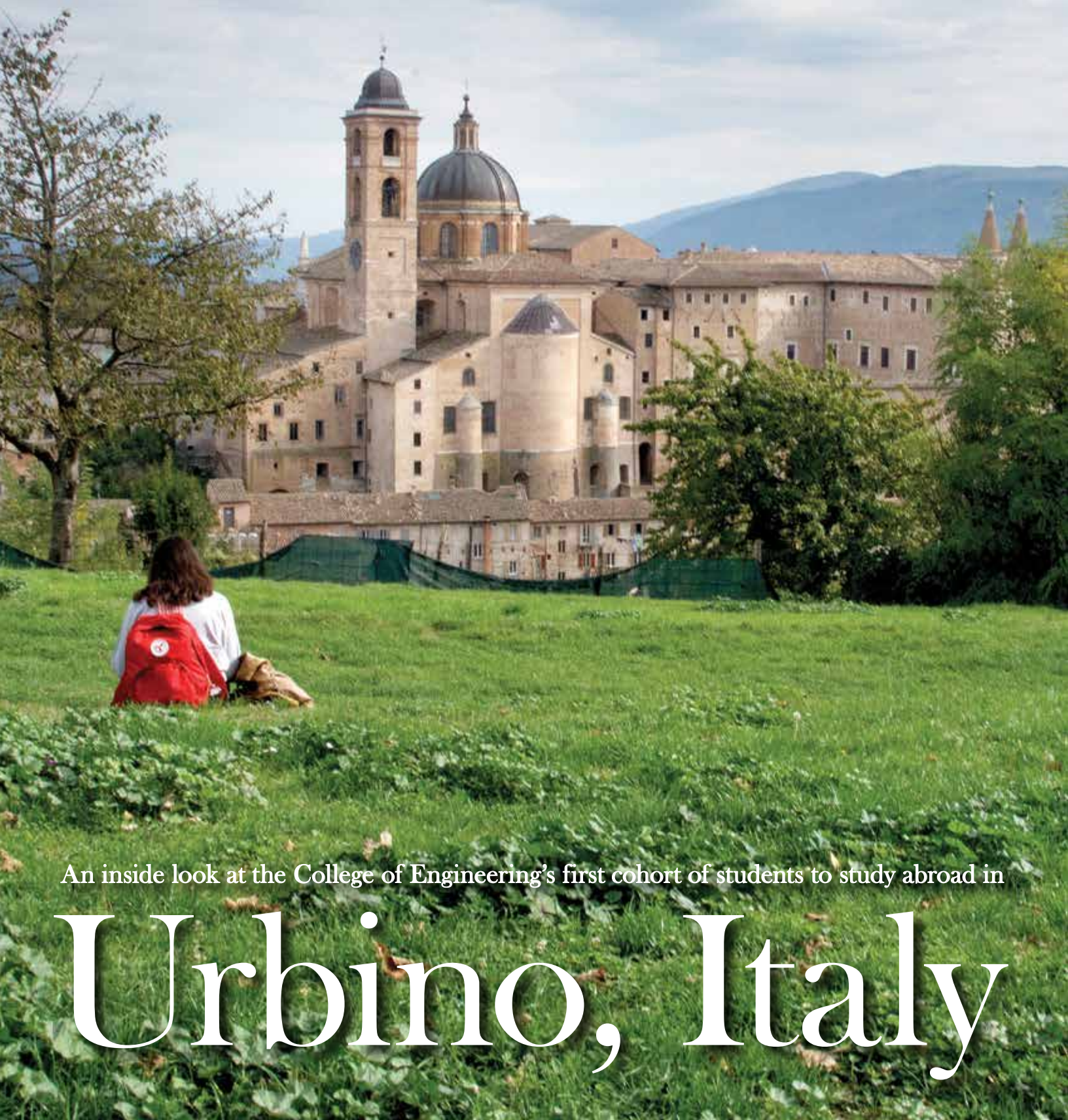
Innovations

THE UNIVERSITY OF TEXAS AT SAN ANTONIO COLLEGE OF ENGINEERING VOL. 22 | WINTER 2016



An inside look at the College of Engineering's first cohort of students to study abroad in

Urbino, Italy

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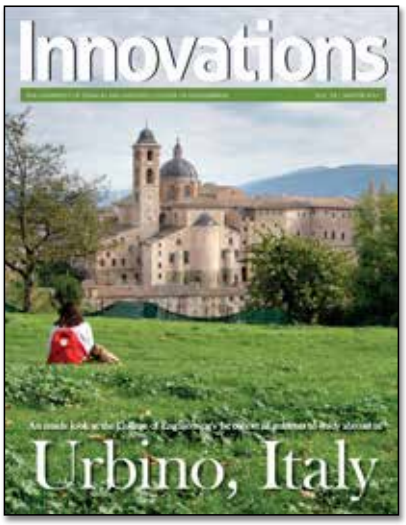


ON THE COVER

For the first time in the history of the College of Engineering, a semester-long study abroad program is now being offered to engineering students in the historic city of Urbino, Italy. Nine students spent their fall semester living and learning in Urbino, as well as traveling around the country and Europe. The Urbino city center was recently included in the UNESCO list of World Heritage Sites. For more photos and story, see pages 20-26. ***(Photo by Deborah Silliman/College of Engineering)***

editorial

A message from the Dean of the College of Engineering

It has been an exciting year in the UTSA College of Engineering! In the pages of this issue of *Innovations*, you will find a variety of stories and photos that will give you a snapshot of the great things that have been happening in the College these past few months. I would personally like to share with you three such highlights that I am particularly passionate about: our new faculty, the beginning of a Chemical Engineering program, and the launch of our Student Success Center.

Our faculty are the foundation of our programs, and the future is very bright for our College! In 2016, we hired nine fantastic faculty members from across all engineering disciplines. Turn to page 6 to learn more about our outstanding new hires. These faculty hailed from such prominent institutions as Stanford University, The University of Texas at Austin, Virginia Tech, University of Cincinnati, and University of Missouri. All faculty members we hire are selected for their demonstrated and potential excellence in research and teaching, and we are excited to see how our students learn from their experiences and influence.

In July 2016, we received approval from the Texas Higher Education Coordinating Board to begin a new Chemical Engineering program in the fall of 2017. The new program has five emphases: energy, environmental, materials, bioengineering, and technology management. This year we are searching for one assistant professor and one associate professor in Chemical Engineering, both with expertise in the areas of energy and materials. For the first few years, the inaugural class of students will learn within our existing facilities and resources, and by the spring of 2020, we will open a brand new unit operations laboratory in the highly anticipated Science and Engineering Building (SEB) to be located across the South Paseo from the current Biotechnology, Sciences and Engineering (BSE) building.

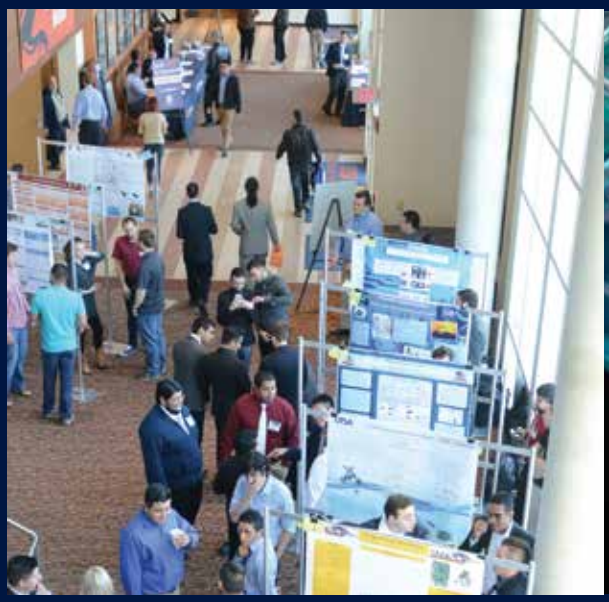
The new Chemical Engineering program brings several significant influences for the College including increasing female enrollment and building new partnerships by contributing to the expertise and workforce needs in the energy sector. We are also excited that this program will offer new educational opportunities for our regional constituency. Furthermore, this program serves as a growth model for the College that allows us to attract new students to chemical engineering while maintaining student populations in our current programs. To read more about the new Chemical Engineering program, turn to page 30.

Finally, I am very excited to share with you the opening of our Student Success Center (SSC), which focuses on professional development and increasing our retention and graduation rates for engineering students. UTSA leadership and UT System Chancellor William McRaven have put an emphasis on increasing student success through curricular improvements and extracurricular activities, and the SSC will help accomplish these goals…and more! The SSC hosts our Tutoring Center, Ambassador Program, Leadership Academy, internship/professional development program, student organizations, and international programs. We have received an enthusiastic response from our engineering students for the services and care that the SSC staff and programs have been able to provide so far, and we look forward to witnessing the impact of these programs on the future successes of the next generation of UTSA engineering alums.

I hope you share our excitement with these developments within the College, and I invite you to visit us any time so we can show you even more about the growth and success of the UTSA College of Engineering!

JoAnn Browning, Ph.D., P.E.
Dean, College of Engineering
David and Jennifer Spencer Distinguished Chair

contents



NEWS BYTES

NEW FA

Please welcome the College of Engineering's newest faculty members!

Sara Ahmed

Assistant Professor in Electrical & Computer Engineering

Ph.D., Virginia Tech

Why did you choose to come to UTSA?

I was impressed with how UTSA is growing and working its way into becoming a Tier One institute. I believe there are lots of opportunities for me to professionally grow. I am coming back to academia from industry and I believe I learned a lot there. It is now time to utilize my industrial experience and perform more.

Wassim Ghannoum

Associate Professor in Civil & Environmental Engineering

Ph.D., University of California, Berkeley

Why did you choose to come to UTSA?

The university is growing and I can be part of this exciting period. I have been given the opportunity to help built state-of-the-art structural engineering laboratories while enjoying a very collegial atmosphere in the Civil and Environmental Engineering Department.

John (Jeff) Prevost

Assistant Professor in Electrical & Computer Engineering

Ph.D.,The University of Texas at San Antonio

Why did you choose to come to UTSA?

UTSA presents a unique opportunity to work with a rapidly rising university. The progress already made in education and research in Cloud Computing makes this an ideal spot to work on Cloud-related research.

Chiyui (Ethan) Ahn

Assistant Professor in Electrical & Computer Engineering
Ph.D., Stanford University

Why did you choose to come to UTSA?
First of all, I realized that this university has good vision as one of the thriving public research universities, and thus found good opportunities for my academic career. Second, I really liked the way the faculty members treated me during the interview and afterward: perfect courtesy. Last, I would like to thank my department chair, Dr. Qian, and the dean, Dr. Browning, for extending me this wonderful opportunity to come to UTSA.

Vikram Kapoor

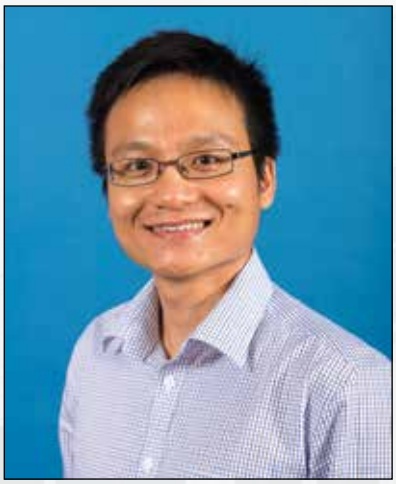
Assistant Professor in Civil & Environmental Engineering
Ph.D., University of Cincinatti

Why did you choose to come to UTSA?
UTSA is a relatively young institution which has the potential to emerge as a premier research university. UTSA has embarked on an exciting journey toward Tier One recognition - I am looking forward to being a part of this transformation. My over-arching goal is to bridge the gap between the disciplines of environmental engineering and microbiology. UTSA's Civil and Environmental Engineering Department has the right expertise and infrastructure to help me achieve this goal.

Christopher Rathbone

Assistant Professor in Biomedical Engineering
Ph.D., University of Missouri

Why did you choose to come to UTSA?
The University of Texas at San Antonio is an ideal setting to educate the next generation of students as well as be involved in exciting research. The environment at UTSA seems to be conducive to collaboration, and both students and faculty can benefit from an atmosphere that allows for significant career development.



Wei Gao

Assistant Professor in Mechanical Engineering
Ph.D., The University of Texas at Austin

Why did you choose to come to UTSA?
I chose to come to UTSA because of a number of reasons, including the growth of the university, competitive startup package, and the supportive research environment.

