the study is not only looking at the eye, but also the optic nerve and the brain. Traumatic brain injury (TBI) is a huge issue. Visual defects are one of the most common problems associated with TBI. These problems are currently ascribed to the brain because changes to the eye and optic nerve have not been studied in as much detail. We are hoping to develop a tear or blood test that can tell if there is any type of injury after a blast so that the retinal damage can be taken care of quickly, reducing vision loss.



## SiViRT Shows its Stuff at SXSW

**D**r. Yusheng Feng and a group of students from The University of Texas at San Antonio's College of Engineering had a chance to show what the college's Center for Simulation, Visualization, and Real Time Prediction (SiViRT) has to offer when they participated in The University of Texas System's Sixth Street Showcase at South by Southwest (SXSW) on March 8, 2014, in Austin, Texas. The showcase was organized by The University of Texas System's Office of Technology Commercialization, and included groups from The University of Texas Austin, The University of Texas at San Antonio, The

University of Texas Health Science Center-San Antonio, The University of Texas Health Science Center-Tyler, Texas State University, Texas Tech University and Texas A&M University.

Dr. Yusheng Feng, SiViRT director and professor with the Department of Mechanical Engineering, was a featured presenter at the event, and spoke about interactive technology and virtual reality.

"We are living in a digital age in which our real world is mixed with virtual reality," he said. "The applications of combining omniscient sensing, powerful computing and immersive visualization can only be

limited by our own imagination."

UTSA students Ehren Biglari, Michael Lasch, Jacob Kantor, Brittany Schier, Aaron Stout, and Daniel Portillo had the chance to demonstrate some of the technology featured in the SiViRT lab.

"The showcase was amazing," said Lasch, a SiViRT undergraduate research assistant. "I really enjoyed the opportunity to show off the technology that SiViRT has been working on. My favorite part of the event was interacting with all of the other students and professors from other UT campuses. It opened up the door for future collaborative work."





# G.E.A.R. 2014

Getting Excited About Robotics (G.E.A.R.) took place April 5, 2014, at The University of Texas Convocation Center on Main Campus. The competition, which was sponsored by the Halliburton Foundation, provides elementary and middle school students with an opportunity to explore science and engineering through a robotics competition using team-supplied LEGO® Mindstorms™ kits. This year, 200 students on 40 teams participated in the event, which has been run by the College of Engineering’s Interactive Technology Experience Center (iTEC) since 2009. The game mats this year were provided by Cold Fire. “We feel that this year’s event went very well,” said Roberta Bauer, iTEC program coordinator. “The overall pace of the competition was upbeat

with very little downtime once we got the competition started. The students were excited and ready to go with the challenges.” Teams spend six weeks at their home schools designing the best robot they can to meet G.E.A.R.-themed challenges. At the end of the competition, two champion teams with the highest scores are named - one from an elementary school and one from a middle school. Awards also were handed out in other various categories, such as Best Dressed Robotics Team, Most Elegant and Best Programming. “I personally like the creativity of the teams that come out in their different costumes,” said Earl Bullock, iTEC educational specialist. “They were unique and helped them work together as a team throughout the competition.”



# Two Semesters = A New Life Plan

**I**lse Malagamba's family likes to travel: Europe, South America, the U.S. Originally from Mexico, Malagamba's parents settled in the United States so their daughters could attend school here.

She's been on family trips abroad. Her parents set aside some money to allow their children to travel. Her older sister has lived and studied abroad for years. But the travel bug hadn't really bit Malagamba, a junior Civil Engineering major.

Her older sister Regina, who has lived in seven different countries, and was studying in Science Po, Paris, encouraged her to consider taking time away from her civil engineering program at UTSA to study abroad.

"My sister pushed me to do it," Malagamba said with a laugh. "I wanted to travel somewhere different and I have always been interested in Australia."

Malagamba started doing her research. She first considered Sydney. After talking to another UTSA student who had studied abroad in Sydney, she learned Sydney was a lot like the U.S.

Malagamba wanted something different. Her sister suggested Melbourne, where a friend of hers at the Paris university was from. After talking with the friend, and reading up on the University of Melbourne, Malagamba knew she had found her study abroad destination.

The University of Melbourne is one of Australia's top universities, and has international scholars and Nobel Prize winners on its faculty. She could take core classes that would transfer into her civil engineering degree.

"I started telling myself, my family, my friends, 'I am going to go,'" she said. "There was no if. I was so determined; I did everything by myself."

"I wanted it to not be like America, and it wasn't," she said. She visited Cairns in Queensland on her breaks, wanting to explore as much of her adopted country as she could. She snorkeled at the Great Barrier Reef a week before her program started.

While at the University of Melbourne,

she lived in student housing as a way to make more Australian friends and immerse herself in the Australian college experience.

Malagamba found it hard to make Aussie friends at first. She ended up hanging out with the European and other American international students, but when the Australian first semester started, she made lots of new Australian friends. In many cases, international or Australian, she was the first Mexican many of them had ever met. She was quizzed about both Mexico and the U.S., and cooked enchiladas for them.

"We became like one big family," she said. She roomed with Jess Wallace, an Australian from a small town near Melbourne. She spent Christmas with Wallace's family. They had beach time for Christmas, and did a Christmas barbecue rather than your U.S. turkey. She taught them how to make S'mores. They all visited St. Philip's Island to see penguins in their natural habitat.

