Innovations

THE UNIVERSITY OF TEXAS AT SAN ANTONIO, COLLEGE OF ENGINEERING

VOL. 14 | FALL 2012

ENGINEERING:

The new vanguard in the war against nosocomial infections?

UTSA Engineering

Still Celebrating 30 YEARS

In the Fall of 1983, Mario J. Gonzalez, Jr. was officially named director of the Division of Engineering at UTSA. It is important to note that he was officially named because Gonzalez had already been the acting director since the division's establishment in 1982. From the moment he came to UTSA, Gonzalez worked tirelessly toward advancing education and focused on creating a worthwhile engineering program for San Antonio and the surrounding region.

"I believe that engineering brings new attitudes and perspectives to a community," Gonzalez says. "Engineering is tough, very tough, but engineers make the world work. I am an unabashed, unapologetic advocate for engineering."

His desire to see UTSA succeed was made apparent by the long hours he put in each day. Gonzalez began his day before 8 a.m., preparing for his morning classes and wouldn't end his day until the students in his 7 p.m. class had all gone home for the night.

He played an active role in driving the civil, mechanical, and electrical engineering programs toward accreditation and ensured that the programs had state-of-the-art equipment like the instruments housed in the Computer Aided Design lab.

He wanted the world to know that the students who came from UTSA with a degree in engineering could compete with any other student throughout the country.

During the accreditation process, Gonzalez was quoted as saying, "We know we have a good program here, but accreditation means public recognition of our efforts."

Gonzalez worked at UTSA for nine years before moving to Austin and continuing his career within the UT System there. He has earned many awards and honors throughout his tenure, with one of the most prestigious awards coming early in his career. In 1982, Gonzalez won the Amoco award for being an outstanding teacher. He was recognized for his dedication to his students and amazing work within his field.

Without a doubt, UTSA and the engineering program would not be where they are today had it not been for its first division director, Mario J. Gonzalez, Jr. He made a choice many years ago to pursue engineering and it is one he's never looked back on with regret.

"I've been an engineer my entire professional life, and the best part is that I have no regrets with my career choice. Somehow as a 17-year-old I chose engineering and many, many years later, I'm still active, and I'm still an engineer."

ON THE COVER

According to the Centers for Disease Control, approximately 1.7 million nosocomial, or hospital-acquired infections (HAIs), from all types of microorganisms, including fungus, cause or contribute to 99,000 deaths every year in the United States. Through the use of high-throughput analysis, the UTSA Colleges of Engineering and Science aim to change that.

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editorial

A message from the Dean of the College of Engineering

C. Mauli Agrawal, Ph.D., P.E.
Peter T. Flawn Professor
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The essence of engineering is problem solving and innovation with the goal of improving the human condition. It includes efforts as diverse as engineering, better materials for roads and highways, improving wireless communications, developing new medical technology, and making spacecraft for interplanetary travel. At UTSA we are committed to not just teaching our engineering students the fundamentals and theories behind technical principles, but also to unlocking the innovator that is a part of every engineer. In this respect we have been very successful over the past few years as our Center for Innovation and Technology Entrepreneurship (in collaboration with UTSA College of Business) has assisted our students in starting new businesses based on their inventions. This approach has infused new energy among the student body and our faculty and consequently the number and quality of innovations is increasing rapidly. In this issue you can read about just some of the many successes we have seen.

The secret to successful engineering students is quality teaching. Quality teaching requires outstanding teachers. At UTSA Engineering we are fortunate to have some of the very best. Every year The University of Texas System picks just a handful (50-60) of faculty from among the several thousand teaching at its 15 component universities across the state, and honors them as Regent's Professors for excellence in teaching. This year three of our engineering faculty members were selected for this very prestigious honor: Dr. Randy Manteufel, Dr. Can Saygin, and Dr. Heather Shipley. Having so many awardees at the same time from one college is rare and we are extremely proud of our professors!

Lastly, extracurricular activities are a big part of any college education and engineering is no different. Our students participate in varsity sports, the UTSA band, photography and videography, and various service organizations among a million other activities. In this issue we highlight just a few students and their fun activities.

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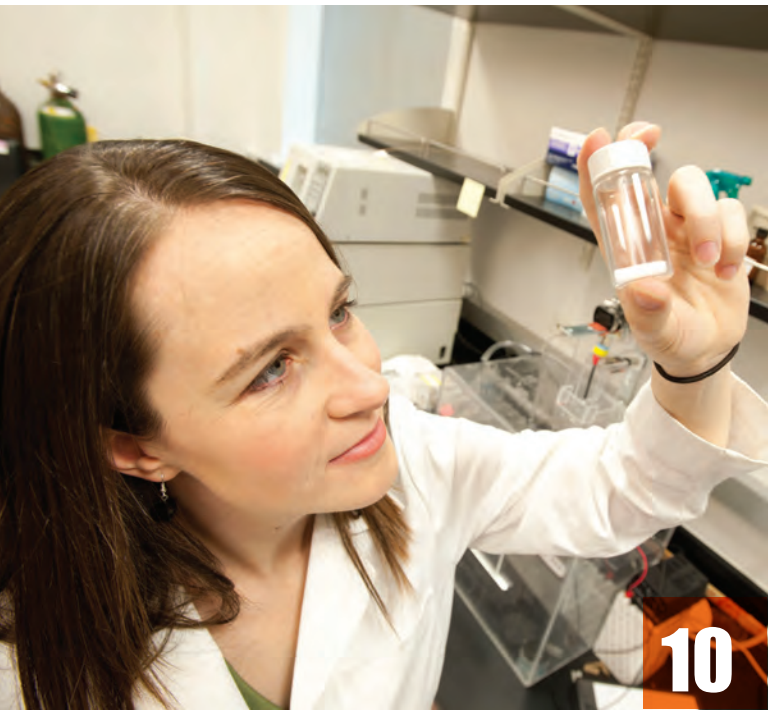

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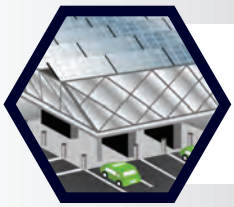
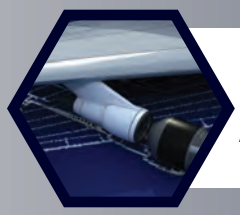


Charging Station of the Future

Shuo Wang, assistant professor in electrical and computer engineering, has won a NSF CAREER Award for his project titled"Megawatt Electric Vehicle Superfast Charging Stations with Enhanced Grid Support Functionality as Energy Hubs."

He proposes a technical approach for superfast electric vehicle (EV) charging stations for next generation electric vehicles. The high power EV charging station is integrated with different grid support functions and renewable energy sources. It also has improved efficiency and reliability compared with existing technologies. The proposed technical approach will greatly improve the performance of charging stations and power systems. It will reduce the cost of energy and grid infrastructures. The education plan focuses on the integration of research and education. It includes the training of undergraduate, graduate, minority, high school and woman students.

His award is a continuation grant and is based on the availability of funds. The total award amount is $400,000 paid over the course of five years.



No Flaws in Aviation Research

Harry Millwater, department chair and professor in mechanical engineering, received an award from the Federal Aviation Administration (FAA) for a project titled "Probabilistic Fatigue Management Program for General Aviation."

Over the next four years, his research hopes to demonstrate the feasibility of probalistic approaches in order to provide the FAA a validated tool to address the known, unsafe conditions due to fatigue cracking. To accomplish his research goals, Millwater will need to develop a probabilistic fatigue management plan for an actual structural detail or details; develop experience and familiarity with probabilistic approaches within engineering personnel that design, manufacture and maintain general aviation aircraft; enhance the software as needed to work within Original Equipment Manufacturer (OEM) engineering and design systems; and document the Probabilistic Fatigue Management Program (PFMP) development approach to serve as a template for future structural situations.

The FAA awarded Millwater a grant of $1,196,893 to fund his research.

Keeping an Eye on Combat Injuries

Matthew Reilly is a co-primary investigator with **Walter Gray** on an award from The Army Medical Research and Material Command for a project titled "Sub-Lethal Ocular Trauma (SLOT): Establishing Standardized Blast Thresholds to Facilitate Diagnostic, Early Treatment, and Recovery Studies for Blast Injuries to the Eye and Optic Nerve."

A large gap exists in our understanding of physical mechanisms and the progression of blast-induced ocular trauma. This gap hampers our ability to design effective protective devices, and may contribute to ineffective treatment and rehabilitation of our eyes due to inadequate awareness of potentially vision-threatening injury. Using the Army Institute for Surgical Research's shock tube, Reilly and Gray will experimentally identify injury mechanisms and their progression with increasing blast energy and impulse. The project will be undertaken as a collaborative research effort between personnel from The University of Texas at San Antonio, the U.S. Army Institute of Surgical Research (Ocular Trauma Division), The University of Texas Health Science Center-San Antonio, and the Sponsel Professional Association of San Antonio.

The total award amount for the joint project is $999,795.