R. Lyle Hood

Assistant Professor in Mechanical Engineering
Ph.D., Virginia Tech-Wake Forest University

Why did you choose to come to UTSA?
I grew up in south Texas and have many friends and colleagues that attended here. When I visited campus, I could immediately feel the cultural fit. I am excited to join a university with momentum, and I look forward to being a part of UTSA as it makes its Tier One transition.

Brendy Rincon Troconis

Assistant Professor in Mechanical Engineering
Ph.D., Ohio State University

Why did you choose to come to UTSA?
I chose UTSA because it provides me an opportunity to continue developing my knowledge in oil and gas and increasing and fortifying my teaching skills, while working collaboratively with different engineering departments. Furthermore, I am very thrilled about my position since my mission matches perfectly the one at the Department of Mechanical Engineering: to encourage students to learn, achieving critical and independent thinking while being socially responsible, and to solve the problems that affect our community.

COE participates in ELSS

The Engineering Lean and Six Sigma conference (ELSS) took place Sept. 14-16 in downtown San Antonio. College of Engineering students took home a number of the top prizes at the annual industry conference.

"I am really proud of our students' active participation at the conference and solid performance in competitions," said Hung-da Wan, a core faculty member at the Center for Advanced Manufacturing and Lean Systems and associate professor in the Department of Mechanical Engineering. "They brought UTSA recognition, learned from renowned experts in the field, and developed professional connections with them. It is also a promise to the Lean Six Sigma community for the future workforce. It was a win-win opportunity."

Advanced computer system aids researchers in processing big data

Jetstream—a cloud-based advanced computing system for the science and engineering community—launched in the fall. Indiana University partnered with UTSA to create Jetstream, which was first announced by the National Science Foundation in early 2015. The project allows thousands of researchers to have easy access to advanced computing tools through a user-friendly, cloud-based interface.

"The intent of this machine is for scientists to have a national resource to aid in their research," said Paul Rad, director of the UTSA Cloud and Big Data Laboratory. "Not every scientist is a computer scientist, and with Jetstream they no longer have to be to utilize big data in their research."

Jetstream is designed to aid researchers in areas like biology, robotics or chemistry who don't have computer science expertise, but use big data in their work. Users interact with a system of virtual machines on a computer or tablet. As the project continues to develop, Rad's UTSA team is focusing on making the interface more accessible and personalized by discipline.

"The cloud is at the cutting edge of the industry, and UTSA is one of the leaders in that field," said Harry Millwater, UTSA associate dean for research and graduate studies and Samuel G. Dawson Endowed Professor of Mechanical Engineering. "I'm very excited to see this innovative new technology launch. I'm sure it will shape how we as researchers approach big data."

In 2013, the UTSA Open Cloud Institute was established to support cloud computing and big data research and development. The laboratory, supported in large part by industry, helps the international business community improve its computing platforms through open-source hardware and cloud and big data technologies such as Open Compute, OpenStack and Software Defined Network.

"UTSA has invested significantly in growing our cloud capabilities by partnering with like-minded academic institutions and industry for which we are recognized nationally," said Bernard Arulanandam, UTSA interim vice president for research.

Dean JoAnn Browning receives Inspiring Women in STEM Award

JoAnn Browning, dean of The University of Texas at San Antonio College of Engineering, recently received the 2016 Inspiring Women in STEM Award from *INSIGHT Into Diversity* magazine, the largest and oldest diversity and inclusion publication in higher education.

The Inspiring Women in STEM Award honors women who work to make a difference in the fields of science, technology, engineering, and mathematics (STEM). Browning will be featured, along with 65 other recipients, in the September 2016 issue of the magazine.

Inspiring Women in STEM Award recipients were nominated by a colleague and selected by *INSIGHT Into Diversity* based on their efforts to inspire and encourage a new generation of young women to consider careers in STEM through mentoring, teaching, research, and successful programs and initiatives. While many women who work in these fields have made significant contributions and have engaged in new discoveries and innovations, it is at times difficult for them to gain recognition for their hard work and dedication.

"We are so proud to have such an outstanding advocate for women and minority students in the UTSA College of Engineering," said UTSA President Ricardo Romo. "Dean Browning is a wonderful role model for our students, an exceptional leader in her field of research, and an integral part of UTSA's advancement to Tier One recognition."

INSIGHT Into Diversity magazine selected Browning because she is passionate about encouraging young people, especially women and minorities, to get involved in STEM. Since joining the College of Engineering in 2014, she has made the recruitment and retention of women and minorities a key goal for the college.

"We know women in STEM fields are not always represented or recognized for their success, dedication, and mentorship to others," said Lenore Pearlstein, owner and publisher of *INSIGHT Into Diversity* magazine. "We want to honor those who are inspirations to their colleagues, their community, and to young girls everywhere who may be interested in a future career in STEM. We are proud to honor these women as role models to all."

New faculty member receives NACE International Award

NACE International has awarded a seed grant of $30,000 for a research project conducted by Brendy C. Rincon Troconis, assistant professor in the UTSA Department of Mechanical Engineering. Rincon's proposal, "Effect of Passive Film Composition on the Electrochemical Behavior and Cracking of Corrosion Resistant Alloys Utilizing Surface Enhanced Raman Spectroscopy," seeks to resolve issues caused by the unique conditions of downhole applications in oil wells. Currently there is a lack of understanding relating to surface film composition and corrosion (including environmentally assisted cracking).

The grant is is intended to encourage university researchers new to the field of corrosion to study the corrosion of engineering materials. This year, 17 proposals were received and reviewed by the Research Seed Grant Task Group, which ultimately recommended that the funding be awarded to Rincon.

"We received many exceptional proposals, but Rincon's proposal stood out because it offered a novel approach to solve a critical problem faced by the oil and gas industry," said David Kolman, chair of the NACE International Seed Grant Committee. "The scientific aspect, coupled with her exceptional background and promise of future growth, resulted in the committee's unanimous nomination of this exciting proposal."

"Controlling corrosion in downhole applications is essential to avoid catastrophic failures that can jeopardize the ecosystem, interrupt production, create a loss of control of a well and result in fines," Rincon said. "Under the extreme conditions of a downhole environment, material selection is a top priority for the successful operation of the well, while minimizing safety risks."

This grant will enable the first stage of this research project, which will be the first one to be performed at the first corrosion laboratory at UTSA. The successful completion of the first research stage is vital to defining safe operating conditions and will be the seed to attract additional financial support from industry. Furthermore, this understanding may provide insight into the development of corrosion-resistant alloys and material selection for anodic stress corrosion cracking mitigation in downhole application.

Founded in 1943, NACE International, The Corrosion Society, serves 36,000 members in 130 countries. Based in Houston, Texas, with offices in the U.S., China, Malaysia, India, Brazil, and Saudi Arabia, and a training center in Dubai, the organization serves all industries impacted by corrosion and provides the most specified technical training and certification programs, conferences, industry standards, reports, and publications focused on corrosion prevention and mitigation.

Program established to prepare students for careers in STEM

The San Antonio Prefreshman Engineering Program (SA-PREP) served up a variety of STEM-related activites to more than 1,500 school-aged students this past summer. PREP students spent seven weeks at UTSA and other San Antonio-area campuses working on projects and other hands-on activities, learning and applying advanced STEM concepts.

"I love engineering," said SA-PREP student Francesca Makilan. "We built a bridge out of toothpicks to see how much it could withstand. It was a lot of fun. I had a really good time."

The curriculum included advanced mathematics, problem-solving, engineering, physics, technical writing, water science, nanotechnology, computer science, research, and STEM career awareness. PREP students also had the opportunity to earn college scholarships, high school credit, and college credit.

SA-PREP was established in 1979 by UTSA mathematics professor Manuel Berriozabal. This summer, the program (PREP I, PREP II, PREP III, PREP IV, and University PREP) was offered on 10 San Antonio campuses, including the UTSA Main and Downtown campuses.

"The problem-solving skills taught during this program help young people in the classroom and later on in their future careers," said Rudy Reyna, executive director of SA-PREP. "According to the Bureau of Labor Statistics, by 2018, the U.S. will have more than 1.2 million job openings in science-, technology-, engineering- and mathematics-related occupations."

More than 18,000 San Antonio students have completed at least one summer component, with 88 percent of those students going on to attend college. The program also has been replicated in 14 cities as TexPREP and across the nation in five states as PREP-USA. Overall, PREP programs have served more than 39,000 students since the program began.

Cyber warrior program receives federal funding

UTSA has received $471,549 in federal funding to support its top-tier Army Reserve Cyber Private Public Partnership Program (Cyber P3). UTSA, tapped by the United States Army Reserve as a founding member of the program in 2015, will produce highly qualified cyber warriors with advanced knowledge, mission-critical skills, and military expertise to defend the nation from persistent cyber threats.

The U.S. Department of Defense has identified a critical need for cybersecurity professionals in the public sector and reached out to UTSA, a consistently top-ranked cybersecurity institution, to create a pipeline of highly skilled Army reservists to fill this void.

"It's another affirmation of the integral role UTSA plays in cybersecurity education and the protection of our country to see the top-tier excellence of our cybersecurity faculty and researchers recognized in this opportunity to serve our armed forces and aid in protecting our nation right here in San Antonio, Military City, USA," said UTSA President Ricardo Romo.

"In receiving this grant, UTSA once again demonstrates its cybersecurity leadership," said U.S. Representative Joaquin Castro. "As cyber threats to businesses, the government, and private individuals continue to grow, San Antonio's role in preparing those who are on the digital frontlines is absolutely critical. This NSA (National Security Agency) funding will help UTSA equip Army Reserve cyber warriors with the latest and most effective cybersecurity training. I'm proud this essential, sophisticated work is happening in our city."

UTSA faculty will educate and train Army reservists at undergraduate and graduate levels to help them build foundational cybersecurity skills and enhance existing skills. The federal funding will also support the creation of a new laboratory to give this new generation of cyber warriors the kind of hands-on research experience UTSA is known for offering its students.

"Increasing our cybersecurity resources, training, and capability is a win for the entire San Antonio community," said U.S. Representative Will Hurd, a cybersecurity entrepreneur who championed UTSA's selection as a founding member of the Army Reserve Cyber P3. "This type of cooperation between our leading educational institutions, public, and private sectors will strengthen our workforce, create new jobs, and continue to elevate San Antonio as a world leader in cybersecurity."

"Much of the research will focus on industrial control systems security," said Glenn Dietrich, professor of information systems and cybersecurity in the UTSA College of Business as well as the project's principal investigator. "These young reservists will learn the skills necessary to protect our power grid, our water systems and petroleum pipelines."

Dietrich plans to start creating the educational programs immediately, with construction on the new lab to begin this fall. One of his main objectives is to recruit participants through the Wounded Warrior Project.

"UTSA is ranked first in the nation for cybersecurity for a reason," Dietrich said. "We can use those considerable skills to help Army reservists and wounded veterans to find a rewarding job in a growing, high in-demand field."

UTSA earns leadership role in multi-million dollar research project

UTSA has been chosen to act as a member of the network coordination office strategic committee for the Natural Hazards Engineering Research Infrastructure (NHERI) grant. The National Science Foundation is investing $62 million over the next five years into the NHERI grant, which will explore how to limit the damage done to engineering structures by natural disasters.

Dean JoAnn Browning expressed pride in UTSA being chosen for a leadership role in such a large-scale grant. "The competition is fierce for these large grants," Browning said. "Everyone who is a player in the earthquake engineering and now the wind engineering community wants to be a part of one of these leading grants. To be chosen means that there is confidence in UTSA from the community."

SiViRT launches new initiatives

Established in 2009 with initial funding from the National Science Foundation, the UTSA Center for Simulation, Visualization and Real-Time Computing (SiViRT) has grown into a diverse interdisciplinary team focusing on methodology and tool development as well as engineering and science applications. With new members Sos Agaian, Arturo Montoya and Justin Wilkerson joining existing executive committee members Yusheng Feng and Fidel Santamaria, the SiViRT Center plans to launch initiatives to form research interest groups in order to enhance collaboration and foster new ideas to pursue new research directions and funding opportunities.

New initiatives also include establishing student scholarships for both undergraduate and graduate students who are interested in computer simulation and visualization. The Center will also establish a travel fund for center faculty to attend professional conferences or make trips to nurture collaborations.

UTSA PREP students to benefit from $1.24 million NASA Space Education Grant

The Lunar Caves Analog Test Sites (LCATS) program will allow for three consecutive annual cohorts of San Antonio Prefreshman Engineering Program (PREP) students to implement what they learned in a series of hands-on workshops, culminating in the development of applications that will provide practical solutions for lunar mission architecture challenges.