One of the big surprises came during her course on American Politics, which was taught by a British national. Malagamba was surprised at how much more informed her Australian classmates were about U.S. politics than she was. They watched Jon Stewart's "The Daily Show," and while she had to explain some of the jokes, her Australian friends seemed to "get" U.S. politics more so than her or her American friends.

"It was shocking to me that someone on the other side of the world knew more about U.S. politics than I did," she explained. It pushed her to know more, and learn more about her home countries.

She loved her time in Melbourne, and she plans to try and move back after graduation on a work visa.

She credits studying abroad to help clarify what to do with her life.

"It helps so much," she said. "It helped me focus. So many people ask you where you are from, and why you are there, and what you are studying, and you have to answer it so many times, it makes you think about what you want to do, and why."



# UTSA and Tecnológico de Monterrey System Establish Education, Research Partnership

The University of Texas at San Antonio (UTSA) and the Mexico-based Tecnológico de Monterrey System (ITESM) announced a 10-year agreement that will provide students and faculty from the universities the opportunity to participate in education, research and cultural exchange programs between the two institutions.

Under the agreement, each university will offer undergraduate and graduate students the opportunity to study and conduct research at the partner university. Faculty and staff also will be invited to participate in a variety of teaching and research activities.

Additionally, the two universities will carry out joint research and continuing education programs, organize symposia, conferences and short courses on research issues, and exchange best practices in teaching, student development and research at each institution.

UTSA first signed an agreement of cooperation with the ITESM campus in Monterrey in 1997. However, the new agreement

includes the entire ITESM system, comprised of 31 campuses throughout Mexico.

“UTSA and the Tecnológico de Monterrey have very similar research interests and have been wonderful collaborators for some time now,” said UTSA President Ricardo Romo. “Expanding this relationship will strengthen our ability to offer top-tier opportunities to students and scholars for pursuing education, research and collaboration abroad.”

“Our strategic partnership with UTSA will facilitate and support our internationalization goals for faculty and students. We are honored to work together and to have new avenues of collaboration,” said David Noel Ramírez, president at Tecnológico de Monterrey.

This summer, the UTSA Office of the Vice President for Research, the College of Engineering and the College of Sciences will host the Monterrey Institute of Technology Research Immersion Camp, allowing ITESM students to explore opportunities in some of UTSA’s research

strengths including integrative biomedicine, cloud and cyber computing, and sustainable communities and critical infrastructures. The camp will offer one- to six-week programs with ITESM students housed on the UTSA campus.

“ITESM has several strong engineering programs that complement our programs,” said dean of the College of Engineering Medhi Shadaram. “I am excited to be working with ITESM because our institutions are relatively young with potential for higher achievements through partnership.”

UTSA researchers and faculty already are traveling to ITESM, and a timeline for UTSA students is being developed now.

As part of its efforts to increase international visibility and foster collaboration in Latin America, UTSA has similar agreements with 14 Mexican higher education institutions including the Universidad Nacional Autónoma México (UNAM), as well as agreements with universities in Asia, Europe, Africa and South America.

## Engineers Without Borders Heads to Peru for Project Followup

In late May, the UTSA student chapter of Engineers Without Borders (EWB-UTSA) will take its fourth trip to the earthquake stricken area of Viña Vieja, Peru to support its ongoing effort to provide access to clean drinking water for those living in the region. The primary goal of the Viña Vieja water project is to facilitate the construction of a reliable, locally sourced water system owned and operated by the residents.

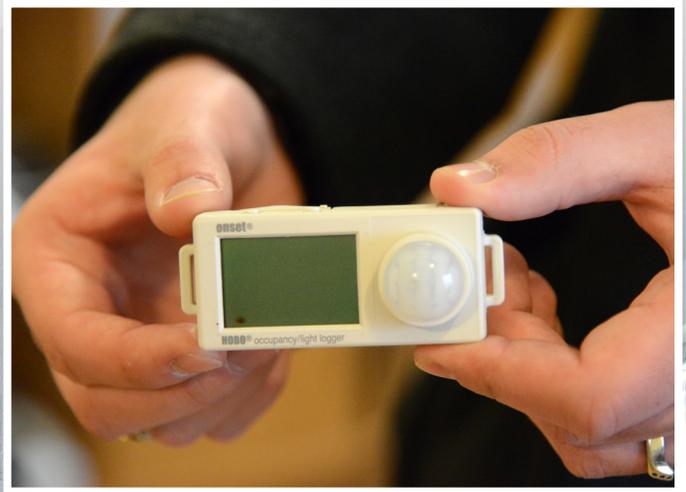
In 2007, the region was devastated by consecutive earthquakes, which left many of the residents of Viña Vieja without housing, while complicating the existing problem of obtaining potable water.

EWB-UTSA has been working on this project since 2012. The group has headed up the construction and



operation of a universal water system for the 110 families in the community, as well as assisted with the election of a water system committee and educate the residents so they are able to sustain the work completed by EWB-UTSA. The project is part of a five-year agreement with the community in cooperation with Texas Partners of the Americas, a non-governmental organization.

In the future, EWB-UTSA is planning to make two additional trips to finish the project. One trip to complete the implementation, and a monitoring trip in which the team — along with the local communities — will measure and assess how well the water system is working.