Engineering New Stereotypes

Long gone are the ideas that engineers are old men locked away in labs hunched over computers and calculators. The new generation of engineers is outgoing, community minded, and can even be Ms. UTSA. Daniella Lerma broke tradition when she was crowned the first Ms. UTSA from the College of Engineering. Not only did she show the rest of the world that engineers are more than mathematical super heroes, she also became a role model for many aspiring female engineers by showing them that the field encourages diversity and outside interests.

Lerma initially planned to be a doctor and follow in the medical footsteps of her parents. However, after her freshman year, her friend's father, a nuclear and biological chemist, introduced her to the world of electrical engineering which paved the way for her future goals. Now instead of the medical field, she focuses on her dream job of working in the aviation field for a company like Lockheed Martin.

When she isn't fulfilling obligations as Ms. UTSA, Lerma actively participates in numerous student organizations within UTSA and nationally. Lerma is an engineering senator, current vice president of the College of Engineering Student Council, national vice president of the College of Student Councils (Nationwide - NAESC), and a member of the American Society of Civil Engineers, Steel Bridge team, Institute of Electrical & Electronics Engineers, Society of Women Engineers, Go Green Committee, and Business Affairs Committee.

"For the Society of Women Engineers, I recently went to local schools to speak to young women about why they should pursue engineering and why I decided to become an engineer," Lerma said. "I think it is important to raise that kind of awareness."

Her dedication to service and drive to represent the College of Engineering was all it took for Lerma to set her sites on Miss UTSA. Now that she has won the title she is excited to carry on the tradition of excellence that comes with the crown.

Advancing Engineering with Honors

Mo Jamshidi, Lutcher Brown Endowed Chair Professor in Electrical and Computer Engineering at UTSA, recently received two honorary professorships from Obuda University in Hungary on September 3, 2012 in Budapest. There he was recognized for his work on system of systems engineering and its global reach for technologies of cyber-physical systems, i.e. technology of iPhone, iPAD, Smart Grid, etc.

Additionally, on November 30, 2012 he received his fifth honorary professorship from the University of Birmingham, U.K., the third-most prestigious institution in the U.K., for his work on intelligent control and sensing of cyber-physical systems.

Jamshidi's other honorary professorships come from Nanjing Aeronautical and Astronautical University, Nanjing, China; East China Normal University, Nanjing, China; and Deakin University, Melbourne, Australia.

New Faculty

Daniel Pack

Department Chair and Professor
in Electrical and Computer Engineering

Ph.D. — Purdue University

Originally from Phoenix, Ariz., Pack comes to UTSA for the chance to be a part of a transforming university. He received his master's degree from Harvard and then moved on to earn his doctorate in electrical engineering at Purdue University. His expertise ranges from multiple cooperative systems and signals systems to embedded systems and intelligent control. Pack has earned the Carnegie Foundation Colorado Professor of the Year Award, Outstanding Academy Educator Award, Tau-Beta-Pi Engineering Honour Society Professor, and Magoon Teaching Award. He loves a variety of sports, music and sitting down to read a good book.

Arturo Montoya

Assistant Professor in Civil Engineering

Ph.D. — Columbia University

Montoya, a native of Tegucigalpa, Honduras, joins the civil engineering department after earning his master's and doctorate degrees from Columbia University. He came to UTSA because of its ideal environment to launch his research program and perform collaborative research with other departments within UTSA and other institutes in the area. Montoya's expertise is in the safety and reliability of suspension bridges, friction and fracture of corroded high strength steel wires, aging infrastructure, and computational approaches for large scale finite element models. Within the College of Engineering, he sees a great opportunity to motivate students of Hispanic heritage to pursue a graduate education and careers in research. When he isn't teaching or working in his lab, Montoya enjoys soccer, tennis and jogging.

Adel Alaeddini

Assistant Professor in Mechanical Engineering

Ph.D. — Wayne State University and Iran University of Science and Technology

A native of Tehran, Iran, Alaeddini came to UTSA because of its culture and motivation for progress and expansion. Here he hopes to expand his research in reliability and quality control, applied multivariate analysis, statistical learning and data mining, modeling and simulation, design of experiments, and response surface methodology and process optimization. Alaeddini also has interests in the biomedical industry surrounding biomedical informatics and healthcare operations management. In his spare time he enjoys painting, calligraphy, soccer, and gymnastics.

Krystel Castillo-Villar

Assistant Professor in Mechanical Engineering

Ph.D. — Texas Tech University and Monterey Tech

Attracted to the College of Engineering at UTSA because of its commitment to providing a world-class education as well as research opportunities to a diverse community, Castillo-Villar eagerly hopes to be part of the development of young engineers and impact their lives in a positive way as her teachers and mentors have influenced her. Originally from Mexico, she now hopes to serve the city of San Antonio and its fast-growing industry. Castillo-Villar's areas of expertise reside in advanced quality control, total quality management, and principles of optimization. However, she is also interested in process optimization and logistics as they are applied to energy and healthcare. In her spare time she enjoys quality coffee while reading a book and listening to music.

Life Saving Technology Born out of Dissertation

Lety Laurel,
Sombrilla Magazine

Mark McClendon,
Photographer

Follow Jordan Kaufmann, a Ph.D. graduate from the University of Texas at San Antonio's College of Engineering, as she revolutionizes how doctors treat aneurisms. From a backyard shed turned laboratory, Jordan created her start-up company, Cardiovate, and hopes to save lives one stent-graft at a time.

Jordan Kaufmann does all her work in a nondescript shed in her backyard.

Fully equipped with an air conditioner and a fan, the shed has everything Kaufmann believes she needs to create the next generation of cardiovascular stent-grafts that may someday save lives.

"I figure if all those software startups can begin in a garage, this one can start in a shed in my backyard," she joked.

In May, Kaufmann launched Cardiovate, a technology startup that will create the stent-grafts to prevent post-surgery aneurysm leakage.

Kaufmann, who received her Ph.D. in biomedical engineering from UTSA in 2012, was sitting at breakfast one day in 2007, brainstorming dissertation topics with her professors, when the subject of aneurysms came up.

There are shortcomings in the current technology, they realized. Stent-grafts are tubes supported by metal mesh that are inserted into arteries, most commonly to support areas that have weakened, or aneurysms. Those that treat aneurysms can migrate. Blood travels around them, which can cause the aneurysm to rupture, leading to death.

So why not create a stent-graft that will encourage tissue growth?

"We looked at it from a tissue-engineering perspective," she said.

A typical graft is inserted into the artery and latches on with barbs pitted into the artery wall. But Kaufmann decided to see what would happen if she brought the wall to the graft, coaxing tissue development between the two.

It took almost six years to create a unique scaffold to promote tissue formation. Called a tissue-engineering scaffold for aneurysm repair (TESAR), it builds a tissue barrier between the blood and the graft after it is implanted. Once the scaffold is in place, the aneurysm stops expanding and the risk of rupture decreases.

After new tissue is in place, the scaffold degrades and is safely reabsorbed by the body.

"It was a very long process to get here," Kaufmann said. It wasn't until after the animal studies came back with better results than traditional grafts that she allowed herself to celebrate.

"I thought, hey, this might actually be something. It was pretty cool."

Her dissertation completed, she decided to turn the technology she had developed into a business.

"Everybody graduates and then works for some big company. That's the recommended way of doing things, to go to work for somebody and learn the ropes and then go do it yourself," she said. "But I thought the opportunity was there, and if you let technology sit for too long, it becomes obsolete. You have to jump on it while it's there. So I figured, why not?"

Shortly after she got her doctorate, Kaufmann won the University of Texas Horizon Fund Student Investment Competition, which provided $50,000 in seed funding for developing TESAR.

With the money, she is working

in her shed to get the business off the ground. Her next goal is to get the technology into humans.

"If we can do that, I will mark that as a success," she said. "If we can get anything past that, I will be ecstatic."

Kaufmann is working with College of Engineering Dean Mauli Agrawal and Steven Bailey, division chief for cardiology in the School of Medicine of UT Health Science Center San Antonio, to refine the manufacturing of TESAR.

They expect to make the product available for licensing in 2013. Ideally, it would then be available for use in vascular surgery after federal government evaluation.

"It could be on the market in five years," said Agrawal, adding that the marketing of the technology will depend on regulatory agencies in different countries around the world.

"So much technology dies coming out of the university," Kaufmann said. "You did all this work, you have five or six years of your life spent on this one little thing and then it doesn't go anywhere. But to be able to say, 'Hey, it's got a shot of being able to go somewhere,' that's pretty cool."

But the plan could still fail, something she admits scares her.

"Most startups fail," she said. "You have the odds stacked against you. They fail for some random thing that you never saw coming and you have no control over. It's a little scary that you can put all this [time and effort] into it and it can all fall apart."

But Agrawal doesn't think that's going to happen.

"Jordan is an example of the new breed of UTSA engineering student. She is highly intelligent, innovative and motivated," he said. "I am confident she will make Cardiovate successful and, most importantly, take this technology to the folks who need it—the patients."