The LCATS student base consists solely of SA PREP students who are able to continue their participation into the regular school year. Additionally, in conjunction with the Texas Alliance for Minorities in Engineering (TAME), participating students will create a comic book showcasing what they learned about space-STEM throughout the course of the project.

UTSA, Microsoft, and NRG Energy announce new flow battery research initiative

The future of renewable energy will rely on many different kinds of technologies. But one technology is primed to play a bigger role. New research announced earlier this fall at UTSA's Texas Sustainable Energy Research Institute (TSERI) indicates that batteries can help ease the transition to a grid increasingly powered by renewables. Senior leaders from multinational technology company Microsoft Corporation, leading integrated power company NRG Energy, Southwest Research Institute, and various utility players converged on UTSA to discuss the role batteries can play as more renewable energy comes onto the grid. The research will evaluate flow battery performance under a variety of operating conditions aiming to understand its potential for large-scale deployment.

The research program, which began in spring 2016 and will continue until at least summer of 2017, looks at the operational capacity range and economic potential of two flow battery chemistries for a variety of applications, from helping power data centers to supporting deployment of renewable resources and optimizing energy management within electric distribution grids.

"Our research to date has focused primarily on two critical questions: What is the operational sweet spot for flow battery technology and what is the revenue potential if used at scale to provide ancillary services to the power grid or energy management benefits to individual customers," said Juan Gomez, interim director at the Texas Sustainable Energy Research Institute. "Preliminary testing has focused on validating vendor claims related to battery performance. Concurrent research on energy markets across three regions of the United States is already unlocking potential strategies to participate in power markets when the flow battery is not in use for its primary application. This sort of world-class research aligns perfectly with UTSA's drive to become a Tier One research university."

Renewable energy made up 58 percent of all new generation additions in the world last year, but renewables still only account for 22 percent of total electricity generation in the world. This means there is a great deal of opportunity to grow the percentage of renewables on the grid – but there are also new challenges related to energy storage that need to be addressed.

Renewable energy made up 58 percent of all new generation additions in the world last year, but renewables still only account for 22 percent of total electricity generation in the world.

With traditional sources of electricity, energy is stored in a lump of coal, a reservoir behind a hydroelectric dam, or in a fissionable isotope. It can be stored indefinitely and deployed to meet demand as needed. However, wind and solar generation resources provide electricity only when the wind blows or the sun shines. The lack of existing large-scale storage for energy produced from these resources requires innovation in the way each can be effectively integrated into the grid at high rates of penetration.

This challenge is precisely what is driving the research at the UTSA's Texas Sustainable Energy Research Institute. Distributed generation technologies, including batteries, have the potential to reduce energy losses, improve reliability and minimize the need for costly investments in new infrastructure. Those benefits are attractive to companies like Microsoft, with large and growing energy needs to power their datacenters, as well as power companies like NRG, that are working to make the grid more reliable while also deploying more sustainable forms of energy generation, including renewables.

"With more than 100 datacenters in more than 40 countries around the world, energy matters a lot to Microsoft. The news today shows great promise in identifying and refining technologies that can reduce energy consumption and improve efficiency within our datacenters, while also contributing to a more reliable and sustainable grid," said Jim Hanna, Director for Datacenter Sustainability at Microsoft. "We're pleased to see the early results and amount of progress that's been made, and excited about the future of this work."

Lynda Clemmons, Vice President from NRG Energy's Business Solutions Group echoed the need to innovate for reliability. "Our customers today are interested in the long-term sustainability benefits of renewable system solutions which are increasingly including storage. Whether datacenters, hospitals, universities or any facility with a mission critical function, there is a direct benefit from dynamic technologies that can help ensure customers meet both sustainablity goals and reliability needs."

The large flow battery shown to the left will be at the center of UTSA-led research on the viability of flow batteries for helping power the grid of the future.

FALL 2016
TECH SYMPOSIUM

The future of engineering was on display during the first-ever fall Tech Symposium, held Nov. 29 in the H-E-B University Center Ballroom. Typically, the College of Engineering hosts the Tech Symposium once a year in the spring semester, but with the help of a number of community partners, this inaugural fall Tech Symposium gave the hardworking seniors who graduated in December a chance to show off their Senior Design 1 and 2 projects and posters, which they have worked on over the course of their senior year.

Additionally, the Center for Innovation, Technology and Entrepreneurship (CITE) Big Rowdy Idea Business Competition kicked off at the event. The aim of this new business model competition is to prepare participants to launch scalable entrepreneurial ventures while simultaneously pursuing their degree program or working at The University of Texas at San Antonio.

In front of a packed house of alumni, fellow students, and engineering professionals, engineering teams displayed projects with a variety of implementations for the future. Among the innovations on display were a baby stroller that can be set at speeds to move alongside a person; a new video game controller shaped like a gun that uses gyroscopic and accelerometer technology to give players an enhanced experience; a new conveyor belt system that will automatically sew shut feed bags and save on cost of production; and a new exhaust and intake system that increases horsepower and reduces the weight of a race car.

The student participants also had a chance to network with professionals from the San Antonio engineering community. Among the professionals on the scene was Frank Garcia, a UTSA alum and the owner of the Land Aero Group, which specializes in aircraft and heavy equipment repair services. Garcia expressed pride in seeing how far the UTSA College of Engineering has come since his days as a student.

"I graduated in 1986 from UTSA,' Garcia said. "Back then we shared a building with the science and computer science students. It's amazing to see all the growth. This is a great opportunity for the students to talk to the professional community about their projects."

JoAnn Browning, dean of the College of Engineering, noted that the event not only highlights the students' hard work, but often is the gateway for students into the workforce.

"It's really gratifying because students work endless hours to make this happen," Browning said. "Many times they may have done an internship or worked with a company on these projects, and those turn into jobs quite often. They come out of this with the experience, the pleasure of being able to show off their hard work, and with job opportunities."

FALL 2016 TECH SYMPOSIUM WINNERS

TECH SYMPOSIUM OVERALL WINNERS:

1st - Spark Mechanics Engineering (SME)
Jose Cervantes, Lindsey Melish, Chelsea Moussouni, Jason Salas

2nd - 4i Engineering
Benjamin Rodriguez

3rd - Smart Roads
Aragon Scherpereel, David Molina, Travis Persyn

Civil and Environmental Engineering - Senior Design 2

1st - SAE Engineering - Urgent Care Development
Christopher Wood, Jacob Poell, Jianhong Lei, Dru Zella, Van Tran, Kyle Rostance

2nd - Roadrunner Civil Engineers and Consultants
Erika Urias, Lillian Martinez, Cesar Martinez, Jesus Juarez, Adam Valdez, Victor Mendoza

3rd - Big Green Dog - Sunglo Townhomes
Connor Bishop, Jacob Clanton, Nayeli Guzman, Chase Hill, Sean McFarland, Maria Northcutt

Electrical and Computer Engineering - Senior Design 2

1st - The Centurions - Portable Raman Spectrometry Hormone Detector
Farhan Sajal, Xavier Saenz, Dhirendra Subedi

2nd - Operation Force Feedback - Haptic Feedback System for Robotic Surgical Forceps
Priyanka Petluru, Antonio Anzalcua, Franklin Sinche, Somruedi Yawanophat

3rd - Team Forgot Me Not - Forget Me Not
Richard Barrera, Mark David Mercado, Rachel Peadson, Nicole Robinson

Mechanical Engineering - Senior Design 1

1st place - AmMech
Leo Drew, Evan Veregge, Gustavo Contreras, Biegette Garcia

2nd place - Exceptional Engineering
Ivan Paredes, David Rodriguez, Levi Jordan, Travis Horstman

3rd place - ROS
Sayid Almusawi, Ali Jeraq, Qasim Abbas, Albraa Alandanousi

BIG ROWDY IDEA BUSINESS MODEL COMPETITION

1st Place - NovoThelium
Bianca Cerqueira, Lauren Cornell, Matt Breaker, Zach Stansbury, Cecillia Nguyen

2nd Place - STEMpak
Patrick Stockton, Kasai Omar, Meghann Lee, Ruben Asebedo

3rd Place (Tie) - Face Inc.
Roland Reyna, Abimael Villarreal, Anthony Bidault, Jeremiah Hall, Justin Strapple

3rd Place (Tie) - Smart Road Sensors
Aragon Scherpereel, Travis Persyn, David Molina

Patrick Stockton is an engineer who's giving back

Meet Patrick Stockton '16. This former farm boy is now building drones while earning his master's degree in engineering at UTSA.

Though he was born in San Antonio, Stockton grew up in rural Sisterdale, Texas, which has a population of about two dozen people. Both of his parents were UTSA graduates who raised him on a farm. His father, a mechanic, had a strong influence on his son's passion for machinery.

"When I was a kid, he gave me a computer, and I started playing games on it," Stockton said. "One day I took it apart and thought, 'What are all these little black chips?'"

The small-town aspiring engineer didn't have to think twice about where to pursue a top-tier education. He enrolled at UTSA in the fall of 2011 to study computer and electrical engineering. Coming from a town of 25 people, Stockton was overwhelmed by the campus teeming with thousands of students and faculty.

"I was very introverted when I first came to UTSA," he said. "But my advisers and my teachers encouraged me to get involved."

Stockton helped found UTSA's first drone team, which allows his fellow engineering students to develop innovative drones that can compete in national competitions. In his senior year, he also founded a start-up company with his fellow students to encourage children to pursue STEM careers.

"When I got to UTSA, I couldn't talk to two people at once, let alone 200," he said.

Stockton graduated from UTSA in May 2016 with his bachelor's degree in computer and electrical engineering. He's now working on his master's in the same field at UTSA while also working on a host of new projects, including one with the United States Air Force.

"We're working on something at Lackland Air Force Base called The Commander's Challenge," he said. "It's very exciting."

The challenge calls for Stockton and his collaborators to develop a robot that can travel over a difficult terrain and secure a downed drone. They're on track to complete the challenge later this month.

Even though he's become entrenched in creating smart, friendly drones, Stockton's first love is still computer chips. After he completes his second UTSA degree, he plans to go into chip design while continuing his work in STEM outreach.

"I know there's a lot of options for me right now, so I'm enjoying my time here and contributing however I can," he said. "We can innovate all we want, but you have to remember to give back."

UTSA engineering students recognized with 'junior Nobel Prize'

The Undergraduate Awards (UA), the world's largest international academic awards program recognizing innovation and excellence at the undergraduate level, has announced the winners of the 2016 program including Regional Winner, UTSA College of Engineering's Andre Cleaver; and Highly Commended Entrant, UTSA College of Engineering's Felipe Flores.

The Regional Winner, Cleaver, with his paper "Inverse Finite Element Analysis of Compressed Mouse Lenses for Mechanical Insights into Presbyopia" is the highest performing paper in the U.S. and Canada region in the Engineering category. Flores received a Highly Commended award for his paper "Design and Advantages of a Bioretention Area as a Best Management Practice for Low Impact Development" in the Built Environment category.

Cited as the ultimate champion of high-potential undergraduates, and often referred to as a "junior Nobel Prize," The UA is recognizing excellent research and original work across the sciences, humanities, business, and creative arts.

"When I heard I was selected, I felt a sense of pride in the fact that the effort and time I put into the project was recognized and rewarded," said Cleaver, who graduated from UTSA in spring 2016 with a degree in biomedical engineering and is currently enrolled in the Mechanical Engineering MS/Ph.D. program at Tufts University in Boston. "I have never been an avid writer, but this award recognized the hard work and dedication I put into constructing this thesis. I also felt a sense of humility in the fact that there were many other strong and capable applicants also in competition for this award."

Flores, who graduated from UTSA in spring 2016 with a degree in civil engineering, was pleasantly surprised when he heard he received a Highly Commended award, which put him in the top 10 percent of entrants.

"I was not expecting to win," he said. "When I got the email, I was waking up, reading my emails with one eye closed and the other one opened. When I read that I was in the top 10 percent in my category, I thought I was getting the information wrong. But after reading the email a couple of times I realized that I actually was one of the winners! I was very proud of myself, very thankful for my advisor Dr. Heather Shipley, and very thankful for UTSA and the Honors College. This award has made me realize that I have still a lot to learn and that if you work hard and have confidence in your job, you can do something outstanding that could help the world and society."