Dr. Bing Dong stands in one of the four residential houses in west San Antonio where he has set up a network of infrared sensors that monitor energy consumption. Above left: Dong and his students pose for a portrait before collecting energy data from a home. Above right: One of the occupancy sensors which is used to collect data in the homes.

# COE Researcher Tapped to Lead International Energy Project

*Bing Dong will advance international research in building occupancy behavior*

For the first time in its history, The University of Texas at San Antonio (UTSA) has been invited to participate in an International Energy Agency (IEA) project along with many of the world's top research universities. College of Engineering mechanical engineering assistant professor Bing Dong has been invited to lead a study that will set an international standard for measuring energy-related occupant behavior in buildings.

Adjusting the thermostat, switching lights on and off, opening and closing windows, pulling up and down window blinds and moving between spaces are all energy-related occupant behaviors that have a real impact on how much energy a building uses.

"I have always been interested in energy consumption in buildings, especially for the past 11 years," said Dong. "Buildings make up nearly 40 percent of total U.S. energy consumption. If car emission and building energy consumption grow at the same pace, and if we can save 47 percent of building energy consumption, that is equivalent to taking

all the cars off the road forever."

According to the IEA, different groups from all over the world are conducting occupant behavior research; however, to date, the researchers have not used a common occupancy behavior model, which has caused their results to vary greatly. The IEA project will bring the world's leading researchers together to define and simulate occupant behavior in a consistent and standard way in order to solve a problem that every country faces.

"I feel very proud to be leading this project be-

cause it involves many top universities from across the world," said Dong. "Being invited to contribute to an IEA project symbolizes that UTSA is truly a top-tier research institution."

With funding from the UTSA Department of Mechanical Engineering and the Texas Sustainable Energy Research Institute at UTSA, Dong and his team will lead the project's first research objective: to provide a standard definition and simulation methodology for occupant movement within buildings.

Using a complex network of infrared sensors that detect movement coupled with sensors that monitor energy consumption, Dong has developed software that captures and transfers information every five minutes into a database. The database allows him to see patterns in energy consumption in commercial and residential buildings. His test beds will include one wing of the Applied Engineering and Technology building on the UTSA Main Campus and four residential houses in West San Antonio designed for low-income residents by UTSA architecture graduate students under the direction of professor Taeg Nishimoto.

Dong's model of tracking and measuring occupant movement will be used as the standard by which the other participating groups in the IEA project conduct their research over the next four years. In the end, this collaboration will create an international standard for measuring occupancy behavior as it relates to building energy efficiency.

The four-year project involves 23 countries, 53 universities, national labs and architecture companies including Harvard University, Carnegie Mellon University, Rutgers University, Purdue University, the University of North Texas, the University of Alabama, Lawrence Berkeley National Lab and Autodesk Inc.

"There are a lot of advantages working with such a large and diverse group of researchers," said Dong. "For example, I am working with world experts in this area and I feel I can learn a lot from them. In addition, the methodologies and results will be shared among the countries involved so that everyone is on the same page, having the same goal."

The IEA is an autonomous organization that promotes reliable, affordable and clean energy for its 28 member countries and beyond. The IEA's four main areas of focus are energy security, economic development, environmental awareness and engagement worldwide.

"I feel very proud to be leading this project because it involves many top universities from across the world. Being invited to contribute to an IEA project symbolizes that UTSA is truly a top-tier research institution."

- Dr. Bing Dong,  
mechanical engineering  
assistant professor

# ENERGY SMART RESEARCH

## TSERI'S PARTNERSHIP WITH CPS ENERGY HIGHLIGHTS ENERGY CONSUMPTION PATTERNS AND OPPORTUNITIES

With the summer months on the horizon after an erratic winter and spring, energy bills will soon reflect the use of home air conditioners and other cooling devices. *Innovations* decided to sit down and have a chat with The Texas Sustainable Energy Research Institute (TSERI). TSERI has been partnering with CPS Energy on various exciting initiatives including the Energy Efficiency and SmartLiving™ Research program. One of the goals of the program is to help consumers figure out how to keep kilowatt hours — and costs — down, even within the unpredictable Texas weather.

“The Texas Sustainable Energy Research Institute has assembled a multidisciplinary research team to develop a framework that enables utilities and policymakers to engage commercial and residential customers with the objective of promoting and deploying energy efficiency and conservation, as well as demand/response enabling technologies,” said Dr. Afamia Elnakat, an associate professor of research with TSERI. “Working with CPS provides us with a unique opportunity to create research and apply it to the real world. This project has given me a chance to go

behind the scenes and see what is really involved with turning on a light switch.”

According to Elnakat, over the past 14 months, the TSERI team, under the guidance of Dr. Juan Gomez, deputy director and an associate professor of research at the TSERI, has conducted a characterization of San Antonio’s residential buildings, developed a methodology to assess the energy performance of single-family detached homes in the San Antonio area, and performed a series of comparative analyses to quantify the impact of building characteristics, equipment, and appliances inside the home. The study also looked at the impact of weather on energy performance and usage patterns throughout the community.