Kaufmann is used to taking chances. Since she was young, she preferred getting involved with projects from their inception.

"I think you get to do a lot more that way. I like projects that I can start instead of jumping on someone else's."

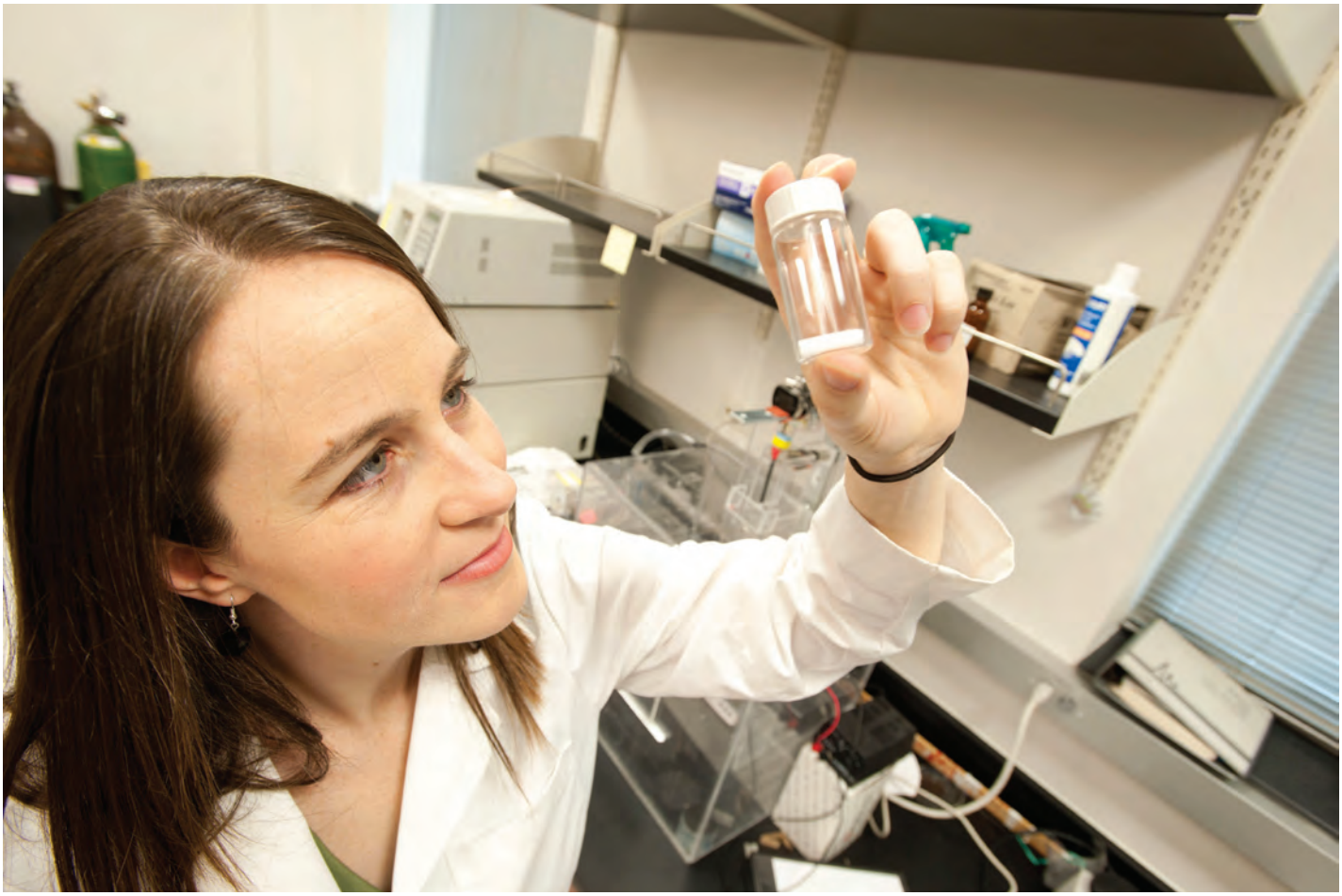
A lover of puzzles and problem solving, she knew from an early age that her future would involve engineering. But it was watching a classmate in elementary school who was unable to run with her friends because of juvenile arthritis that had her thinking about medical technology.

"I started thinking, how can we get her to where she can run without hurting?" she said.

"I don't think it occurred to me until years later that that was my first inclination that I could do something in this field."

What drives Kaufmann is the knowledge that she can have a lasting effect on someone's life.

"It's this idea that you can have an impact, whether it is making something for a friend who can't run or something like I'm doing now for aneurysms," she said. "It's kind of neat to be able to have that influence and be able to do something."



Engineering's 2012 Regents' Outstanding Teaching Award Recipients

In November 2008, the UT System Board of Regents introduced the Regents' Outstanding Teaching Awards for its nine academic institutions. The awards recognize faculty who deliver the highest quality of undergraduate instruction, demonstrate their commitment to teaching, and have a history and promising future of sustained excellence with undergraduate teaching.

The Regents allocated $1 million per year for five years for these teaching awards. It is intended that no fewer than 30 total awards are made each year. The awards are $25,000 and are believed to be among the highest in the nation for rewarding outstanding undergraduate faculty performance and innovation. Actual awards are made on the strength of individual faculty, not proportionally by campus.

Randall Manteufel

Associate Professor, Mechanical Engineering
College of Engineering

"My job is to get more students to be committed learners who can and will succeed in engineering," explains Randall Manteufel, associate professor of mechanical engineering at UTSA.

Like all good engineers, Manteufel has created a system in his classroom optimized for efficiency. He employs organization, clarity, technology, equity and involvement. By believing that each student has the highest motivation for enrolling in his class, his approach is one of respect and "hard but fair" grading practices.

The courses Manteufel teaches aren't easy. Although fundamental to advancing in engineering, they are fraught with difficult concepts and advanced mathematics. Lectures, however clear and organized, don't always reach every student. To better meet the needs of his students, he records his lectures for future viewing and teaches using a variety of graphics and visually appealing material. This way, his students can review things discussed in class and see the material first hand.

Manteufel is vigilant in ensuring his ideas are reaching the students. "I've come to know where students have conceptual misunderstandings. I know the muddy points. I have seen the same conceptual mistakes repeatedly made," he says. "I strive to hit these areas hard by explaining the material in more than one way. I may pause and say, I know this is hard stuff. I know too many students missed this on the exam last semester, so let me try and explain it another way."

It is through this methodology that Manteufel is such an effective teacher. He doesn't just present material and allow his students to sink or swim. Instead, he makes sure the information takes hold and offers assistance to those struggling with the concepts.

His dedication to his craft doesn't go unnoticed by the students. As one student wrote on an evaluation, "Dr. Manteufel is, hands down, the best teacher I have had in my entire college career. He exemplifies what it means to be a teacher and UTSA is lucky to have him on their faculty."

Can Saygin

Professor, Mechanical Engineering College of Engineering

Can Saygin is a professor of mechanical engineering at UTSA. His exceptional approach to teaching and his methodologies used in the classroom have earned him the admiration of students. His evaluation scores have consistently put him in the top categories for excellence in teaching and course quality.

Saygin's teaching philosophy is one that inspires his students to become life-long learners. As an educator, he sees himself as a facilitator, whose primary responsibility is to create a stimulating atmosphere in which learning, rather than teaching, takes place naturally, and students mature intellectually. Although he wants his students to understand the materials in the classroom, he also wants them to walk away with questions that go beyond the concepts covered. By fostering an environment of research and discovery, Saygin is able to set the groundwork for continued education.

"After all," Saygin says, "learning to learn is the ultimate skill my students are expected to have as knowledge workers in the information economy."

He understands that teaching requires versatility. Some students learn through sequential lectures, while others thrive in hands-on experiments. In all cases, he models his curriculum to engage the various methods of understanding.

According to one of his students, "Dr. Saygin addresses students' multiple learning styles in many ways. Presenting information as open-ended questions, rather than long lectures, enables a higher level of learning to take place and allows interpersonal learners an opportunity to get involved."

When he isn't in the classroom teaching, Saygin is also the director of the Interactive Technology Experience Center (iTEC) and is actively involved in the Center for Advanced Manufacturing and Lean Systems (CAMLS) as well as the Society of Automotive Engineers.

Heather Shipley

Assistant Professor, Civil and Environmental Engineering College of Engineering

Assistant Professor Heather Shipley is very passionate about undergraduate education. Through her rigorous teaching, mentoring, advising, and research, she offers some of the most balanced and beneficial courses in civil and environmental engineering.

To ensure all of her students are successful, Shipley tailors her courses to incorporate homework, group exercises, quizzes, exams and projects. These course objectives parallel program standards and expectations, which enable students to apply the fundamentals of engineering needed for their degrees.