> "I have never been an avid writer, but this award recognized the hard work and dedication I put into constructing this thesis. I also felt a sense of humility in the fact that there were many other strong and capable applicants also in competition for this award."
> -Andre Cleaver

The Undergraduate Awards received a record number of submissions in the 2016 program, with 5,514 papers from undergraduates in 244 institutions and 121 nationalities. The Global Winner is the highest-performing paper within its category and the Regional Winners are the highest-performing Highly Commended papers from their region within a category. The seven regions of the UA 2016 program are: the Island of Ireland, Europe, USA & Canada, Latin America, Oceania, Asia, Africa & the Middle East.

"This is a huge achievement for the University of Texas at San Antonio and its students," said Louise Hodgson, CEO of The Undergraduate Awards. "UA received the highest number of submissions to date with only the best papers making it through the judging process. The competition was extremely tough and the judges were astounded at the high quality of undergraduate research in the program this year. Congratulations to this year's successful entrants."

Cleaver and Flores were invited to meet their fellow awardees at the annual UA Global Summit, which took place in Dublin, Ireland, on November 8-11, 2016. The attendees were addressed by the likes of NASA Astronaut Dr. Mae Jemison, Shiza Shahid of the Malala Fund, MacArthur Fellow Kyle Abrahams, and many more speakers and facilitators.

Andre Cleaver shows off his Undergraduate Award in Dublin, Ireland, this fall.

Graduate student selected for AHA scholarship

Shalin Parikh, graduate student in the UTSA/UTHSCSA Joint Graduate Program in Biomedical Engineering, was recently selected to receive a 2016 Student Scholarship in Cardiovascular Disease from the Scientific Councils of the American Heart Association.

"I feel excited that I was selected for this scholarship," Parikh said. "It is more about the recognition than the amount because this scholarship is from a very big organization, the American Heart Association. I will be using these funds for expenses I incur during the project period."

According to its webpage, the Scientific Councils of the American Heart Association/American Stroke Association want to stimulate interest, knowledge, and investigative work in students in medicine, nursing, public health, nutrition, and other allied health disciplines. AHA Student Scholarships support students conducting research projects related to cardiovascular disease, stroke, and basic sciences early during pre-doctoral training, usually during the summer. AHA scholarships provide valuable stipends for students during the research project. The stipends may be used for student expenses, lab fees, or other costs incurred by the student during the project.

"Shalin is one of our outstanding students in the Joint Graduate Program in Biomedical Engineering," said Ender Finol, professor in the College of Engineering. "His research involves the noninvasive assessment of abdominal aortic aneurysms under surveillance by finite element and geometric modeling. He is also training undergraduate research assistants who also do research related to this topic. This American Heart Association scholarship is a well deserved reward for his hard work in the lab and motivation to do research in cardiovascular disease. I look forward to Shalin's continued success in the program and his future contributions at the forefront of vascular mechanics research."

UTSA alumna's medical device receives UT System investment

The UT Horizon Fund recently invested $150,000 to fund Cardiovate, a San Antonio-based startup that is using technology from two University of Texas System institutions to commercialize a medical device to treat vascular diseases by repairing blood vessels.

Jordan Kaufmann, when she was a student at UTSA in 2012

The UT Horizon Fund — a formative-stage venture fund created by the UT Board of Regents that provides capital and support to companies with tangible ties to one of UT System's 14 academic and health institutions — initially invested $50,000 in seed money for the company in 2013.

"Cardiovate's disruptive technology will improve outcomes for patients who suffer from vascular diseases such as peripheral artery disease," said Julie Goonewardene, UT System associate vice chancellor for innovation and strategic investment and managing director of the UT Horizon Fund. "The UT Horizon Fund continues to support the company's efforts to move its life-saving medical device from the laboratory to the bedside."

Cardiovate CEO Mark Standeford said having the UT Horizon Fund as an investment partner brings credibility and will help attract other investors to his company.

Cardiovate's medical device was developed by Jordan Kaufmann, Ph.D., while she was a graduate student at UTSA's College of Engineering, along with her faculty advisers Mauli Agrawal, UTSA interim provost and vice president for academic affairs, and Steven Bailey, M.D., division chief for cardiology at UT Health Science Center San Antonio's School of Medicine.

"Vascular disease is a progressive and life-threatening condition," Standeford said. "Our technology will help those patients suffering from it who rely on synthetic bypass grafts for treatment. Current synthetic grafts oftentimes fail to perform well in long-term applications, requiring patients to undergo additional surgeries to treat the condition, or in some cases, they must undergo an amputation."

Cardiovate's graft — made from a biodegradable material that can be absorbed by the body after use — is designed to support the body's own healing process to develop new vascular tissues over time. The three-dimensional architecture and distinct surfaces of the graft will enable the growth of a patient's own cells. The graft will be used for surgical repairs of blood vessels for peripheral artery disease and below-the-knee surgical applications.

Standeford said the UT Horizon Fund's latest investment will help Cardiovate execute the next phase of research to conduct long-term studies and show improved results from its grafts compared to other current devices.

Alejandro Morales Betancourt is earning his degree for his son

Meet Alejandro Morales Betancourt. This nontraditional UTSA student is pursuing his biomedical engineering degree to inspire his son.

Born in Mexico City, Morales came to Texas in 2007 with his wife and young son, now 12 years old.

"Our main motivation was to make sure he could have the best possible education," Morales said.

In the United States, Morales initially had a series of unfulfilling jobs, including work as a welder, as a house cleaner, and as an overnight stocker at Wal-Mart. He knew he needed to earn a college degree before he could pursue a more lucrative career, but was uncertain about what path to take.

"I started earning my associate's degree at San Antonio College," he said. "I was about to finish when another opportunity arose."

Last summer, Morales was invited to join the Louis Stokes Alliance for Minority Participation Ciencia, Ingeniería y Matemáticas Aliados (LSAMP-CIMA) program. He was immediately struck by UTSA's diverse, welcoming campus.

"My experience has been wonderful," he said. "It's a truly multicultural experience, and there are so many resources here to foster success."

At UTSA, Morales conducted research for the first time, working alongside top-tier faculty in biomedical engineering laboratories.

"I was hooked," Morales said. "I'd always liked engineering and medicine, and the work the faculty is doing is very exciting."

Morales was so intrigued by the summer program that he transferred to UTSA and began earning his bachelor's degree in biomedical engineering. At 40, he's going into his sophomore year.

Now a member of UTSA's Maximizing Access to Research Careers (MARC) program, Morales has plans to pursue a Ph.D.

"I love research because I learn something new every day," he said. "I don't want to ever stop learning."

During the school year, Morales and his son do their homework together each night, and he says one of his biggest motivations is inspiring his son to value a university education.

"I know the best example I can give him is to pursue my degree and show him how important that is."

Ph.D. student awarded prestigious NSF Fellowship

Civil and environmental engineering Ph.D. student Thomas Mander was awarded a prestigious National Science Foundation Ph.D. fellowship that will fund his education over the next three years, as well as providing a $32,000 yearly stipend.

Mander has degrees from the University of Canterbury in New Zealand and Texas A&M, and he decided to come to UTSA for a number of reasons.

"This is an up-and-coming program, and I feel that I can gain from that one-on-one interaction that I can get here at UTSA as compared to other schools," said Mander. "The opportunity to perform research with Dr. Adolfo Matamoros (Peter T. Flawn Distinguished Professor in the Department of Civil and Environmental Engineering), and later become involved with the new planned structures lab is distinguished in itself."

COE's Blake Bogenschutz is chasing a bright future

Meet Blake Bogenschutz. This former quarterback for the UTSA Roadrunners football team is now tackling his future as a civil engineer.

Bogenschutz grew up in the small town of Carthage, Texas, and began playing football in the 7th grade.

"I was in love with the sport," he said. "I knew this was going to be a big part of my life."

He joined his high school's team as a sophomore and as a senior received an offer to join UTSA's football team. Excited to pursue a top-tier education and be a part of a brand new team, Bogenschutz happily accepted.

"I thought it was so exciting because we're writing our own legacy," he said. "It's really thrilling to be a part of something new."

Bogenschutz was struck by the close-knit atmosphere of the UTSA campus and found himself immediately at home even before he had played his first game.

"I've loved playing in the Alamodome, but I think my favorite part of the games is how loud it is," he said. "It's amazing to hear people cheering on both sides and showing so much spirit for their school."

As UTSA's quarterback, Bogenschutz led the Roadrunners for two seasons. However, in early 2016 he made the difficult decision to leave football behind after learning he was at risk for brain damage from sport-related concussions.

"It was the hardest decision I've ever had to face," he said. "But my heart and mind are at peace with stepping away because my doctors advised me to."

Now a junior, he's still hard at work earning his undergraduate degree in civil engineering.

"I love math, especially geometry, so I want to build bridges and work with transportation," he said.

Until he graduates, though, he'll remain a part of the football team as a student assistant. As practices began this summer, Bogenschutz was there daily to support his coaches and teammates in every way he could.

"I'm working the new quarterbacks and helping out wherever the coaches need me," he said. "I feel like I'm doing more learning than anything."

The team is made up of upperclassmen he's familiar with as well as fresh students recruited by the new head football coach, Frank Wilson. According to Bogenschutz, energy is high going into the new season, and a lot of that has to do with Coach Wilson.

"He's doing a great job of getting everyone pumped up," he said. "I've been able to work with him a bit more closely than I would have if I was still a player, and he's a great leader. He does a great job of explaining things so that everyone knows what they need to do and how to do it. From the beginning, it was clear he was going to be a great asset."

Aside from game tips, Bogenschutz has been advising the new players to manage their time wisely and balance their course load properly.

"That's how we are," he said. "Not just on the team but at UTSA. We're like a small town in a big city. We're a family."

Photo credit UTSA SAE

SAE competes at Formula SAE Lincoln, Nebraska

This past summer, UTSA's student chapter of the Society of Automotive Engineers (SAE) competed for the fourth time in the Formula SAE Lincoln competition in Lincoln, Nebraska.

"Getting to compete against teams from Europe, Asia, and South America was an amazing experience," said Roadrunner Racing member Peter De La Cruz. "Being at the competition exposed me to a lot of ideas I might not have otherwise thought of."

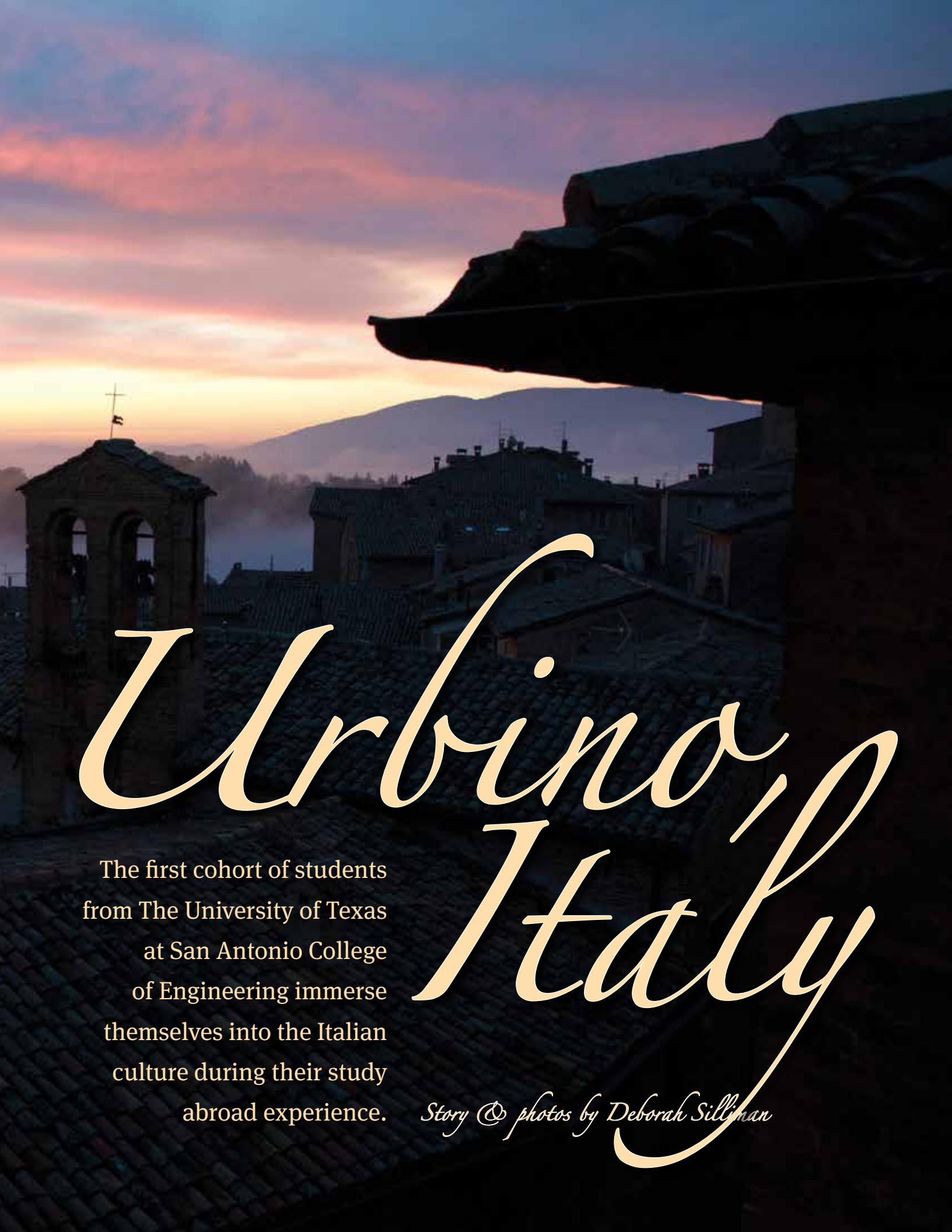
The organization's 22 students have worked year-round to prepare for this competition. They designed a race car in fall 2015, built it in spring 2016, and raced it in summer 2016. A dozen of those students competed in seven different events. The team faced international competition, as this event was open to universities from around the world.