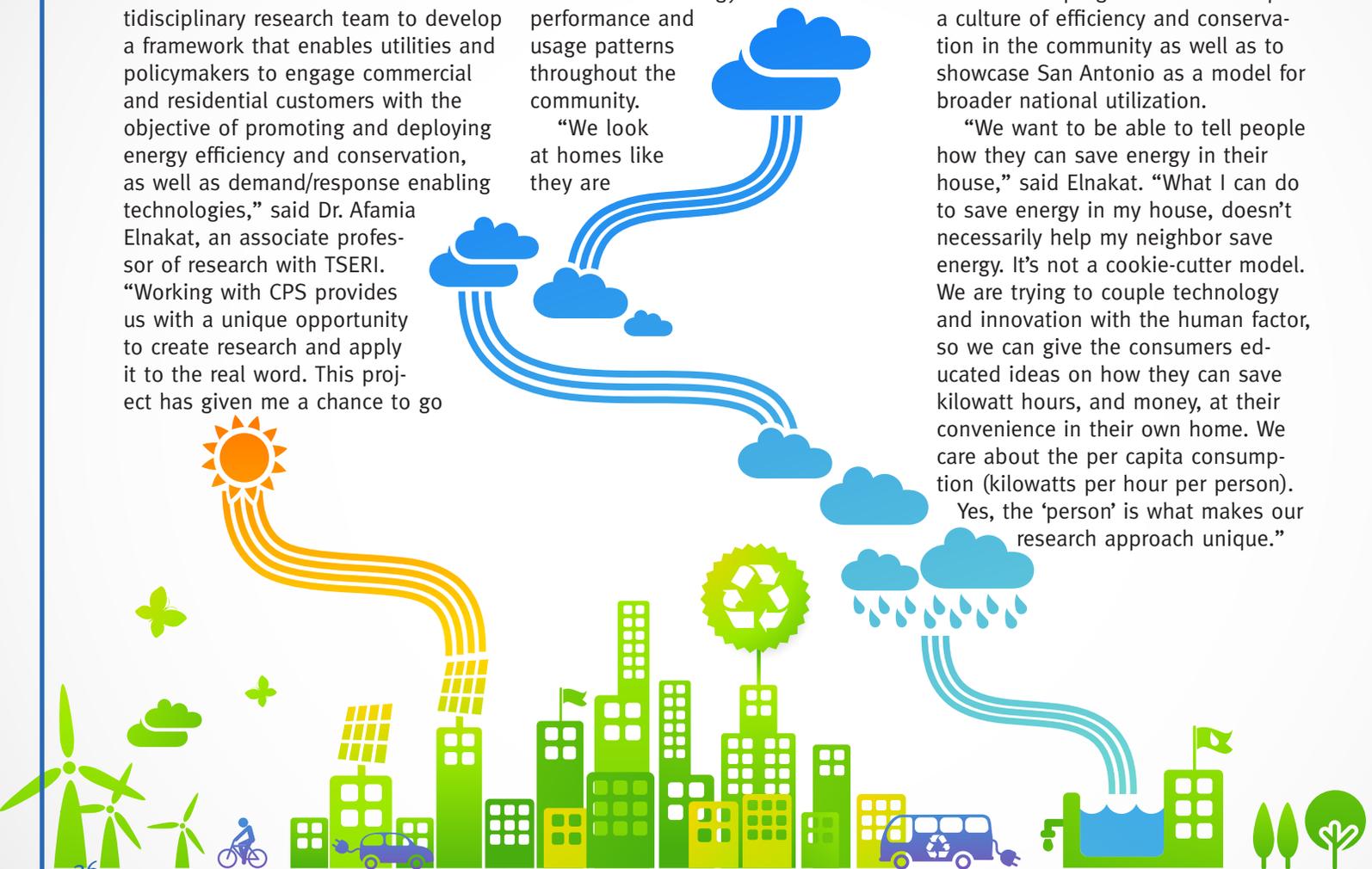
“We look at homes like they are

living organisms,” Elnakat said. “The home heats up with you, cools you down; exists with your family. Homes age. We really try to understand everything about the places we call home so we can better understand our impact.”

In the upcoming months, the TSERI team will focus on additional comparative analyses as well as developing a science-based methodology for understanding the impact of people and their behaviors on energy performance and utilization patterns. One specific area the team is looking at under the guidance of Elnakat is the role of women in household energy decisions. The long-term objective of the research program is to develop a culture of efficiency and conservation in the community as well as to showcase San Antonio as a model for broader national utilization.

“We want to be able to tell people how they can save energy in their house,” said Elnakat. “What I can do to save energy in my house, doesn’t necessarily help my neighbor save energy. It’s not a cookie-cutter model. We are trying to couple technology and innovation with the human factor, so we can give the consumers educated ideas on how they can save kilowatt hours, and money, at their convenience in their own home. We care about the per capita consumption (kilowatts per hour per person).

Yes, the ‘person’ is what makes our research approach unique.”



# Research Awards

The College of Engineering has already secured more than 3 million dollars worth of **new** grants for the 2013-2014 fiscal year, and is on its way to reaching, and surpassing, the total amount of grants received in 2012-2013 fiscal year. We are proud of all of our faculty and students who are striving to reach research excellence in The University of Texas at San Antonio's path to becoming a Tier One institution.