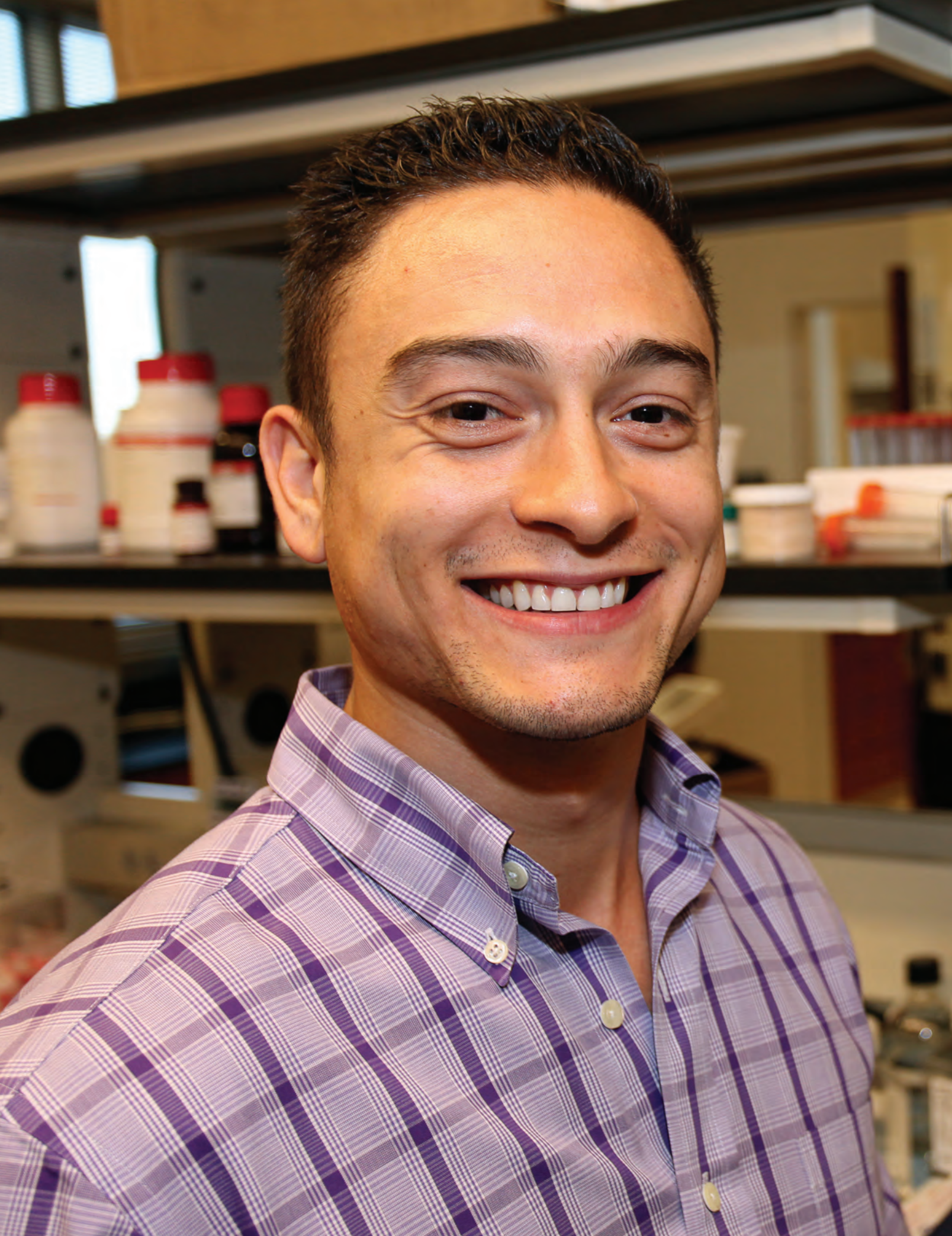
Shipley believes students need to be motivated beyond what they see in the classroom. They need to have first-hand knowledge of how her courses are used outside of academia.

"Engineering is the application of science; therefore, it is important that students get hands-on experiences with what they are learning in the classroom. I am very enthusiastic about taking my students on field trips," Shipley says. "Field trips allow students to compare what they have learned and how that can be implemented in real life."

Her dedication to the success of her students goes beyond helping those who take her class. In order to become a practicing engineer, students must first pass two tests—the Fundamentals of Engineering (FE) exam and the Professional Engineering (PE) exam. To prepare students for the FE exam, Shipley volunteers three hours every semester to instruct a review session.

Shipley also doesn't believe research should be the sole domain of graduate students. To her, research is complementary to teaching; because of this, she always involves undergraduates in her research projects. These undergraduates have presented posters of their work, attended conferences and have been published in academic journals.

Aside from her work in research and teaching, Shipley is also the faculty adviser for Engineers Without Borders and an adviser for students in her department.



INVICTUS

It's called "the soft spot." Every baby is born with one at the top of its head. The plates of the skull eventually fuse and it disappears within months after birth. It's as natural as nervous parents. But, sometimes, nature needs a helping hand.

If an unborn child's head rests against its mother's pelvic bone for too long it can become distorted, a condition known as plagiocephaly. The same thing can happen when a child born prematurely rests in the same position for too long; soft bones flatten under their own weight and fuse together in an asymmetrical shape.

The occurrence of plagiocephaly increased in the 1980s and 90s as parents desperately sought a way of preventing Sudden Infant Death Syndrome (SIDS). In 1994 the American Academy of Pediatrics (AAP) went so far as to implement the "Back to Sleep" campaign to educate parents, caregivers, and healthcare providers on ways to reduce the risk of SIDS. The AAP recommended placing newborns on their backs while sleeping. And while this led to an 80 percent decrease in SIDS, it also led to a 600 percent increase in plagiocephaly.

Today's treatments range from labor-intensive repositioning of infants in neonatal intensive care units (NICUs) to cranial remolding orthoses, restrictive helmets used to reshape the skulls of toddlers. In 2009, UTSA engineering students Daniel Mendez, Israel Cruz and Nick Flores thought there had to be a better way, and they used their senior design project to find it.

"It seemed like a relatively simple problem that could be solved easily and cheaply," Mendez says. "Having just finished an internship at Kinetic Concepts (a San Antonio-based wound care development and manufacturing company) and having gone through the whole FDA 510(k) process, coming up with a way of preventing plagiocephaly seemed like almost a no-brainer. I felt like I could do that."

Every nurse and neotologist Mendez and his team interviewed loved the idea of finding some way to prevent plagiocephaly instead of just treating it once it had occurred. They also agreed there was nothing effective currently on the market. The solution the UTSA team developed, the Aqua Bonnet was, like most inventions, born of necessity.

Rather than create some intricate mechanical device that would move a baby's head periodically or make a clumsy padded helmet, Mendez addressed the root cause of the problem: pressure against pliable plates in a baby's skull. He and his team designed an elegantly simple cotton hat, padded with gel inserts, which distributes external pressures equally around the skull and reduces the stress on the contact point.

The concept was so simple and practical, Mendez and his team entered it in UTSA's biannual $100K Student Technology Venture Competition sponsored by the Center for Innovation and Technology Entrepreneurship (CITE). Created to give students hands-on experience as early stage entrepreneurs, the CITE program teams senior business and engineering students to work throughout the semester to develop a technology demonstrator and business plan to successfully develop a new company.

Even though he was an engineer, Mendez was eager to be involved in the business planning portion of the project, so eager in fact, his team entered the competition without a business major.

"We decided to enter the competition on our own," he explains. "My teammates and I felt that, as long as we had the guidelines of the competition, we could do everything required. We wrote our own business plan. We did everything on our own. We entered the competition at the end of our second semester of senior design."

Even without a business specialist in their corner, Mendez and his team won the competition. The result was not only a new product, but a new career for Mendez. With a bachelor's degree in engineering in hand, he's now working on his master's in business administration.

A Chicago native who went to high school in The Woodlands, Texas, Mendez demonstrated some of his business savvy when he chose UTSA. "It's like an investment. The value of a degree from UTSA is going to increase over time. You put something in and, at the end, you'll get something even better."

But it's not all about business. The San Antonio lifestyle has had an impact on Mendez as well.

"There is a big mash-up of culture here. You have Texas culture, and you have a strong Hispanic presence, and you have your typical American culture, especially here around the university. So you get to see everything. It's like a miniature Austin without the congestion and the high prices."