UG research booms in COE

Undergraduate research is booming in the College of Engineering. A prime example of this are the 18 students who participated in summer internships. From Lubbock and Temple, Texas, to Madison, WI, and Beltsville, MD, these students had a chance to work in the field of clean energy and sustainable/green engineering systems, conducting research at USDA national laboratories mentored by renowned researchers who are working on cutting-edge engineering and science to solve societal and sustainability challenges in the nation through Assistant Professor Krystel Castillo's BioEnergy and Water for Agriculture Research and Education (BE AWARE) Network and Water Treatment, Agricultural logistics and Renewable Energy (WeARE) Systems. Shown in the photo to the left, mechanical engineering students Andres Tapia and David Olazaba conducted experiments at USDA Beltsville laboratories on agricultural sustainability modeling and optimization.

Castillo, GreenStar Endowed Assistant Professor in Energy, received about $1.6 million in grants and has support more than 27 college students and 23 community college students since the inception of the programs.

"Internships are a great way to conduct hands-on research and promote an education that is centered on the learner. I encourage our students to work on the theoretical aspects of their research during the academic semester and conduct summer internships at national laboratories to gain knowledge and understanding of the operational complexity of sustainable energy systems from source-to-use and collect first-hand data," said Castillo. "I have observed that after the summer internships, the students become more articulated about the impact and significance of their research and how their project is aligned to a national priority. The success stories are many and varied. For example, Andres Tapia and Alex Lara (ME) just published a journal paper from their 2015 internship project; great accomplishment of our Roadrunners!"



Urbino, Italy

The first cohort of students from The University of Texas at San Antonio College of Engineering immerse themselves into the Italian culture during their study abroad experience.

Story & photos by Deborah Silliman

Students from the College of Literature and Fine Arts, College of Architecture, and College of Engineering walk the streets of Perguia, Italy, during one of the many educational travel experiences they took together as a group.

UTSA Engineering students know what it takes to succeed in their chosen major. Hard work. Dedication. Pasta.

Pasta? Yes, this Italian staple is certainly playing a part in the lives of the civil and environmental engineering students who pioneered the first College of Engineering-sponsored study abroad in Urbino, Italy, this fall semester.

"The goal of the Urbino study abroad is to promote collaborative and professional multidisciplinary project-based learning," said Heather Shipley, department chair of Civil and Environmental Engineering and Burzik Professor in Engineering Design Associate Professor. "The students take a total of 12 credits and have the chance to apply and implement all of the things they learned at UTSA in Italy into their final senior design project and presentation."

Nine students took part in the trip to Urbino, which is located in the Marche region in Italy, about one hour from the coastal city of Pesaro. The walled city is a World Heritage Site and is known for its legacy of independent Renaissance culture, picturesque cobblestone streets, and Medieval vibe. The University of Urbino is located within the city walls, with its buildings seamlessly blending into the surrounding architecture. Close to 14,000 Italian students are enrolled at the university and attend classes in the city center, while the UTSA students have their classes outside of the city walls at a smaller campus where there are facilities dedicated solely to UTSA study abroad.

"The overall experience has been great," said senior civil and environmental engineering student Travis Lung. "Learning the Italian code has been amazing. And being able to see all this history, that is something that you just can't get in the United States. The Romans have been building for thousands of years, and for us to get that exposure and see what they have developed, it shows us that the things we do today aren't much different than what they knew back then. It's pretty incredible."

Travel played a large part in all of the students' lives in Italy; there were university-led, in-country trips every week. The students also had the opportunity to travel on their own to places all throughout Europe including Germany, England, France, Norway, and Amsterdam, just to mention a few.

"My favorite thing about studying abroad in Italy is the cultural immersion," said senior civil and environmental engineering student Ricardo Del Rio. "It is unreal how

UTSA students sit on the terrace outside the studios where they have classes in Urbino. "You should see the sunsets here. They are amazing!" said Arturo Montoya, College of Engineering assistant professor who taught civil engineering classes in Urbino.

much of a difference this makes in my life and my view of the world. Enjoying and learning the ways of other people, how they are, and how they think. The way they live, it has been a life-changing experience."

The UTSA College of Architecture, Construction and Planning, and the UTSA College of Liberal and Fine Arts have been sending students to study in Urbino since 2011.

"I believe that study abroad is an extremely important piece of a college education, so when I was approached by Dean John Murphy about teaming up with his existing study abroad program, I was thrilled," said JoAnn Browning, dean of the College of Engineering. "I was able to witness first-hand the impact of the Urbino program on architecture students, and I knew that our engineering students would greatly benefit from the expansion of mind from the cultural experience, as well as the interdisciplinary nature of the senior design projects and learning from European engineers using the Eurocode."

Leadership in the Department of Civil and Environmental Engineering has been working with the nine engineering seniors over the past two years, making sure that their coursework would line up and that they would graduate on time. UTSA Civil Engineering Professor Jose Weissmann and Assistant Professor Auturo Montoya both traveled to

PHOTOS CONTINUED ON PAGE 24, STORY ON PAGE 26

"My favorite thing about studying abroad in Italy is the cultural immersion. It is unreal how much of a difference this makes in my life and my view of the world. This has been a life-changing experience."

– Ricardo Del Rio, senior in civil and environmental engineering

PHOTOS, CLOCKWISE: 1) Ricardo Del Rio, civil and environmental engineering senior, eats a slice of pizza on the streets of Urbino with fellow UTSA and international students. 2) Katherine Sepassi, civil and environmental engineering senior, twirls some freshly made pasta during the students' trip to Perugia, Italy. Each week, the UTSA students traveled together to a variety of cities around Italy, immersing themselves in the culture and civil engineering aspects of the locations around the country. 3) *(From left)* **Chelsea Linwood, Garrett Frazier (COLFA), Travis Lung, and Nicole Kitchen have a laugh in the studio in Urbino that is solely dedicated to UTSA engineering students. 4) Students from the College of Literature and Fine Arts, College of Architecture and College of Engineering walk the streets of Perugia, Italy, during one of the group's many day trips. This is the first year College of Engineering students have had the chance to participate in a semester-long study abroad.**

The walled city of Urbino, Italy, is a World Heritage Site and is known for its legacy of independent Renaissance culture, picturesque cobblestone streets, and Medieval vibe.

CONTINUED FROM PAGE 23

Italy to teach required civil engineering coursework. Additionally, the students worked with Italian professionals in the classroom for both Italian language and construction management classes. The students also had in-country program managers that they could depend on when facing any challenges during their time abroad.

Though all the students said they learned a lot in the classroom, a lot of learning went on outside the classroom as well.

"I have always lived at home with my family," said senior civil and environmental engineering student Rogelio Ondarza. "Here in Italy, I get to be on my own, wander around. I have to adapt and figure out things on my own for myself, and I like that. I have the chance to immerse myself in a culture that is amazing. I am from Mexico, but I was in an English school so I didn't run into a language barrier when I moved to America. Now over here, that was something else. I like the struggle, and we were lucky enough to find friends who are willing to help us out. We help them learn English and Spanish, and they help us learn Italian. I have forged really good new friendships. Plus, the fact that we are able to visit other places and travel as much as we have in Europe to get to know new things is fantastic. This study abroad is an amazing opportunity that I would definitely recommend to other people."

"I believe that study abroad is an extremely important piece of a college education. I was able to witness first-hand the impact of the Urbino program on architecture students, and I knew that our engineering students would greatly benefit from the expansion of mind from the cultural experience, as well as the interdisciplinary nature of the senior design projects."

- JoAnn Browning, College of Engineering dean

Research Awards

It is UTSA's vision to be a premier public research university, providing access to educational excellence and preparing citizen leaders in the global environment. We are proud of all of our faculty and students who are striving to reach research excellence in UTSA's path to becoming a Tier One institution. Listed here are the projects awarded between January 1, 2016, and December 1, 2016.

Akopian, David (PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Text Messaging to Promote Walking in Latinos with Peripheral Arterial Disease
Funding Agency: UTHSCSA
Amount: $33,325

Akopian, David (PI)
Dept. of Electrical and Computer Engineering
Proposal Title: San Antonio Life Sciences Institute : An Interactive Automated Mobile Messaging Service for Mobile Health Promotion Interventions
Funding Agency: San Antonio Life Sciences Institute
Amount: $50,000

Alaeddini, Adel (PI)
Dept. of Mechanical Engineering/CAMLS
Proposal Title: A Novel Probabilistic Methodology for Prediction of Emerging Diseases in Patients with Multiple Chronic Conditions
Funding Agency: National Institute of Health
Amount: $441,000

Alaeddini, Adel (PI)
Dept. of Mechanical Engineering
Proposal Title: Active Learning in Expensive Testing Design and Optimization
Funding Agency: U.S. Department of Defense
Amount: $371,937

Alaeddini, Adel (PI)
Dept. of Mechanical Engineering
Proposal Title: Prediction and Optimization in Engineered Residual Stresses (ERS) with Minimum Data
Funding Agency: Clarkson Aerospace Group
Amount: $100,000

Bhaganagar, Kiran (PI)
Dept. of Mechanical Engineering
Proposal Title: Novel Technology for Detection and Prediction of Spreading of Air-borne Chemicals
Funding Agency: Minority Serving Institutions STEM Research & Development Consortium (MSRDC)
Amount: $105,383

Bhounsule, Pranav (PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: CRII: RI: Energy Effective and Versatile Bipedal Robots Using Event-Based Switching Between Parameterized Steady-State Controllers
Funding Agency: National Science Foundation
Amount: $159,024

Bhounsule, Pranav (PI) Jafari, Amir (Co-PI)
Dept. of Mechanical Engineering
Proposal Title: GREAT: Highly Customizable, Light Weight Artificial Legs Based on Embedding Actuators and Sensors in 3-D Printed Parts
Funding Agency: UTSA GREAT Award
Amount: $20,000

Bhounsule, Pranav (PI)
Dept. of Mechanical Engineering
Proposal Title: Accelerated Path Teaching for Robotic Routing Using ROS Industrial Framework
Funding Agency: Southwest Research Institute
Amount: $12,786

Bin-Shafique, Md. (PI) Long, Monique (Co-PI); Huang, Jie (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Maximize Savings and Minimize Air Pollution with On-Site Manufacturing of Embankment Soils
Funding Agency: Texas Department of Transportation
Amount: $164,686

Browning, JoAnn (PI) Atwood, Erin (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: NSF NHERI Network Coordination Office
Funding Agency: Purdue University
Amount: $1,864,537

Cao, Yongcan (PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Dynamic Data-Driven Intelligence, Surveillance, and Reconnaissance Using Cooperative Heterogeneous Teams: from Individual Sensor-driven System to Cooperative Information-driven System
Funding Agency: U.S. Dept. of the Air Force
Amount: $50,918

Castillo Villar, Krystel (PI) Sharif, Hatim (Co-PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: Interdisciplinary Hands-on Research Traineeship and Extension Experiential Learning in Bioenergy/Natural Resources/Economics/Rural
Funding Agency: U.S. Dept. of Agriculture
Amount: $275,760

Castillo Villar, Krystel (PI)
Dept. of Mechanical Engineering/Open Cloud Institute
Proposal Title: Cloud-based Decision Support System Integrating Biomass Quality, Uncertainty and Risk to Optimize the Production of Second-generation Biofuels
Funding Agency: Oklahoma State University
Amount: $150,000

Chen, Fengshan (PI) Wan, Hung-Da (Co-PI)
Dept. of Mechanical Engineering/CAMLS
Proposal Title: Education and Mentoring Program for Lean Manufacturing Enterprise Implementation
Funding Agency: Goodheary Speciality Foods
Amount: $62,000

Diaz, Manuel (PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Dwight D. Eisenhower Fellowship
Funding Agency: U.S. Dept. of Transportation
Amount: $17,500

Dong, Bing (PI) Vega, Rolando (Co-PI), Shephard, Les (Co-PI)
Dept. of Mechanical Engineering/TSERI
Proposal Title: Behavior-driven Transactive Energy For Residential Buildings
Funding Agency: U.S. Dept. of Energy
Amount: $37,615

CONTINUED ON PAGE 33

Education + Engineering = Success

ATE brings service learning opportunities to COE

The College of Education and Human Development's Academy for Teacher Excellence (ATE) and the Center for Civic Engagement have partnered with the College of Engineering (COE) to bring service learning opportunities to students in a whole new way.