**Rolando Vega, Bing Dong, Hariharan Krishnaswami, Walter Richardson, Hongjie Xie, Daniel Pack, Mohammad Jamshidi, Kiran Bhaganagar, and Nikolaos Gatsis**

*Texas Sustainable Energy Research Institute, Mechanical Engineering Department, Electrical Engineering Department, Mathematics Department, Geological Sciences*

**Proposal title:** Intelligent Energy Systems Research Program  
**Funding Agency:** CPS Energy Accounts  
**Amount:** \$467,974

**Yufei Huang**  
*Electrical Engineering Department*

**Proposal title:** Acquisition of High Resolution Electroencephalogram Systems for Advancing Brain-Machine Interaction Research and Education  
**Funding Agency:** Army Research Office  
**Amount:** \$408,322

**Hariharan Krishnaswami and Les Shephard**  
*Electrical Engineering Department, Civil Engineering Department, and Texas Sustainable Energy Research Institute*

**Proposal title:** DISTINCT: Diversity In Solar Talent through INnovative Curriculum and Training  
**Funding Agency:** Department of Energy  
**Amount:** \$372,135

**Hai-Chao Han and Yufang Jin**  
*Mechanical Engineering Department, Electrical Engineering Department*

**Proposal title:** NHLBI San Antonio Proteomic Center  
**Funding Agency:** University of Texas Health Science Center San Antonio  
**Amount:** \$240,009

**Juan Gomez**  
*Texas Sustainable Energy Research Institute*

**Proposal title:** Energy Efficiency and SmartLiving  
**Funding Agency:** CPS Energy Accounts  
**Amount:** \$221,630

**Marcio Giacomoni**  
*Civil Engineering Department & Water Institute of Texas (WIT)*

**Proposal title:** Development of an Optimization Framework to Reduce Sanitary Sewer Overflows at San Antonio Sewer System  
**Funding Agency:** San Antonio Water System  
**Amount:** \$189,695

**Hatim Sharif, Jose Weissmann and Samer Dessouky**  
*Civil Engineering Department*

**Proposal title:** Safety Impact of Texas Travel Information Centers (TIC)  
**Funding Agency:** Texas Department of Transportation  
**Amount:** \$127,281

**Shuo Wang**  
*Electrical Engineering Department*

**Proposal title:** Active Filter Research for DC/DC Power

Converters  
**Funding Agency:** Huawei Technologies Co., Ltd  
**Amount:** \$110,000

**Heather Shipley and Hung-Da Wan**

*Interactive Technology Experience Center, Civil Engineering Department, Mechanical Engineering Department*

**Proposal title:** 2014 Robotics GSMP camps  
**Funding Agency:** Texas Workforce Commission  
**Amount:** \$100,000

**Andrew Trickett**  
*Texas Sustainable Energy Research Institute*

**Proposal title:** Clean Energy Incubator Clean Technology Program Year 2  
**Funding Agency:** Texas Comptroller  
**Amount:** \$83,332

**Xiaofeng Liu**  
*Civil Engineering Department, Water Institute Of Texas (WIT)*

**Proposal title:** Pore-scale modeling of turbulent flows with realistic and physically correct particle arrangement  
**Funding Agency:** Army Corps of Engineers  
**Amount:** \$70,681

**Ender Finol**  
*Biomedical Engineering Department*

**Proposal title:** Geometric, hemodynamic, and biomechanical metrics in cardiopulmonary remodeling

**Funding Agency:** American Heart Association  
**Amount:** \$70,000

**Ram Krishnan and Ravinderpal Sandhu**  
*Electrical Engineering Department, Institute for Cyber Security*  
**Proposal title:** Secure Information Sharing Models for Cyber Response Teams  
**Funding Agency:** LMI  
**Amount:** \$50,000

**Kiran Bhaganagar**  
*Mechanical Engineering Department and Center for Simulation, Visualization and Real Time Prediction (SiVIRT)*  
**Proposal title:** EAGER: Understanding fundamental mechanisms involved in the turbulence, current and wave interactions for offshore wind-turbines  
**Funding Agency:** National Science Foundation  
**Amount:** \$45,139

**John Foster**  
*Mechanical Engineering Department, Center for Simulation, Visualization and Real Time Prediction (SiVIRT)*  
**Proposal title:** Fiber failure modeling with peridynamics  
**Funding Agency:** The Johns Hopkins University  
**Amount:** \$44,828

**Harry Millwater**  
*Mechanical Engineering Department and Center for Simulation, Visualization and Real Time Prediction (SiVIRT)*  
**Proposal title:** Probabilistic and Sensitivity Method Development and Application in Life Prediction of Metallic Materials and Structures  
**Funding Agency:** Clarkson Aerospace Corp  
**Amount:** \$44,322

**Rogers, Dwain Shephard, Les**  
*Texas Sustainable Energy Research Institute, Civil Engineering Department*

**Proposal title:** Fuel Cell System Performance and Deployment Feasibility  
**Funding Agency:** USAA  
**Amount:** \$38,000

**Daniel Pack**  
*Electrical Engineering Department*  
**Proposal title:** Cooperative, Distributed Sensing and Navigation of Quadrotors in GPS Denied Environments  
**Funding Agency:** Air Force Research Laboratory  
**Amount:** \$35,000

**Harry Millwater**  
*Mechanical Engineering Department and Center for Simulation, Visualization and Real Time Prediction (SiVIRT)*  
**Proposal title:** Airframe Digital Twin (ADT) Spiral 1  
**Funding agency:** Northrop Grumman System Corporation  
**Amount:** \$20,000

**Dwain Rogers**  
*Texas Sustainable Energy Research Institute*  
**Proposal title:** Waste to Energy Characterization for Research Development Test & Evaluation at Joint Base San Antonio  
**Funding Agency:** University of Dayton Research Institute  
**Amount:** \$19,248