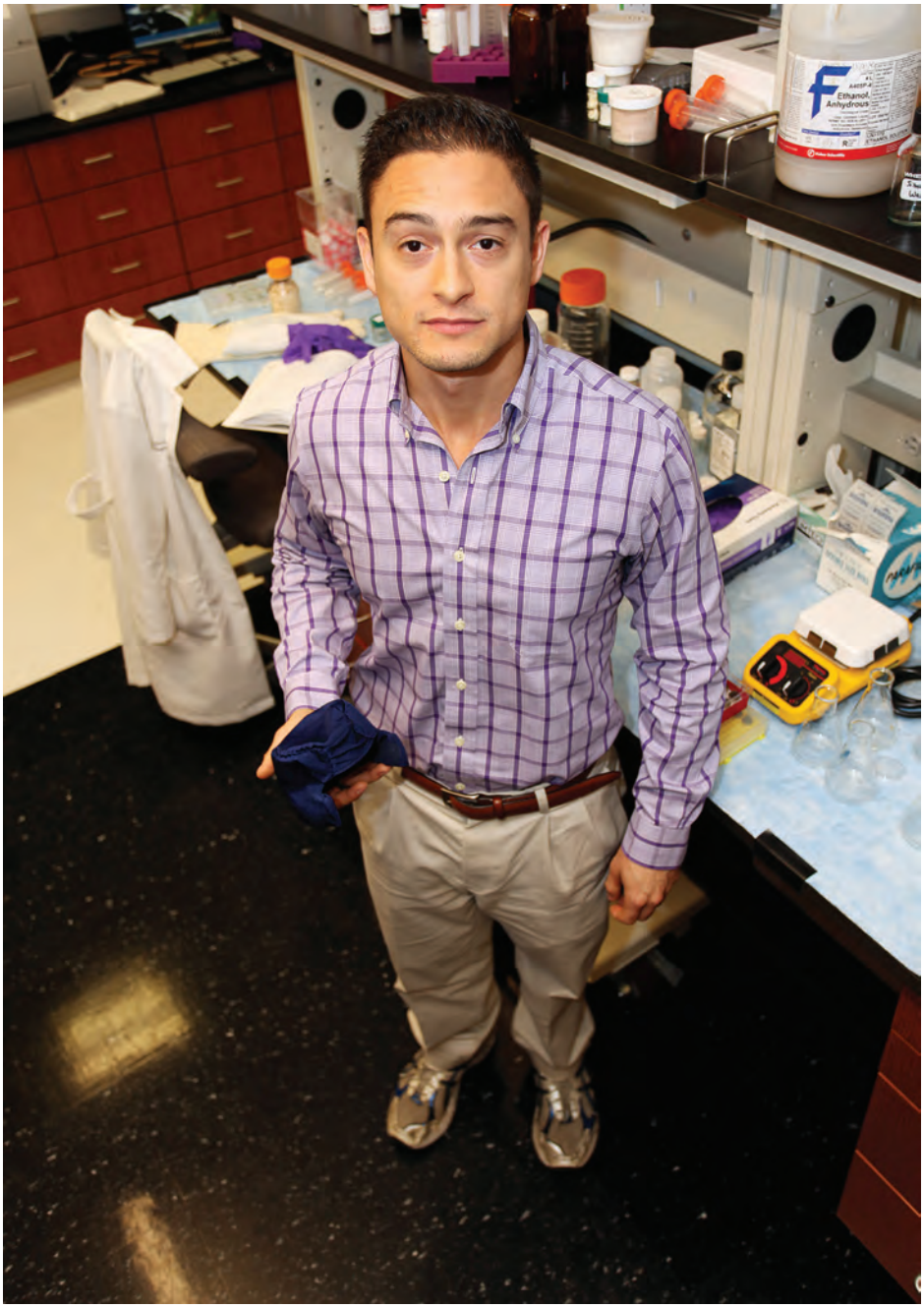
"I loved engineering. I've always been interested in how things work. The main reason I decided to go for an M.B.A. is because I think it will help me in running my own business.

"I've had the opportunity to see good management and bad management. I can always spot a problem, and I can usually create a solution for that problem. So instead of going the engineering route, I wanted to not only create a company, but run it as well. And in order to do that, I think it would add a lot of legitimacy if I got an M.B.A.

"After the competition I was able to meet some entrepreneurs here in San Antonio and they were able to connect me with some excellent resources; business resources, technology resources, capital resources."

Those resources were instrumental in Mendez' creation of Invictus Medical, the company he launched to bring the Aqua Bonnet to market. As chief technology officer, Mendez is conducting bench tests which have shown the device can potentially reduce the occurrence of head molding by 92 percent. The company is currently raising a half million dollars to manufacture prototypes, complete clinical studies, and submit its product to the FDA for 510(k) clearance.

But, in the end, Mendez isn't creating just a product. He's also creating opportunities some children never had. "This isn't just a cosmetic issue," he says. "It's also a neurodevelopment issue. A lot of children undergo motor skill development therapy because of plagiocephaly. Even when they're young, they have trouble tracking things with their hands and their eyes. Something had to be done."



Become part of UTSA® Engineering

Individuals enrolling in degree programs are given an opportunity to develop a strong background in the engineering disciplines and to learn the analysis, design and synthesis tools necessary to function well as active participants in both traditional and new and emerging areas of technology.

The College has excellent laboratory facilities where students receive hands-on instruction by faculty. Computer-aided design (CAD) facilities, including state-of-the-art workstations, are routinely used in all programs. Some classes are taught by adjunct faculty from local industries, giving students the opportunity to interact with engineering professionals engaged in relevant engineering practice. With small classrooms, professor interaction and amazing facilities students receive the best in education.

Faculty.....89

Undergraduate Students....2,334

Graduate Students.....400

Departments.....4

Degree Programs.....17

$50M

TSERI received a $50 million grant in 2010 from CPS Energy to fund green energy research.

Degrees Offered

BACHELOR'S

- Biomedical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Mechanical Engineering

MASTER'S

- Master of Science in Advanced Manufacturing and Enterprise Engineering
- Master of Science Biomedical Engineering
- Master in Civil Engineering
- Master of Science in Civil Engineering
- Master of Science in Computer Engineering
- Master of Science in Electrical Engineering
- Master of Science in Mechanical Engineering
- Master of Science in Advanced Materials Engineering

DOCTORAL

- Biomedical Engineering
- Electrical Engineering
- Environmental Engineering
- Mechanical Engineering

Gaming Rebooted

In the beginning there was Pong, and it was good. Then came Pacman, which begat Mario Brothers, which produced Street Fighter which birthed Call of Duty: Black-ops. And these too, were good.

The video game industry has come a long way since we were delighted by a tiny ball bouncing across a screen. What hasn't changed too drastically, however, is the way we play games. We still sit in a chair and use a controller to make our character shoot, stab or avoid whatever obstacle gets in the way. But now, engineering and business students at UTSA want to take that experience to the next level.

Engineering students, Igor Popov, Radford Byerly, Chase Chapman, along with business students Breanna Oliver and Josh Bellows, want our chairs to be as interactive as the games we are playing.

"We needed a senior design project, and we needed something that was fun and challenging to do," Popov says. "We considered other ideas but eventually settled on a flight simulator. We all play video games and this combined all of our passions."

What the team created was *The RowdySim 240*, a motion gaming chair for the next generation gamer. The original plan called for a sleek aluminum design with all of the trimmings, but with a limited student budget they built their prototype of wood instead.

"We basically had what was in our wallets to spend, and our original overarching budget was $1,250. Really none of us could assume that much, so we just started paring it down over and over and until we got it to the cheapest we could afford," Popov explains.

Although the chair looks more medieval than high tech, it could be the start of a new business.

Through a collaboration between the colleges of engineering and business, students are able to work on all aspects of bringing a product to market. As the engineers work toward building a functioning prototype, the business students are laying the foundation for a start-up company, including a business plan, marketing strategy and cost/benefit analysis. All of this is done through senior design projects and the Center for Innovation and Technology Entrepreneurship (CITE).

Since its creation, CITE has provided a pipeline for UTSA faculty, students and the surrounding business community to develop new technology ventures.

"What's unique about our program is we are bringing two disciplines together without changing the curriculum," says Anita Leffel, assistant director of CITE. "We are offering winnings of resources to teams that want to continue. They get money, services, office space, all of which comes to an equivalent of $100,000. And we do that twice a year. No other school does that. There is no one doing this kind of competition in the undergraduate level."

Using a combination of education, experiences, resources and support, CITE is focused on fostering the growth of new technology-based ventures. Education is focused on disseminating the basic building blocks of entrepreneurial activity through classes and short courses. Through hands-on activities, projects, internships and competitions, experiences are created that help unlock the inner entrepreneur in students, faculty and the public. CITE also coordinates resources for supporting early venture execution within the university or in collaboration with companies, and provides linkages to IP protection, incubation and funding that support the successful launch of new technology ventures.

Team *RowdySim 240* won third place at CITE's $100K competition, and although they didn't take home the grand prize they still won a small cash award. Their concept is still lucrative, and the business students have already found someone to manufacture a sleeker chair for around $600 apiece and plan to use their new-found business acumen to get the word out.

"The market for this product is relatively small because it's designed mostly for simulation games," said Oliver. "To bring it to market would require going to online forums, electronics stores, and demoing our product at exhibits and trade shows

nationwide. But, we saw the potential in this chair, and it's something we can bring to the gaming community."