Through a Title V for Hispanic Serving Institutions (HSI) grant from the U.S. Department of Education awarded to ATE and a National Science Foundation (NSF) grant awarded to COE, 34 students in Dr. Pranav Bhounsule's Fundamentals of Robotics course are completing their 10-week required service project at one of ATE's 10 after-school robotics clubs. They began working in the elementary and middle schools in mid-September.

"What we want to do is to have sustained science, technology, engineering, and mathematics (STEM) mentoring in schools," said Bhounsule, assistant professor of mechanical engineering. "If the UTSA students go every week, the students in the schools will realize their potential in STEM and hopefully become interested in science."

Once a week, the UTSA students travel to schools throughout the San Antonio area to mentor 227 elementary and middle school students at 10 different campuses, and teach them how to work with LEGO robotics kits. They are also helping the elementary and middle school students prepare to participate in the first LEGO League, a national-level robotics contest for schoolchildren.

"I teach using LEGO robotics kits, and the UTSA students can take their classroom skills to mentor young kids in the community," said Bhounsule. "The close interaction with young children allows the UTSA students to enrich their learning experience while instilling a sense of civic responsibility. That's exactly what service learning is about."

Through the NSF grant, Bhounsule will be able to provide a stipend to support the UTSA students' travel to and from these schools.

"Reciprocal collaborative efforts across departments and colleges at UTSA, like the one we have created with the Department of Mechanical Engineering, are imperative for us to better serve our English learners, Latino, and other culturally and linguistically diverse learner populations," said Dr. Lorena Claeys, executive director and research associate for ATE.

All of the schools served by ATE's after-school clubs are in underserved areas around San Antonio. The funding for the clubs has been made possible through ATE's resources and funding from its Title V – HSI and Title V – HSI STEM grants from the U.S. Department of Education.

"This partnership is also about making our UTSA students role models to these children and create a college-going culture at

College of Engineering students Josephine Dike, Chelsea Moussini, Kyle Lamoureux, Thanh Tran, and Andrew Wattereus have been volunteering their time mentoring students at Douglass Elementary School, which is located just east of downtown San Antonio. "It has been great having the UTSA mentors in class," said Eric Asel, a technology support specialist at Douglass Elementary. "They're enthusiastically involved in what the kiddos are doing and will get down and engage the students at their level, lots of times literally on their knees. Our students are always so excited to see them and ask their advice on the projects they are working on."

these low-income schools," said Deborah Chaney, ATE education specialist. "Our UTSA students can talk about the importance of a college-going culture and how exciting it is to be an engineering or STEM student."

The partnership is also serving as a way for ATE and Bhounsule to showcase the efforts UTSA is making in encouraging young students to pursue STEM career paths, including STEM education.

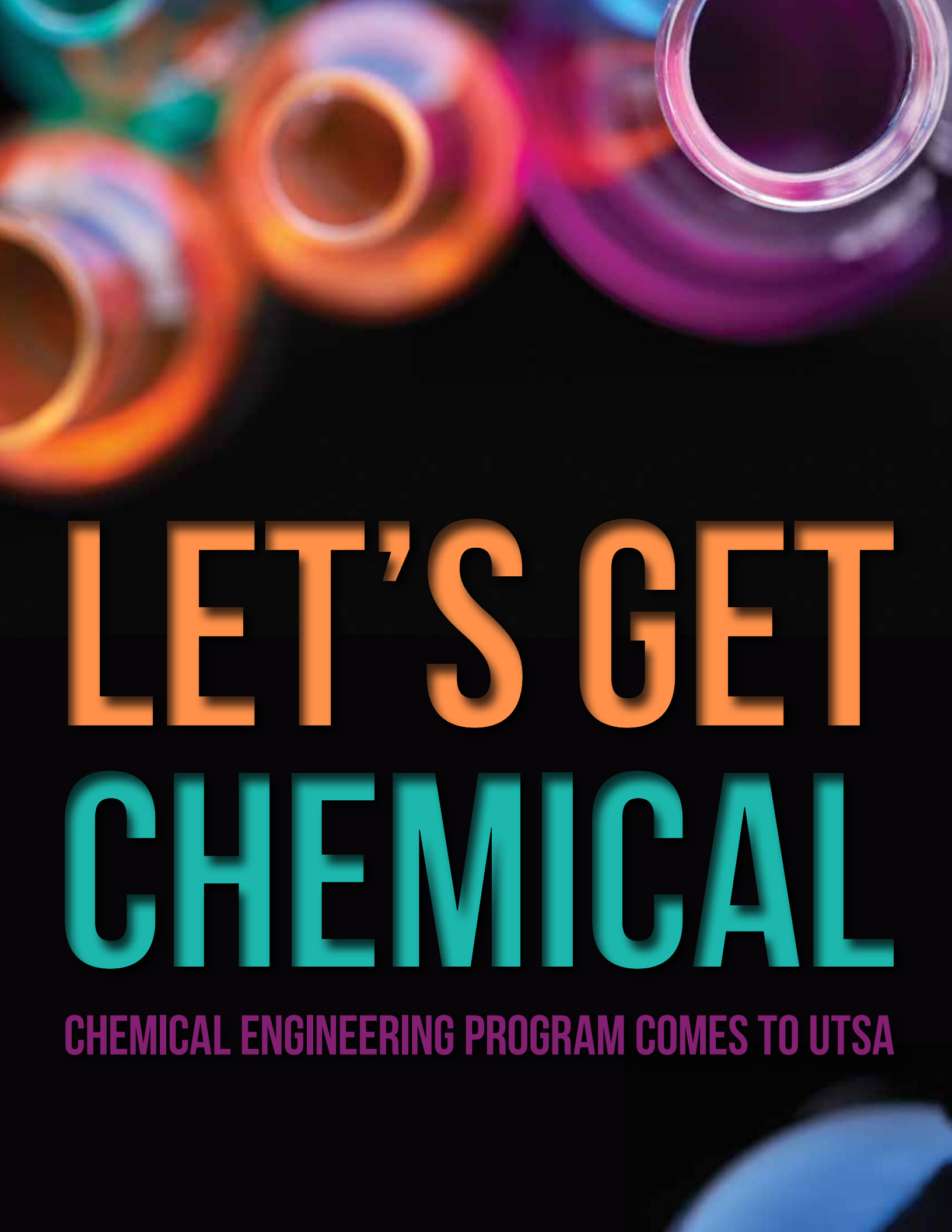
"The National Science Foundation is interested in increasing the number of Americans who follow STEM careers," said Bhounsule. "We are placing these UTSA students as role models in the community. My hope is that the students in the schools who do the robotics club will say, 'Hey, this is something that I really want to pursue as my dream career.'"

Since its inception, ATE has been working with schools in local districts to strengthen their university-school-community relationships and collaborative efforts. As a result, ATE has been able to provide field experiences and service learning opportunities to teacher candidates and other undergraduate students through its informal learning clubs.

"In addition to science and other STEM careers, we are also promoting STEM education across the P-20 spectrum through our informal learning clubs, like our robotics clubs," said Claeys.

For the past two years, ATE has worked with Bhounsule's students to provide volunteer opportunities through their robotics club. The fall cohort is the largest group of student mentors ATE has had. This is due in large part to the course's service learning designation from the Center for Civic Engagement, the first designation of its kind for the College of Engineering.

"For me, the excitement is about the mentorship that is going to happen," said Brian Halderman, director of the Center for Civic Engagement. "We know that you need that sustained period of time to really develop a mentorship relationship with young people. It is important for those young students to see college-aged students who are excited about what they are doing at UTSA and passionate about what they are studying and to be willing to share their knowledge and skills with those students."



LET'S GET CHEMICAL

CHEMICAL ENGINEERING PROGRAM COMES TO UTSA

NEW PROGRAM SET TO LAUNCH THIS FALL

Beginning in the fall, students at The University of Texas at San Antonio (UTSA) will be able to enroll to earn a bachelor of science degree in chemical engineering. Because only a few other undergraduate chemical engineering programs exist in Texas, and just one other in the UT System (UT Austin), this new development at UTSA will benefit the state and the region by producing top-tier educated chemical engineers.

"This is a major step for UTSA and the College of Engineering," said JoAnn Browning, dean and David and Jennifer Spencer Distinguished Chair of the College of Engineering. "A chemical engineering program helps tie together all of our existing programs and adds a cornerstone of engineering education at UTSA. It is our mission to provide educational opportunities for students in San Antonio, and throughout Texas and the region, that fill critical workforce needs."

According to the Bureau of Labor Statistics, Texas and the Gulf Coast region are some of the biggest employers of chemical engineers in the country, offering an average starting salary of about $120,000. Graduates of chemical engineering programs are highly sought-after in a wide variety of industries, including oil and gas, biotechnology, and pharmaceuticals as well as environmental and materials engineering.

"This is a very exciting time for UTSA," said Ruyan Guo, Robert E. Clarke Endowed Professor in the Department of Electrical and Computer Engineering and director of the chemical engineering program. "I'm confident this addition will significantly propel our progress in becoming a Tier One institution as well as benefit our community by providing a pipeline of graduates from a top-tier chemical engineering program."

Students will have the option to specialize in one of five tracks: bioengineering, energy, environmental, materials, or technology management.

"By offering several diverse options to our students, we're giving them a competitive edge in the job market," Guo said. "This will allow them to graduate with not only knowledge of basic chemical engineering, but also specialized in-depth training."

Through core courses emphasizing problem-based learning, students will develop skills to help them obtain professional engineering licensure. Additional elective courses will be instrumental in their success in graduate school.

All chemical engineering students will benefit from the kind of hands-on research experience UTSA is known for offering its undergraduate students. The College of Engineering is already in the process of hiring new faculty to support the new degree program.

The College of Engineering is a major public provider of undergraduate and graduate engineering programs in South Texas with enrollment exceeding 3,400 students. The college has seen a 100 percent increase in graduate enrollment in the past few years and continues to grow steadily with the mission to provide outstanding education and research opportunities and service to the region's multicultural community, the nation, and beyond.

"THIS IS A MAJOR STEP FOR UTSA AND THE COLLEGE OF ENGINEERING. A CHEMICAL ENGINEERING PROGRAM HELPS TIE TOGETHER ALL OF OUR EXISTING PROGRAMS AND ADDS A CORNERSTONE OF ENGINEERING EDUCATION AT UTSA."

- JOANN BROWNING, DEAN AND DAVID AND JENNIFER SPENCER DISTINGUISHED CHAIR OF THE COLLEGE OF ENGINEERING

Miniaturizing

Healing

By Joanna Carver and Deborah Silliman

Study describes new minimally invasive device to treat cancer and other illnesses

Lyle Hood says he knows it sounds corny, but his father is his hero. Growing up in Corpus Christi, Hood saw his father take risks in his dental practice and those risks ended up improving the lives of his patients. Hood, now an assistant professor of mechanical engineering at UTSA, wanted to follow in his footsteps.

"When I was a junior in high school, my dad went to a dental conference and learned about a new deep-cleaning laser system that, as deep cleanings are done a visit or two before a gum surgery, could address the problem and prevent the need for a surgery at all," Hood recalled. "He said, 'This is great! Our patients can have better outcomes.'

The system was extremely expensive, and he had to take a loan out on his practice to pay for it. Everyone told him he was crazy to take such a risk, but he believed in the technology, and in one year, the system had paid itself off, and more. Outside of the money, it allowed him to get better results for his patients with fewer visits. He was able to see that many more patients and help that many more people because of this medical technology. Both patients and doctors benefit, and that is one of the great things about developing medical technologies."