**Yusheng Feng**  
*Mechanical Engineering Department, Center for Simulation, Visualization and Real Time Prediction (SiVIRT)*  
**Proposal title:** To diagnose major causes of medical device screen and design protective casing under the condition of dropping and collision  
**Funding Agency:** KCI  
**Amount:** \$13,273

**Anson Ong**  
*Biomedical Engineering Department*  
**Proposal title:** Student Support  
**Funding Agency:** Southwest Research Institute  
**Amount:** \$13,000

**Harry Millwater**  
*Mechanical Engineering Department, Center for Simulation, Visualization and Real Time Prediction (SiVIRT)*  
**Proposal title:** Gas Turbine Engine Probabilistic Fracture Mechanics Research  
**Funding Agency:** Southwest Research Institute  
**Amount:** \$11,523

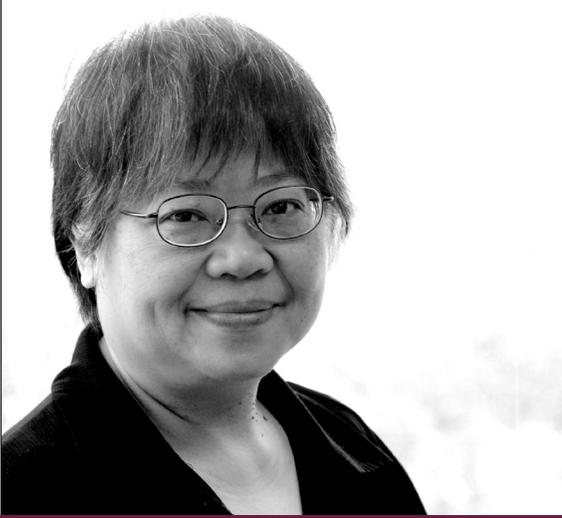
**Anson Ong and Teja Guda**  
*Biomed-PI-Ong, Biomedical Engineering Department*  
**Proposal title:** Reverse engineer AgNovos Healthcare bone filler for treatment of bone degeneration  
**Funding Agency:** AgNovos Healthcare  
**Amount:** \$9,996

**Krystal Castillo Villar**  
*Mechanical Engineering Department, Center for Advanced Manufacturing & Lean Systems (CAMLs)*  
**Proposal title:** Reliability Project in Assembly  
**Funding Agency:** Toyota Manufacturing  
**Amount:** \$6,600

**Anson Ong**  
*Biomedical Engineering Department*  
**Proposal title:** ACCD - Nantechology Lab - Spring 2014  
**Funding Agency:** ACCD  
**Amount:** \$1,500

**Mark Appleford**  
*Biomedical Engineering Department*  
**Proposal title:** Material Processing by Lyophilization and EtO Sterilization  
**Funding Agency:** Rochal Industries LLP  
**Amount:** \$1,500

**Matthew Reilly**  
*Biomedical Engineering Department*  
**Proposal title:** Rheometry of Liquid Bandage Biomaterials  
**Funding Agency:** Rochal Industries LLP  
**Amount:** \$1,500



*Staff Award Winner*

## Liping Bien

Liping Bien has been awarded the College of Engineering 2014 Staff Excellence Award. Bien has been with the college as a graduate coordinator for six years, and according to her nomination letter, her performance in all aspects of her job have been excellent.

“One of the most praise-worthy attributes in Liping’s work mentality is in that she always pro-actively initiates communication with all prospective students, admitted students, students with admission conditions, and individual program administrators to promotion the growth of all programs,” said Wei-Ming Lin, the associate dean for Graduate Studies. “Due to her continuous effort, the COE overall graduate enrollment has maintained a continuing growth in these years, even under the period of economic down turn.”

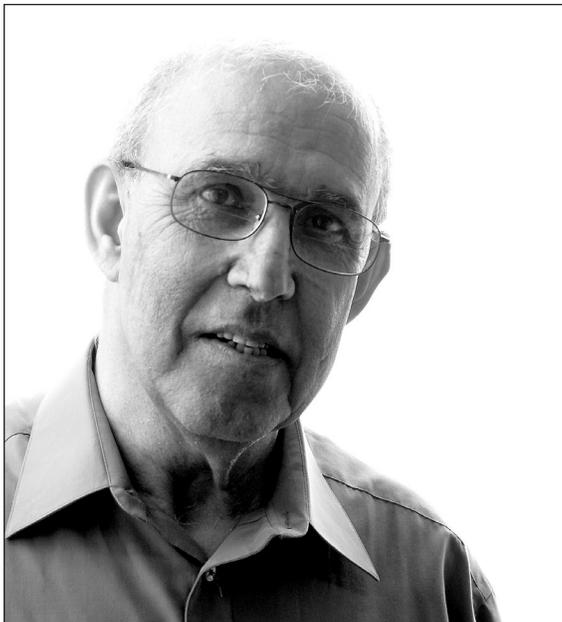


*Faculty Award Winner, Teaching*

## Wei-Ming Lin

Wei-Ming Lin has been awarded the College of Engineering 2014 Faculty Excellence Award for Teaching. Lin joined the college in 1993 as an assistant professor and has steadily risen in the ranks, and is now currently serving as the Associate Dean at COE, overseeing the graduate programs for more than 1,000 students.