Other teams that competed for this semester's $100,000 included:

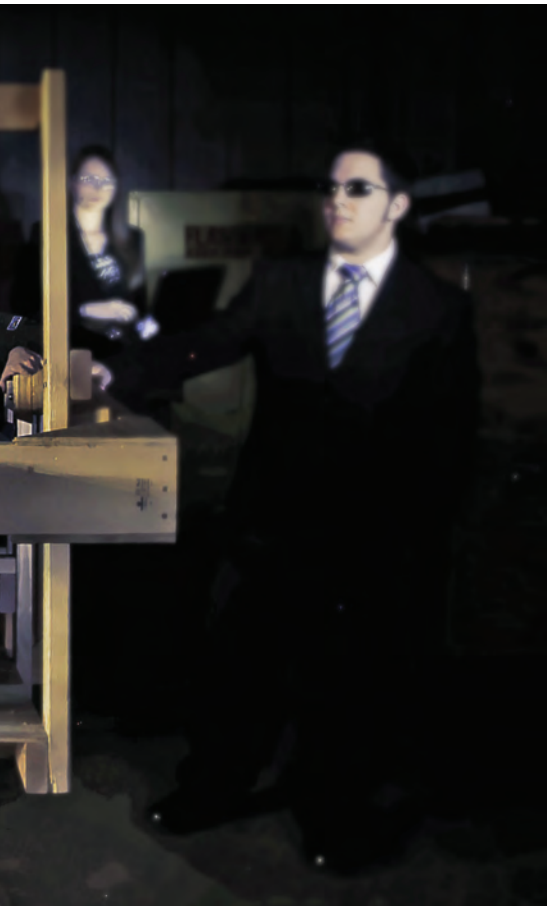
Intuitive Laparoscopic System (1st Place Winner)—a way for a surgeon to cool a kidney to the temperature proven to be the safest to prevent damage while performing kidney surgery.

Jack Rabbit (2nd Place Winner)—a remote control lift that allows one person to move an immobilized automobile from one end of a mechanic shop to another.

Gear Flux—an automatic transmission that can be added to a gear bicycle in order to display distance, fat and calorie burn rate much like on a stationary bicycle in the gym.

Minesweep—a way of finding trapped miners in the fastest and most efficient manner through a specialized location tracking system that focuses on people showing signs of distress.

Wind Hawk—a mechanism that will aid golfers in predicting distance and best angle to a hole by combining live weather (temperature and humidity) with wind speed and direction.



Commercializing Engineering

Even though Cory Hallam is officially part of the UTSA College of Business, he spends a fair amount of his time at the College of Engineering. What he's most interested in, though, is biology; cross-pollenization to be exact. The university's chief commercialization officer is committed to turning engineers into entrepreneurs.

As director of The Center for Innovation and Technology Entrepreneurship (CITE), Hallam is the link between creation and commercialization. When he joined the university in 2006, there was no connection between the two. Engineering students would spend a year completing their senior design project and then toss it aside. Business majors would go through the same process to create a business plan and then throw it away.

"There's nothing wrong with that," Hallam says. "It's great educational training but when I looked at it with the deans of the colleges of engineering and business, we wanted to put it in an entrepreneurial context."

Both deans thought their students would get more out of the experience if engineering and business majors worked on teams to develop and market real-world product prototypes. It's a concept Hallam became very familiar with at the Massachusetts Institute of Technology where he earned a master's degree in Technology and Policy and a Ph.D. in Technology Management and Policy.

"By developing a prototype and proof of concept, the seniors in engineering are giving the business students what most business students don't have beyond their paper plan—something to demonstrate, a product to show people. It changes the context of their coursework without changing the coursework itself," Hallam says.

"There are more than 2,000 entrepreneurship programs in this country. The vast majority of them are truly a bunch of classes," he adds.

For those who want to take their project to the next level, CITE's $100K Student Technology Venture Competition gives students hands-on experience as early stage entrepreneurs. Teams of senior business and engineering students work throughout the semester to develop a technology demonstrator and business plan to successfully develop a new company. The engineering students create a new technology product, and the business students create the business plan for commercialization of the product. The Harvard Business Club of San Antonio provides a mentor for each of the new venture teams.

"We show them the value of what they can do," Hallam explains. "With the 100 K competition we give out some cash awards up front, and if they win, some prototyping monies to go off and start their company. We don't expect most to do that initially, but the least thing they can graduate with is a prototype, a business plan, a potential patent, and the experience, so when they go to a job interview they can talk about how they tried to launch this new product."

Multiple start-up companies have already spawned from his idea and students' hard work. He's far from complacent though. Hallam would like to see more colleges across campus become integrated with this mode of thinking, and he is also expanding this type of innovation toward graduate programs.

The key to the program's success, says Hallam, is alumni support.

"I think ultimately if we are going to be a Tier One university, attracting the best students, creating the best graduates, we have to look at the best universities across the country who have a strong, strong alumni network. There is a tremendous satisfaction of seeing these young tech entrepreneurs understand what alumni are telling them in terms of business acumen or experience. I think if we can really ramp up the level of alumni involvement and support, we can push it forward even faster."

In Step with

Engineering

Extracurricular Activities Have Value

Randy Lankford

Computer engineering major Max Guiterrez wasn't sure what he'd gotten himself into when he signed up to be part of UTSA's first-ever marching band.

When Guiterrez's family moved from Brownsville to the Bahamas following his sophomore year of high school, he thought his days in a marching band were over. "They didn't have a band program of any kind my junior and senior year of high school. So I sort of got over it. I kind of missed it for awhile, but just sort of forgot about how much fun it was."

It was while researching engineering schools in the summer of 2011, that Guiterrez learned UTSA would be launching its inaugural marching band that fall. "That sounded kind of cool," he recalls. "I thought I wanted to be part of building something from the ground up, creating something new. I hadn't played music in a while and I really missed it. And then, when I heard the band would be performing in the Alamodome, I really wanted to be a part of it."

Then came the reality.

"When we marched out of the tunnel at the first game with 50,000 people yelling and cheering, that was definitely a rush," Guiterrez laughs. "My heart was pounding so hard I couldn't even tell if I was in step."

Guiterrez, now a sophomore, is among a number of engineering students who have found a way to balance the academic rigors of a scientific major and the artistic satisfaction of a musical outlet – a balance researchers have found to be an important factor in collegiate success.

"I try to arrange my schedule so I only have classes on Monday, Wednesday and Friday," explains Guiterrez. "That's the time I do most of my school work. Then on Tuesday, Thursday, Saturday and Sunday I can spend time on my music and still study for my classes.

"My strengths are in math and science but I love music. I like being active and this gives me the chance to pursue music and support the school."

Margo Gardner, a research scientist at Columbia University's National Center for Children and Families, has found extracurricular activities are not only enjoyable, but also beneficial to students. Using data from the 1988 National Education Longitudinal Study, Gardner calculated the odds of attending college were 97 percent higher for youngsters who took part in school-sponsored activities than for those who didn't. Gardner also determined the odds of completing college were 179 percent higher for those who participated in extracurricular activities.

Associate Director of Bands Ron Ellis, who heads the UTSA athletic band program, believes non-classroom experiences are just as important a part of college life as studying. "Being in the band and being a successful student go hand-in-hand," he explains. "I want to see all these kids graduate, not just the music majors. I want to see engineering students graduate. I want to see business administration students graduate. I want to see all our students become well-rounded college graduates.

"Parents ask all the time about the time commitment to being in the band. Studies have shown the odds of graduating are no better for a student who spends all his time studying and one who spends all his time partying. There has to be a balance. We want our students to experience all of college life, not just academics."

Before coming to UTSA in 2010, Ellis was an assistant director of bands at the University of Central Florida where he built the marching band program from a group of barely 100 to a performing unit of more than 325. He also currently serves as a music director for Walt Disney Attractions Entertainment in Orlando, Fla. where he has directed the Toy Soldiers and the Student Musician Program since 1993.

"Engineering, math and science students tend to be some of the more creative people out there," says Ellis. "There's an orchestra in Boston, a world-class orchestra, that's all doctors. None of them majored in music. They just like to play. I believe art and science go hand-in-hand. It's a no-brainer to me. Everyone wins."

The UTSA athletic bands are made up of a cross-section of the student population. Only about 20 percent of the band's members are music majors. There are no auditions—everyone is welcome to participate.

"The biggest surprise to me," says second-year civil engineering student Jacob Poell, "was the number of shows we had to learn. In high school you only learn one basic show. At the college level you learn about six different shows. You don't spend a lot of time learning the music. You should already know how to play. We spend most of our time learning routines."

Poell, a Smithson Valley High School graduate, admits he loses some sleep due to his busy schedule. "I don't get to go out with my friends very often. My social life revolves around the band. I'm a big sports fan and this is a way of supporting the UTSA athletic program. I'll definitely be in the band again next year and I would certainly recommend it to incoming students. Between rehearsing and performing, I'd say the band takes between 12 and 15 hours a week. Then I have a part-time job. So between classes, studying, band and working, I don't have a lot of down time."

Nor does biomedical engineering major R.J. Vaughn. Now in his junior year, Vaughn has seen the athletic band grow from just an idea to a thriving community.

"Expectations were high when we first started. People were psyched about having a football team and everything that goes with that, a band, cheerleaders, pep rallies, tailgating, all that stuff. There were some high expectations," says Vaughn.