Currently, Hood is working on a study using medical technologies through a new device that could revolutionize the delivery of medicine to treat cancer as well as a host of other conditions. Hood developed the device in partnership with Alessandro Grattoni, chair of the Department of Nanomedicine at Houston Methodist Research Institute.

"The problem with most drug-delivery systems is that you have a specific minimum dosage of medicine that you need to take for it to be effective," Hood said. "There's also a limit to how much of the drug can be present in your system so that it doesn't make you sick."

As a result of these limitations, a person who needs frequent doses of a specific medicine is required to take a pill every day or visit a doctor for injections. Hood's creation negates the need for either of these approaches, because it's a tiny, implantable drug-delivery system.

"It's a capsule filled with medicinal fluid that uses about 5,000 nanochannels to regulate the rate of release of the medicine," Hood said. "This way, we have the proper amount of drugs in a person's system to be effective, but not so much that they'll harm that person."

The capsule can be used for any kind of ailment that needs a localized drug delivery over several days or a few weeks. This makes it ideal for treating cancer, while a larger version of the device, which was originally created by Grattoni, can treat diseases like HIV for up to a year.

"In HIV treatment, you can bombard the virus with drugs to the point that that person is no longer infectious and shows no symptoms," Hood said. "The danger is that if that person stops taking their drugs, the amount of medicine in his or her system drops below the effective dose and the virus is able to become resistant to the treatments."

The capsule, however, could provide a constant delivery of the HIV-battling drugs to prevent such an outcome.

Hood noted it can also be used to deliver cortisone to damaged joints to avoid painful, frequent injections, and possibly even to pursue immunotherapy treatments for cancer patients.

> "One of the great things about developing medical devices is that both the patients and the doctors benefit."
>
> - Lyle Hood, assistant professor in the Department of Mechanical Engineering

"The idea behind immunotherapy is to deliver a cocktail of immune drugs to call attention to the cancer in a person's body, so the immune system will be inspired to get rid of the cancer itself," he said.

The current prototype of the device is permanent and injected under the skin, but Hood is working with Teja Guda, assistant professor of biomedical engineering, to collaborate on 3-D printing technology to make a new, fully biodegradable iteration of the device that could potentially be swallowed.

Harder, Better, Greener, STRONGER

Grant supports UTSA professor's research on stronger rebar

Wassim Ghannoum, associate professor of civil and environmental engineering at UTSA, has received a $248,083 grant to support his research on the performance of an innovative new kind of high-strength reinforcing bars, commonly known as rebar.

In Texas, more than 80% of bridges are made from concrete, and no concrete structure can sustain itself without the support of a rebar cage.

"The bulk of all construction in the world is concrete-based," Ghannoum said. "Concrete is very strong in compression, but very weak in tension. You can easily just crack it. The steel rebar takes the tension loads."

Rebar in use today first became common in the 1940s. The most widely used type had a tensile strength, or ksi, of 40. In the 1960s, American construction began using 60 ksi bars, which have been the standard ever since. Now, Ghannoum is testing up to 100 ksi rebar to see if it's fit to become the new standard.

"We're going to hone in on their exact properties," he said. "Above all, we want to know what their exact strength is, as well as their ability to resist breakage and how long they can last."

The sheer amount of steel currently used in concrete structures can be staggering, and new, stronger rebar could cut out a third of the cost of steel in construction projects.

"Steel is always one of the most expensive parts of building any structure," Ghannoum said. "It has to be fabricated, erected, and transported."

He also noted that in Texas, where a large portion of the rebar used in U.S. construction projects is forged, switching to a stronger steel could have positive environmental effects. Because sturdier rebar means less of it will be needed in construction, the energy saved could be considerable.

Ghannoum's grant comes from a consortium of construction-oriented agencies, namely the Charles Pankow Foundation, the Concrete Reinforcing Steel Institute, and the American Concrete Institute.

He is set to begin his two-year project this fall, with a small group of UTSA graduate students to aid him. He's working with the five largest steel mills in the U.S. to establish specifications for the use of 80- and 100-grade bars, which will entail a good deal of testing. A machine to help simulate a host of conditions, including earthquakes, will soon be on the way to Ghannoum's laboratory.

"The last time we changed grades was five decades ago," he said. "If the new bars perform well, this is what will be holding up our buildings and bridges for the next 50 years."

Wassim Ghannoum, associate professor of civil and environmental engineering, shows a steel rebar that his team has conducted studies upon. Ghannoum is the nation's leading expert of high-strength reinforcing bars and has developed new fatigue and fracture testing methodologies for quantifying rebar properties.

CONTINUED FROM PAGE 27

Dong, Bing (PI)
Dept. of Mechanical Engineering
Proposal Title: PEP: NSF, Behavior-driven Energy Usages
Funding Agency: UTSA Proposal Enhancement Program (PEP)
Amount: $10,000

Dong, Bing (PI) Taha, Ahmad (Co-PI) Gatsis, Nikolaos (Co-PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: EAGER: Collaborative Research: Empowering Smart Energy Communities: Connecting Buildings, People, and Power Grids
Funding Agency: National Science Foundation
Amount: $173,420

Duan, Lide (PI)
Dept. of Electrical and Computer Engineering
Proposal Title: CRII: SHF CSR: A High Performance and Reliable Non-Volatile Memory Framework for Handheld Platforms
Funding Agency: National Science Foundation
Amount: $174,371

Feng, Yusheng (PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: Radical Cystectomy Compared with Combined Moda Treatment for Muscle Invasive Bladder Cancer: A Pilot Randomized Control Trial
Funding Agency: UTHSCSA
Amount: $10,140

Feng, Yusheng (PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: Medical Device Design for Emergency Medicine
Funding Agency: UTHSCSA
Amount: $9,600

Finol, Ender (PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: Mechanistic Justification for Pentagalloyl Glucose Mediated AAA Suppression
Funding Agency: American Heart Association
Amount: $750,000

Finol, Ender (PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: Geometric Modeling of Small Abdominal Aortic Aneurysms: A Retrospective Study
Funding Agency: American Heart Association
Amount: $2,000

Ghannoum, Wassim (PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Acceptable Elongations and Low-Cycle Fatigue Performance for High-Strength Reinforcing Bars
Funding Agency: Charles Pankow Foundation
Amount: $248,083

Giacomoni, Marcio (PI) Shipley, Heather (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Modeling Stormwater Runoff at UTSA Main Campus
Funding Agency: San Antonio River Authority
Amount: $15,000

Giacomoni, Marcio (PI) Shipley, Heather (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Monitoring Stormwater Quality at UTSA Main Campus
Funding Agency: Greater Edwards Aquifer Alliance (GEAA)
Amount: $27,800

Giacomoni, Marcio (PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Proposal Enhancement Program for NSF CAREER Award
Funding Agency: UTSA Proposal Enhancement Program (PEP)
Amount: $20,000

Guda, Teja (PI) Ong, Anson (Co-PI)
Dept. of Biomedical Engineering
Proposal Title: Bone Regeneration Evaluation in Rat Calvaria
Funding Agency: US Naval Medical Research Unit-SA
Amount: $21,000

Guo, Ruyan (PI) Bhalla, Amar (Co-PI) Wan, Hung-Da (Co-PI) Joo, Youngjoong (Co-PI) Binzaid, Shuza (Co-PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Hybrid 3-D Digital Deposition Platform for Bottom-Up Fabrication of Multicomponent-Multiferroic Composites (DURIP: H3DPlatform)
Funding Agency: U.S. Dept. of the Navy
Amount: $577,100

Guo, Ruyan (PI) Bhalla, Amar (Co-PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Project 2 - Measured Attribute Effect on Drink Properties
Funding Agency: FBD Partnership LP
Amount: $36,000

Huang, Jie (PI) Matamoros, Adolfo (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: GREAT: Converting Ubiquitous Biomass into Sustainable Civil Engineering Materials Based on Polymerization and Cross-linking
Funding Agency: UTSA GREAT Award
Amount: $20,000

Huang, Yufei (PI)
Dept. of Electrical and Computer Engineering
Proposal Title: 2016 Workshop on Bioinformatics for Precision
Funding Agency: National Science Foundation
Amount: $10,000

Krishnan, Ramnarayan (PI)
Dept. of Electrical and Computer Engineering /Institute for Cyber Security
Proposal Title: CAREER: Group-Centric Secure Information Sharing - Models, Properties, and Implementation
Funding Agency: National Science Foundation
Amount: $544,376

Krishnaswami, Hariharan (PI) Taha, Ahmad (Co-PI) Gatsis, Nikolaos (Co-PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Integrating OpenStack New Features and Docker Containers for the JetStream System
Funding Agency: U.S. Department of Defense
Amount: $400,000

Lee, Wonjun (PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Detection of Kernel Level Rootkits Targeting Linux Containers
Funding Agency: Samsung
Amount: $20,000

Millwater, Harry (PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: Probabilistic Modeling of Random Variables and K-Solution Developments for General Aviation - Extensions to the SMART|DT Software
Funding Agency: US DOT Federal Aviation Administration
Amount: $400,000

Millwater, Harry (PI)
Dept. of Mechanical Engineering
Proposal Title: Probabilistic and Sensitivity Method Development and Application in Life Prediction of Metallic Materials and Structures
Funding Agency: Clarkson Aerospace Group
Amount: $75,000

Najafirad, Peyman (PI) Huang, Yufei (Co-PI) Jamshidi, Mohammad (Co-PI) Agaian, Sos (Co-PI)
Open Cloud Institute
Proposal Title: Machine Learning Cloud Research Test Bed Bio- Informatics and Brain Health
Funding Agency: UTHSCSA
Amount: $25,000

Najafirad, Peyman (PI) Jamshidi, Mohammad (Co-PI)
Open Cloud Institute
Proposal Title: Acquisition of Real-Time Simulator for Intelligent Power Networks in Operational Energy Applications
Funding Agency: Indiana University
Amount: $280,410

Ong, Anson (PI) Guda, Teja (Co-PI)
Dept. of Biomedical Engineering
Proposal Title: Recapitulation of the Salivary Gland Niche Ex Vivo for Stem Cell-based Therapies
Funding Agency: UTHSCSA
Amount: $127,008

Rincon Troconis, Brendy (PI)
Dept. of Mechanical Engineering
Proposal Title: Effect of Passive Film Composition on the Electrochemical Behavior and Cracking of Corrosion Resistant Alloys Utilizing Surface Enhanced Raman Spectroscopy
Funding Agency: NACE International
Amount: $30,000

Saygin, Can (PI) Wan, Hung-Da (Co-PI)
Dept. of Mechanical Engineering/CAMLS
Proposal Title: Incorporating Lean-Six Sigma Methodologies into the Institute for Integration of Medicine and Science
Funding Agency: UTHSCSA
Amount: $50,000

Shadaram, Mehdi (PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Summer Residential Engineering Camp 2016
Funding Agency: Texas Higher Education Coordinating Board
Amount: $12,900

Sharif, Hatim (PI) Weissmann, Jose (Co-PI) Dessouky, Samer (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Safety and Economic Impact of Texas Travel Information Centers: Update
Funding Agency: Texas Department of Transportation
Amount: $80,000

Sharif, Hatim (PI) Weissmann, Jose (Co-PI) Dessouky, Samer (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Incorporating Wildlife Crossings into TxDOT's Project Development, Design and Operations Processes
Funding Agency: Texas Department of Transportation
Amount: $87,346

Sharif, Hatim (PI) Weissmann, Jose (Co-PI) Dessouky, Samer (Co-PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Assessing the Safety Issues Associated with Isolated Rural Intersections (Deliverable Based)
Funding Agency: Texas Department of Transportation
Amount: $266,800

Shipley, Heather (PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Connect: Molecular Characterization and Quorum Sensing of Microbiologically Influenced Corrosion (Mic) Bacteria in Pipeline Populations
Funding Agency: UTSA Connect
Amount: $50,000

Taha, Ahmad (PI) Dong, Bing (Co-PI) Gatsis, Nikolaos (Co-PI)
Dept. of Electrical and Computer Engineering
Proposal Title: Dynamic Cyber-Attack Detection and Mitigation for Secure Smart Grids
Funding Agency: UTSA Smart Grid Security Research
Amount: $30,000

Testik, Firat (PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Advanced Optical Disdrometer for Precipitation Observations
Funding Agency: National Science Foundation
Amount: $22,254