“Dr. Lin’s students rate him as one of the best professors at UTSA with instructor and course ratings at the top of the scale for each course he taught, without exception,” said Dr. Daniel Pack, professor and department chair of Electrical and Computer Engineering. “Students consider him as one who is knowledgeable and patient. He really connects with students, is innovative, and is readily available for instruction.”



*Faculty Award Winner, Research*

## Mo Jamshidi

Mo Jamshidi has been awarded the College of Engineering 2014 Faculty Research Award. Currently, Professor Jamshidi serves as the Lutchter Brown Endowed Distinguished Professor in the Department of Electrical and Computer Engineering.

“Dr. Jamshidi has demonstrated excellence in research, publishing 159 total works while at UTSA,” said Dr. Brian Kelly, associate professor in the Electrical and Computer Engineering Department. “Dr. Jamshidi has been instrumental in initiating faculty research in sustainable energy and smart grid systems, and his research efforts have led to the development of our West Campus Energy lab.”

MAKING INNOVATION POSSIBLE:

# Steve Griffin





*An alumnus of Mechanical Engineering, Griffin and Tami, his wife, recently gave COE a gift to help improve a thermal and fluid science lab*

Steven Griffin believes in the power of hard work. A graduate of The University of Texas at San Antonio Mechanical Engineering program, who by his own admission, basically lived in the lab while he was pursuing his degree, completed his master's in one year and one semester, graduating in 1993. Now, 20 years after his graduation from UTSA, Griffin and Tami, his wife, are giving back to the College of Engineering with a gift that will be used to enhance the college's thermal and fluid science lab.

"I have always felt extremely fortunate in terms of opportunity," said Griffin. "I have more than I require, and my kids are taken care of. Those aspects of my life are managed and I feel like I am in a position to give back. It makes sense at this stage in my life to do that. Generally, I think that I owe the university and my professors far more than I could pay them in gratitude or kindness or in gifting."

Over the past 20 years, there have been 63 master's degree graduates from the zip code where Griffin grew up, on the southwest side San Antonio. Griffin, his twin brother and his sister were three out of 63 graduates.

"I have been lucky to have been able to stay in one place," said Griffin. "I was born and bred in San Antonio, and have an investment in my property, my home, and my neighborhood."

In 2002, just about 10 years after graduating from UTSA, Steve founded Carnot Emission Services with his twin brother Tim Griffin, and their older sister, Holly Schmidt, with a small business loan. The company is located at Port San Antonio, and since opening its doors, Griffin and his siblings, all UTSA graduates, have

built the company into one of the most recognized engine emission test labs in the world. In 2007, the three of them sold the company assets to public company Intertek Group, PLC in the United Kingdom.

Griffin and his wife Tami have three daughters, and Griffin says he sometimes wonders if his daughters would be better off at magnet school, like John Jay Science and Engineering Academy or a private school.

"At some stage you have to believe that your public education is just as important and just as valuable as Rice or Trinity or MIT or Stanford," said Griffin. "You get out of school what you put into it. Do you have more doors that might open up if you graduate from Harvard? Yeah, maybe. But at the same time, I don't know if those schools prepare you more [than a public university]. I didn't graduate from those schools so I have no basis for that, but I think I have done quite well; a public education hasn't held me back. Could more doors have been opened, maybe? Everyone talks about a UT Austin ring or a Texas A&M ring and how it carries its weight like gold. Maybe its gold, or silver or platinum, but for me, those things didn't add value. I generally thought that when I was coming here [UTSA], there were no shortcuts from my professors. There was no worrying about the school teaching to the lowest common denominator. I didn't feel like there were any free rides. I thought everyone was sweating and we all were pretty smart."

Steve is married to Tami (Damon) Griffin. Tami is also a UTSA graduate, earning a BA in Interdisciplinary Studies in 1994; she is a counselor at John Glenn Elementary School in the NISD.

**Above left: Steve Griffin addresses College of Engineering students at their EWeek banquet, held March 28, 2014. Above right: Griffin and his wife Tami accept a thank you gift from the students.**

**T**he College of Engineering is grateful to all of its donors, both individual and corporate, who believe in the university and the college's dedication to the advancement of knowledge through research and discovery, teaching and learning, community engagement and public service. Thank you to all our donors. You are helping the College of Engineering and The University of Texas at San Antonio on our path to Tier One!



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# ENGINEERING

by the **NUMBERS** *spring 2014*

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**TOP 10** HISPANICBUSINESS.COM RANKS COE  
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## Departmental highlights Fall 2013- Spring 2014

The college's **Electrical Engineering Graduate Program** has been ranked 102<sup>nd</sup> out of 177 schools by the *U.S. News & World Report's* ranking of Best Electrical Engineering Programs. Last year, UTSA's Electrical Engineering Graduate Program was ranked 122<sup>nd</sup>.

Lutcher Brown Endowed Distinguished Professor **Dr. Mo Jamshidi**, Department of Electrical and Computer Engineering, has been selected by the

IEEE-USA Board of Directors as a 2013 recipient of the IEEE-USA Professional Achievement for Individuals based on his contributions in the systems engineering profession, and for founding the IEEE Systems Journal.