"Then, when the program had the success it did in its first year, that just ramped up expectations even more. We have high expectations of ourselves. We're taking it to the next level this year."

For Vaughn, music is recreational, a way to express his creative side. It's also a way to spend time with other musicians.

Vaughn and his bandmates use their shared experiences as both motivation and support system. "The social circle is part of the appeal. We have a very close-knit group. People I play with in the band understand the rigors and sacrifices you have to make to be there and they're very supportive. They understand when you have to study and when you have to rehearse and we find time to spend together to just hang out and have fun.

"I learned time management in my freshman year. It was difficult at first but I learned how to balance work and relaxation and have time for both. Honestly, it can be a little rough for anyone, regardless of what your major is. As long as you can find that balance, things will work themselves out."

Bianca Dumlao, a freshman mechanical engineering student, wasn't on the UTSA campus when the Spirit of San Antonio was being formed. She was marching with the Kempner High School band in Sugar Land, Texas. In fact, she was the drum major at KHS for her junior and senior years – a passion she's finding difficult to give up.

"I was going to quit band after high school to concentrate on my studies, but I saw how much fun everyone was having so I signed up," says Dumlao. "I'm so glad I did. I wouldn't have it any other way. It's more fun than high school. In high school it's more competitive. We went to different contests and our main focus was on University Interscholastic League (UIL) band competition. At the college level, it's more about spirit and supporting the team. Everything we do on campus and in the community is about supporting the team."

Like most non-music majors, Dumlao doesn't take any music-related courses other than participating in the band. As a freshman however, she's leaving her options open. "Right now I'm just participating in the band because it's fun. I might look into a music minor but that's something to think about in the future."

Vaughn, a saxophonist who intends to march again in his senior year, sums up his collegiate band experience with a not-surprisingly engineering-related analogy. "There's an old saying about 'the sky's the limit.' How can you tell us the sky's the limit when we've already put our footprint on the moon?"

ROLDAN DOMINGUEZ

Mechanical Engineer
Houston, TX
Age 20
Junior

What brings you to UTSA?

Originally I was going to come to UTSA, but they didn't have more dorms available, and I was not ready to get an apartment. So I went to Austin first. I actually just transferred from UT Austin when I got into engineering here and decided that was what I wanted to do.

Why did you want to be an engineer?

Growing up I just basically took apart all my old toys and everything, and I like cars a lot, you know so I figure this is the right way to go and I guess I can do a lot of things on this degree and in a lot of different fields.

What's your favorite class?

They are all kind of my favorite so I don't know. I kind of like the numerical methods class that I am taking because that's the only class that I work on the computer a little bit, you know working in mathlab.

Other than engineering, what else do you do?

I like skateboarding. I mean I started riding in the fourth grade, but I didn't learn any tricks until fifth or sixth grade. My older brother started and then my younger brother got into it. We all started at around the same time, and they were both better than me. I just had that drive to be better than them, and after a long time I was, but mostly because they stopped.

Ever been in any skateboarding competitions?

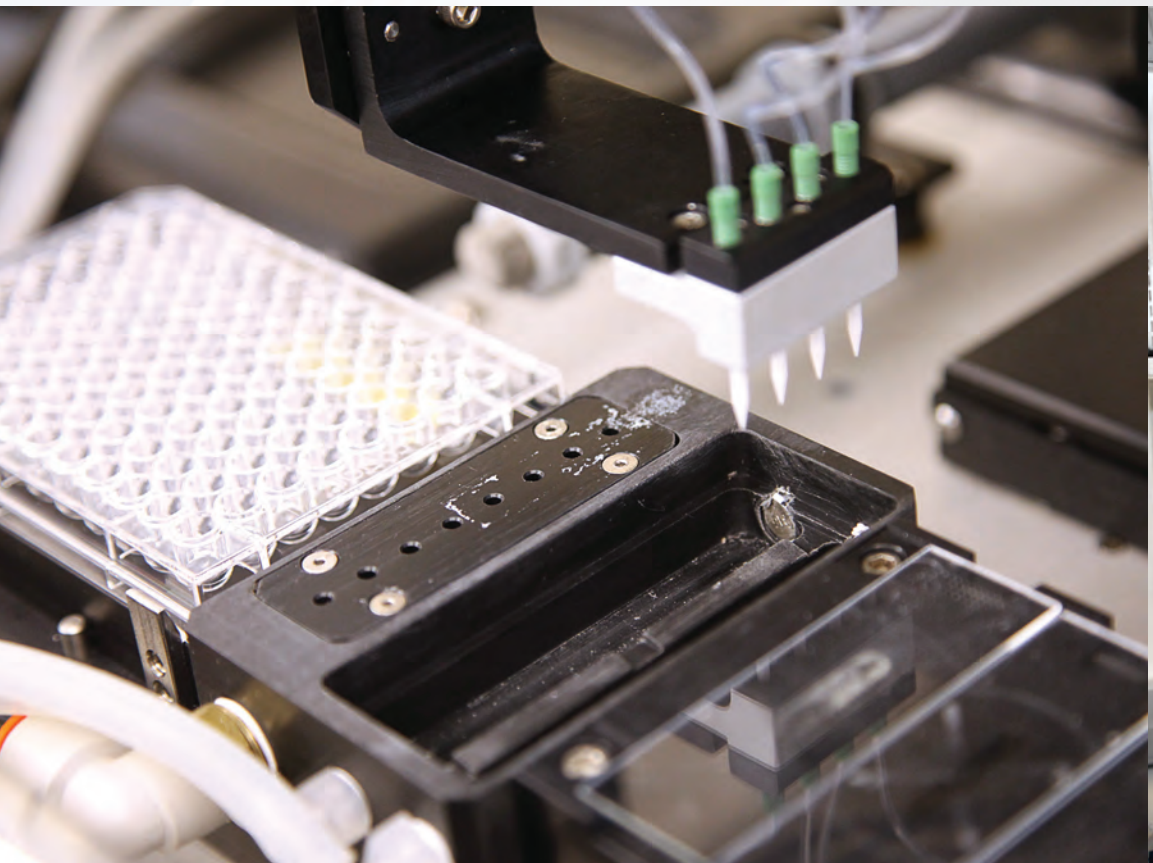
I went to a couple that they call *A Game of Skates*, where you just do tricks. I went to two of those and I got second place. I also went to an actual contest like two years ago but I placed 25th out of 50 people. I just did it just to do it.

What would be your dream job?

Dream job… Probably something with skateboards. I would love to like design a stronger skateboard or wheels that last longer. Or, maybe have a big part in the design of a car, and one day point out to my brother that I helped design that car, you know. I think that would be pretty cool.

Microbial War in Engineering

The battle to reduce the deaths caused by nosocomial, hospital-acquired, infections has reached San Antonio. And the new battle lines are being drawn right here at the UTSA College of Engineering. Under the guidance of biomedical engineering professor Anand Ramasubramanian and biology professor Jose Lopez-Ribot, Ph.D. student Anand Srinivasan is creating a faster, more cost-effective way to test drugs on fungal biofilms. His work could allow doctors to test thousands of drugs within hours rather than days, saving both money and lives in the process.



People expect hospitals to be clean, safe and a place to heal. But what if the hospital isn't clean? What if it isn't safe? What if, instead of healing, a patient dies? That's the nightmare scenario UTSA's Anand Ramasubramanian, Jose Lopez-Ribot and Anand Srinivasan are working to end.

According to the Centers for Disease Control, approximately 1.7 million nosocomial, or hospital-acquired infections (HAIs), from all types of microorganisms, including fungus, cause or contribute to 99,000 deaths every year in the United States. The development of such infections is actually facilitated by a hospital environment and can be transmitted to patients whose resistance is compromised.

While the medical community is fighting back, testing thousands of fungal biofilm samples gathered from hospital surfaces throughout the world is time-consuming and costly.

When Ramasubramanian, a biomedical professor and expert on high-throughput medical sample analysis, and Lopez-Ribot, a biology professor and pioneer in the field of fungal biofilms, met an idea was born. What if they could combine their research to develop a way of processing thousands of fungal biofilm samples at a time? It could be a game changer.

"It was clear we needed better drugs to treat the infections caused by fungi," explains Lopez-Ribot. "Fungal biofilms is a field I've been working in for a long time and the one thing that has been stopping me from working faster is technology. The expertise Dr. Ramasubramanian provided with his cellular chips was the perfect scenario to combine with my expertise."

Srinivasan, a biomedical engineering doctoral candidate who came to UTSA from India for the opportunity to work directly with the university's professors on healthcare-related research, was enlisted based on his work on a chip capable of holding thousands of fungal biofilm nanocells which could then be tested against various drugs.

The previous process required technicians to use pipets to place sizeable samples into a 96-well tray which was then tested by hand. The backlog created by the enormous volume of samples to be handled could delay test results by up to a year.

"A high-throughput technology offers a robust platform for rapid, cost-effective, easy handling and automated analysis," says Srinivasan. "Compared to the current technology, our chip technology is controlled by a robotic printer that prints cells, drugs and uses 2,000 times fewer reagents while still providing reliable results. One such chip is equivalent to a dozen 96-well plates, so imagine the number of experiments that could be done using one chip."