Weissmann, Jose (PI)
Dept. of Civil and Environmental Engineering
Proposal Title: Development of Pavement and Bridge Consumption Cost Library
Funding Agency: Texas Department of Transportation
Amount: $50,000

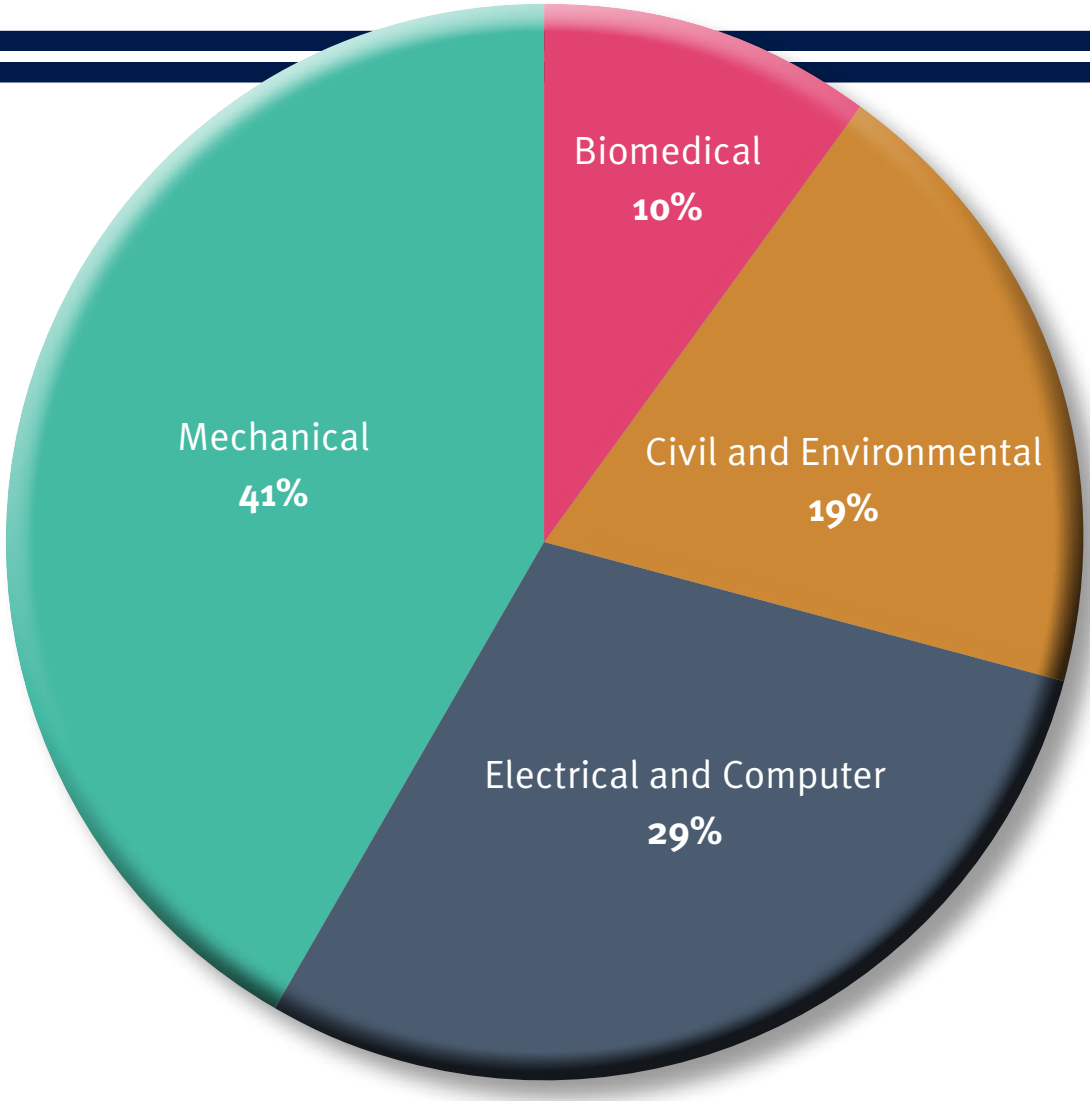
Wilkerson, Justin (PI)
Dept. of Mechanical Engineering/Center for Simulation, Visualization, and Real Time Prediction
Proposal Title: A Multifunctional Materials-By-Design Approach to Ignition Desensitization
Funding Agency: U.S. Department of Defense
Amount: $360,000

Ye, JingYong (PI)
Dept. of Biomedical Engineering
Proposal Title: Quantifying Cancer Molecular Signatures with a Double-Clad Fiber Optic Probe
Funding Agency: San Antonio Area Foundation
Amount: $30,000

Ye, JingYong (PI)
Dept. of Biomedical Engineering
Proposal Title: Connect: Ultrasound Mediated Drug Delivery in 3-D Tissue Model Quantified by Photoacoustic Tomography
Funding Agency: UTSA Connect
Amount: $50,000

Zeng, Xiaowei (PI)
Dept. of Mechanical Engineering
Proposal Title: GREAT: Advancing Cohesive Interface Zone Model for Biomechanics Applications
Funding Agency: UTSA GREAT Award
Amount: $20,000

ENGINEERING *by the* NUMBERS *fall 2017*



COE Student Population by Department

- Mechanical/**41%**
- Electrical and Computer/**29%**
- Civil and Environmental/**19%**
- Biomedical/**10%**

*general engineering/**1%**

Source: UTSA Data Warehouse, 2016

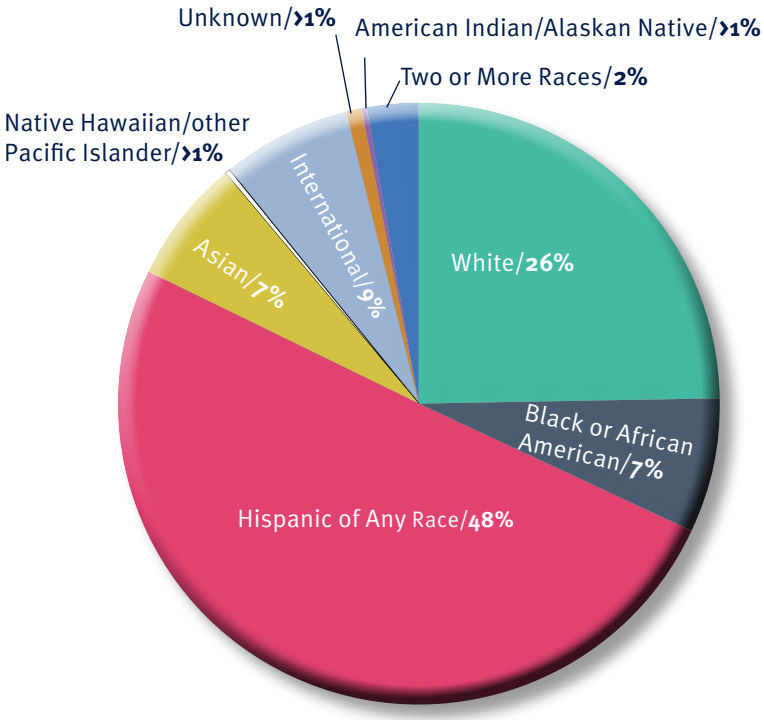
Total student population

UNDERGRADUATE

82% male / **18%** female

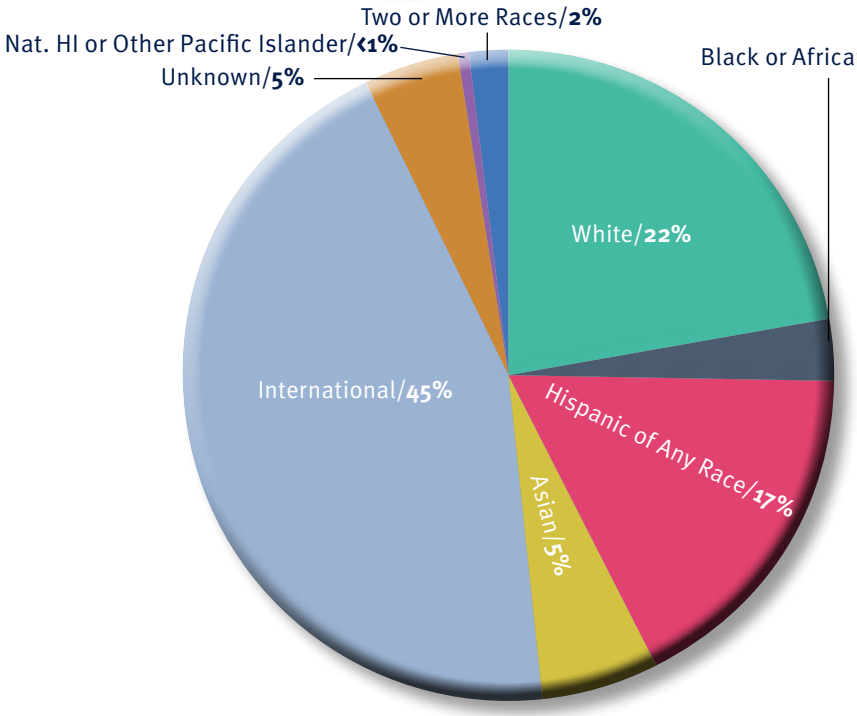
GRADUATE

75% male / **25%** female



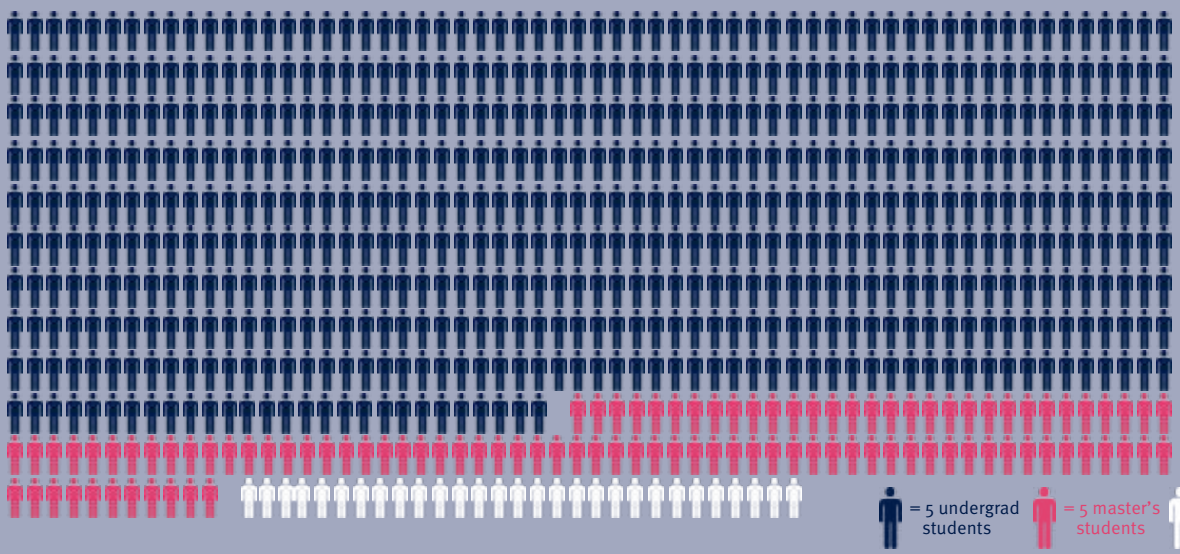
COE Undergraduate Population by Race

- Hispanic of Any Race/**48%**
- White/ **26%**
- International/**9%**
- Asian/**7%**
- Black or African American/**7%**
- Two or More Races/**2%**
- Unknown/**>1%**
- American Indian or Alaskan Native/**>1%**
- Native Hawaiian/other Pacific Islander/**>1%**



COE Graduate Population by Race

- Hispanic of Any Race/**17%**
- White/**22%**
- International/**45%**
- Asian/**5%**
- Black or African American/**3%**
- Two or More Races/**2%**
- Unknown/Not Reported/**5%**
- Native Hawaiian/other Pacific Islander/**>1%**



Fall 2016 enrollment = 3,306

Undergraduates /2,789

Master's students /356

Doctoral students /161

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BBQ Cook-Off

The 3rd Annual Engineering BBQ Cook-Off took place this fall at the Helotes Festival Grounds. The student-led event brought together members of the local engineering community and UTSA engineering students to network with one another in a fun and casual setting - while competing to be a barbecue champion! Student chapter organizations who made this event possible included the Texas Society of Professional Engineers (TSPE), American Society of Civil Engineers (ASCE), Engineers Without Borders (EWB), and the Institute of Transportation Engineers (ITE).