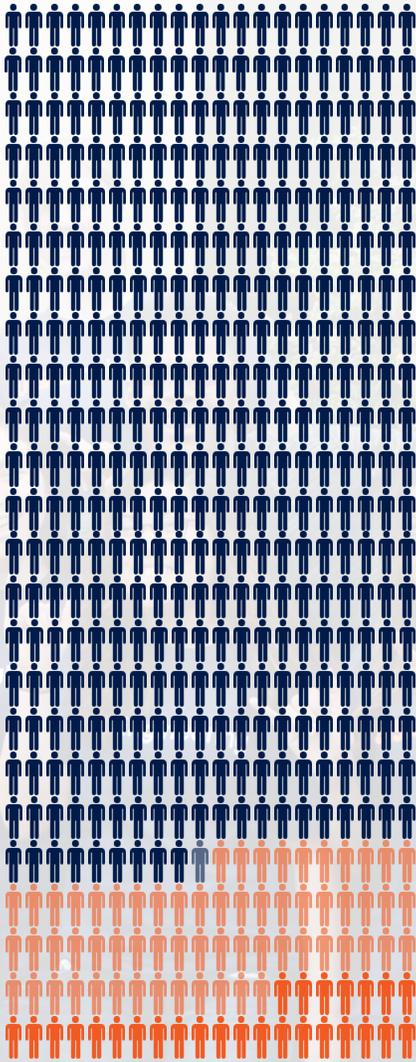
**Dr. Rena Bizios**, Department of Biomedical Engineering, has been selected by the Society for Biomaterials for the 2014 Founders Award for her long-term landmark contributions to the discipline of biomaterials. She will

also be receiving the 2014 Theo C. Pikington Outstanding BME Educator from the ASEE Biomedical Engineering Division.

**Dr. Joo L. Ong**, Department of Biomedical Engineering, is the current Program Chair for the 2014 Society for Biomaterials Meeting, which was held in Denver April 16-19, 2014.

**The Department of Biomedical Engineering's** has been ranked #65 by the *U.S. News & World Report's* ranking

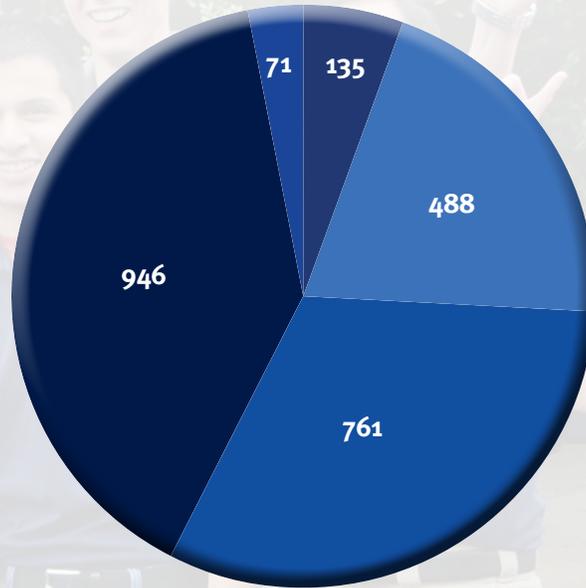
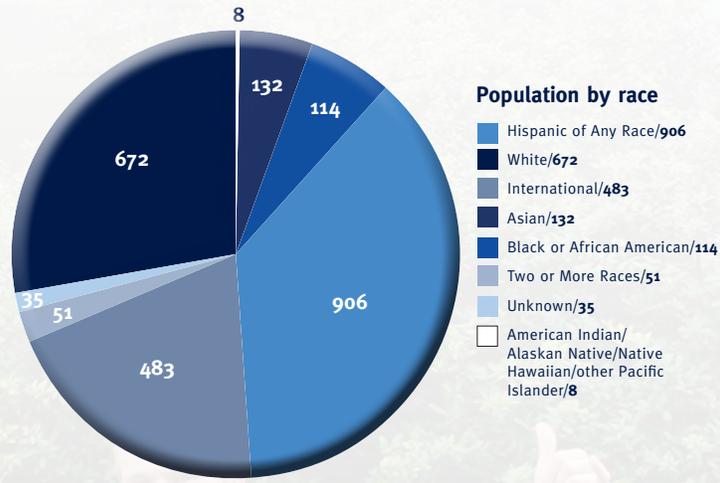
 = 5 undergraduate students



Total number of fall 2013 students: 2,401  
 Total number of those students who are undergrad: 1,950  
 Total number of those students who are at the graduate level: 451

 = 5 master's students

 = 5 doctoral students



Source: UTSA Data Warehouse, 2014

of Best Biomedical Engineering Programs. UTSA named mechanical engineering professor **Yusheng Feng** as the school's inaugural Innovator of the Year. The award was designed to honor the professor who made the greatest headway in patenting and licensing his or her research during the previous fiscal year.

**The Center for Excellence in Engi-**

**neering Education** led a successful Engineering Summer Camp pilot last summer and has since acquired a \$15,000 grant from Halliburton as well as tripled the number of participants and quadrupled the number of camps for the 2014 summer. This grant allowed individuals who would not normally have the ability to attend such programs, ultimately sparking an interest in pursuing

a STEM career. The center anticipates more participants and more camps during the summer of 2015, including an all-female engineering camp.

**Deborah Silliman Wolfe**, communications coordinator with the Dean's Office, won a 2014 Council for Advancement and Support of Education Gold award in the black and white photography category.

*Donors continued from page 32*

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