While their current project focuses on fungal biofilms, there is nothing stopping the threesome from expanding into other areas of microbial research. The multidisciplinary project can be applied to the process of drug discovery for any pathogen or mammalian cell model. For Srinivasan, who developed the process and is amazed by its potential, the work is a bit more personal.

"I call it 'the next generation' of in vitro assay platform for drug discovery," Srinivasan explains. "The CaBChip is a powerful and revolutionary model in identifying novel drugs from large drug libraries, with a potential of changing the phase of conventional high-throughput screen strategies. This model can be extended to high-throughput assays, enzyme inhibition and cytotoxic assays of all microbial flora of fungi and bacteria."

Based on preliminary estimates, the cost of drug testing will be a tenth of what it is right now, and increasing the speed of drug tests means patients can receive medical care faster than ever before.

The work done by this UTSA team is, indeed, a game changer.

Dean's List Spring & Summer 2012

The Dean and faculty of the College of Engineering congratulate the following undergraduates for making the Dean's List. To attain this honor, these students achieved a 3.75 or higher grade point average while registered for the spring and summer semesters of 2012.

CIVIL ENGINEERING

Alkharraz, Abdullah SO
Almutairi, Yousef FR
Alnajdi, Khaled SO
Alrashidan, Ahmad JR
Alsuwidan, Khaleefa SO
Azouggagh, Karim SR
Azouggagh, Najib SR
Blanco, Martin SR
Brunette, Nathanie IJR
Burdick, Madison FR
Byers, Steven SR
Castanon, Ruben JR
Chavez, Celeste SR
Cui, Yingjie FR
Faust, Louis JR
Hoffman, Travis SR
Krause, Ryan JR
Laws, Dustin JR
Lemons, Ross SR
Lopez, Julio JR
Patrick, Robert SR
Perez-Milicua, Luis SR
Reed, Taylor SR
Reyes, Delmy SR
Schmidt, Kevin SR
Schwille, Katherine JR
Semora, William SR
Shattuck, Paul SR
Sun, Hongye FR
Vogler, Ryan SR
Woodruff, Jackson SR
Bryant, Jennifer SR
Faust, Louis SR
Flores, Felipe FR

ELECTRICAL ENGINEERING

Castro, Marc SR
Dominguez, Richard JR
Duggirala, Moses JR
Henk, Shane JR
Kocian, Garrett SR
Putri, Rani JR
Ramaekers, James SR
Rios, Heleodoro SR
Sanchez, Steve SR
Whitehouse, Joseph JR
Wiatrek, Bryan SR
Spikes, Clarence SR
Alhawas, Abdullah JR
Amador, Delfino SR
Caverte, Anne Margaret SR
Cochran, William SR
Cruz, Frankie SR
Duggirala, Moses SR
Flores, Noe SR
Garza, Frank SR
Gonzalez, Josues SR
Hower, Bryce SR
Jaeger, Rico SR
Kajonpong, Punsak SR
Kocian, Garrett SR
Kodinariya, Shrey SR
Mcdaniel, Wesley JR
Mendez, Jose SR
Olear, Usifo SR
Patel, Ankilkumar SR
Ramirez, Miguel SR
Rodriguez, Eduardo JR
Vernor, Dusten SR
Whitehouse, Joseph JR

MECHANICAL ENGINEERING

Badshah, Huzeifa JR
Beck, Griffin SR
DeSamaniego, Jairo JR
Doemel, Jonathan SR
Gomez, Miguel SO
Guthmann, Oliver SO
Hampshire, Alexandra SO
Lochte, Frederick SR
Lovelady, Kayla SR
Medintz, Jessica SR
Meineke, Aspen FR
Mojica, Pedro SR
Morales, Jesus JR
Parks, Kathryn FR
Rivera, Michael SR
Rodriguez, Eduardo SR
Schaefbauer, Alyssa SO
Silvester, Conrad SR
Smith, Andrew SO
Syrio, Hugo SO
Taylor, Jordan SO
Varley, Daniel SR
Arinze, Chukwunonso JR
Arriaga, Samantha JR
Badshah, Huzeifa SR
Bailey, Matthew SR
Bhakta, Amit SR
Carlton, Willis SO
Carpenter, Clark SR
Doemel, Jonathan SR
Ferry, Ryan JR
Marymee, Stephen SR
Morales, Jesus SR
Mosely, Levi JR
Rodriguez, Ricardo SR
Starling, Jose SR
Thomson, Aaron SR
Ward, Matthew JR
Watson, William JR

PRE ENGINEERING

Aguero Villarreal, Victor FR
Alfaro, Karem SR
Alkhayat, Hussain FR
Alshammari, Hashim FR
Alteneeb, Abdalrahman FR
Barrera, Gustavo FR
Battle, Justin FR
Caldera, Mylena FR
Chong-Macias, Jessica SO
Dadari, Shawyan FR
De Greef, Angela SR
Dhuka, Nomaan FR
Failakawi, Yousef SO
Fick, Chase FR
Flores, Maricel FR
Gibson, Derrick FR
Guevara, Jorge SO
Heaps, Aaron FR
Ibarra Aleman, Omar FR
Itz, Nathaniel FR
Jauregui, David JR
Jefferson, Isaac SO
Johnson, Robert SR
Lessig, Matthew SO
Mauritzen, Andreas FR
Naville, Dawn FR
Nikjoo, John'Yar SO
Opusunju, Gabyhayes SO
Reyes, Benjamin SO
Robleto, Francisco FR
Rodriguez, Jennifer SO
Sadeqi, Yousuf FR
Schwartz, Brandon FR
Shalab, Basim SO
Talamas, Oscar FR
Trevino, Abraham FR
Trevino, Kristopher SO
Valencia, Ilse FR
Vargas, Alejandro SO
Werzner, Konrad FR
Ahmadi, Alireza SR
Al Raddadi, Naji FR
Alodan, Mohammed FR
Chong-Macias, Jessica SO
Gates, Dillon SO
Grams, Travis SO
Guevara, Ricardo JR
Haynes, William SO
Hester, Zachary FR
Horstman, Travis SO
Ibarguen, Ian JR
Naville, Dawn SO
Ozuna, Evan SO
Pena Reed, Daniela FR
Serrano, Hector SO
Vazquez, Rigoberto FR

BIOMEDICAL ENGINEERING

Isaac, Kameel SO
Morovitz, Alexander SO
Thornton, Rita JR

COMPUTER ENGINEERING

Lucas, Justin SR
Priatmadi, Anggi JR

UNDECLARED ENGINEERING

Abebe, Natnael SO
Castillo, Jair FR
Fernandes, Bernardo FR

ENGINEERING BRILLIANCE

Thousands of Reasons

With more than 2,000 undergraduate and 400 graduate students in 17 degree programs, the College of Engineering is a driving force behind The University of Texas at San Antonio becoming a Tier One Institution. We are consistently voted one of the top colleges for Hispanic students. With small classrooms, professor interaction, and state-of-the-art facilities, students receive the best in education.

To help students take full advantage of everything offered in the College of Engineering, our goal is to provide scholarships and fellowships. If you need a reason to give, we've got thousands of them. To give to the College of Engineering, please visit https://giving.utsa.edu.

"I am confident that our rapidly growing and exciting programs will provide some of the future scientific breakthroughs that will keep our nation at the forefront of technology."

C. MAULI AGRAWAL, Ph.D.
Dean, College of Engineering

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Paving the way for Engineering

Richard Howe, a self-proclaimed accidental academic, came to UTSA in 1976 as the director of the division of environmental studies. Within a few weeks of his arrival in San Antonio, he was given a personal tour of the city by Henry Cisneros so he could better understand the needs of his new home. Having had a background in city politics and with a fair amount of volunteer work under his belt, Howe soon came to understand the inner workings of San Antonio.

"I had an introduction to this city that precious few would ever have," Howe says.

And with his predilection as a "political engineer," he realized that without an engineering school, San Antonio couldn't be a player in the emerging technology industry.

Within four years of arriving at UTSA, he and Mario Gonzalez were tasked with contacting the UT Systems Coordinating Board and began the process of bringing an engineering program to San Antonio. With the help of other influential San Antonians like Lila Cockrell and Henry Cisneros, Howe and Gonzalez were given the green light to establish a bachelor's program in civil, electrical and mechanical engineering.

"The greatest success of the engineering program at UTSA is it simply being here and providing the people of this region access to an engineering education," Howe says.

Howe is still a strong advocate for engineering and providing quality education to those who might not otherwise have access to it. He recently spoke about his experiences at UTSA during the Engineering Program's 30th Anniversary event. He emphasized the importance the engineering program had on the city and expressed his great pleasure at being an integral part of establishing it.

To see photos of the 30th Anniversary or to find out more about what the College of Engineering at UTSA is doing, like us on Facebook at www.facebook.com/utsaengineering or visit our website at http://engineering.utsa.edu.