Service-learning projects change lives, develop better engineers

**Engineering and science students at The University of Tulsa have found the secret to success — and it has more to do with give than take.**

Using the skills they learn both inside and outside the classroom, ENS students enrich the lives of those around them.

“We have developed a culture that places an emphasis on service to one's community,” said Steven Bellovich, dean of the College of Engineering and Natural Sciences. “We believe that while helping others, you discover there is more meaning to life than just having a paycheck and a great career.”

To provide students with a well-rounded perspective, the college has woven community service into its curriculum, keeping students connected to real-world problems they can help solve.

“Our students often see how fortunate their lives have been,” Bellovich said. “Then they develop a commitment to giving more in the world than they are taking. We want to recognize the value of that.”

Whether in classrooms, laboratories, honor societies or extracurricular clubs, ENS students are making a difference in others' lives, and transforming their own as well.

**The ripple effect**

When he came to TU in 1984, Steve Tipton, professor of mechanical engineering, began looking for ways to implement a service-oriented philosophy into the undergraduate program.

Soon Tipton had assigned his students to build a tricycle for a child who was paralyzed on one side of his body. He saw how excited the students became about the project and how they developed a strong bond with the child they were helping.

“One student, Tamara Brown, became very close with the child,” Tipton said. “When Tamara died unexpectedly a few years later, I went to her funeral and saw the photos of her senior project were displayed. What she did in that class didn’t just earn her credit — it was an important part of her life.”

The impact of that first project rippled throughout the TU community, with university friends and alumni contributing funds to support projects. The gifts have provided a vital source of support through which the program has flourished.

“Before these gifts were made, we just scrounged for money and donated spare parts,” Tipton said. “The funding from alumni and friends has allowed us to do a lot of great projects over the years.”

**Unforgettable moments**

When six-year-old Abigail Laipple began to move of her own free will for the first time in her life, there wasn't a dry eye to be found.

Because of an auto accident, Abigail suffered a stroke while still in the womb and was born with cerebral palsy. As part of their 2006 senior design project, a group of electrical engineering students developed a specialized wheelchair for her.

“Abigail’s mother was amazed after she got the wheelchair,” said electrical engineering professor Kaveh Ashenayi. “Abigail was chasing her brother and sister around.”

Engineering students craft an all-terrain vehicle for one unstoppable seven-year-old

Dru Baker knows no boundaries thanks to the ingenuity of TU engineers. For their senior design project, mechanical engineering students designed, built and tested an all-terrain vehicle that could take her wherever she wanted to go.

“I’ve always wanted to use my engineering knowledge to bless others, and when the project for Dru came along, I knew I wanted to be a part of it,” said Susan Radwansky, the project’s team leader who graduated in May 2009. “When we met her, her smile and spunky personality were contagious.”

That spunk served Dru well when two years ago, a car wreck paralyzed her from the chest down. Her family has struggled to adjust to and help her in her new life.

“After a couple of years of shock, sadness and adjustment, now we’ve started focusing on solutions,” said Kenneth Roberts, Dru’s uncle and a TU associate professor of chemistry.

Roberts contacted spinal cord injury researchers to find out what his niece’s options might be. Although the experts said the stem cell technology to help Dru wasn’t ready yet, when it would be, she needed to be in top physical shape to be a candidate for clinical trials. A specialist from the Stephens Spine Institute at the University of Arkansas Medical School said the best thing to do was to find an exercise wheelchair. Although similar exercise equipment was available for adults, he knew of no company that made them for children.

“So he told me I’d have to make it myself. That’s when I went down to the mechanical engineering department and pitched the idea to Steve Tipton,” Roberts said.

Dru and her family met with students to present their story as an option for the spring 2009 senior design project.

“We were talking about improving her quality of life and getting exercise,” Roberts said. “When we turned to Dru and asked her what functionality she wanted with the new chair, she said, ‘pink camouflage.’”

And pink camouflage sums up Dru perfectly. The students were hooked by her infectious spirit, and they took on her case with gusto — a dedication that led to an unexpected twist.

While conducting research into materials for the chair, the TU team contacted Renegade Wheelchairs, a company specializing in all-terrain wheelchairs for adults.

After hearing Dru's story and realizing the need for children’s alternatives to conventional chairs, the company’s management decided to design and build a chair sponsored by

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TOOTHLESS, FIVE-WHEELED WONDER
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Renegade Wheelchair and supported by the charity, Cheers from the Heart.

“I totally give the TU students credit for Dru’s new chair, and I hated telling them about Renegade’s proposal,” said Rebecca Baker, Dru’s mom. “The Renegade chair has changed her life, and we will be forever grateful to them.”

While the customized wheelchair was a blessing for Dru and her family, it left ME students minus a senior design project. With six weeks left in the semester, the team regrouped to develop a special five-wheeled cycle that Dru could ride on the street with her friends.

“The students were a little disappointed, but I said it was the best thing to happen to them because it made them think in another direction and develop something different and out-of-the-box,” said John Henshaw, professor of mechanical engineering.

The bike features a safety harness, flexible side mirrors, lightweight Plexiglas back with a custom embroidered cushion, brake system and TU student-designed graphics. Powered by arm and chest muscles, the bike challenges Dru’s upper body and helps her build the physical strength she needs as stem cell therapies develop.

At the unveiling of the bike at the Reynolds Center arena, Radvansky surprised Dru’s family by riding the bike out onto the basketball court and zooming around to show its versatility.

“I like it, and the color’s great,” Dru said with a wide, toothless grin as she checked out her new bike’s features. “I can push the mirrors up and bend them like that and like that. I can use them to see cars when I go out on the road.”

Her sister, Ivee, hovered nearby, waiting anxiously for her turn on the one-of-a-kind bike.

“The whole experience has been really interesting, and we’ve gotten to meet lots of new people,” Ivee said. “I’d be cool to be an engineer some day.”

SERVICE-LEARNING PROJECTS CHANGE LIVES, DEVELOP BETTER ENGINEERS
Continued from front page

For the past several summers, a popular interdisciplinary program at TU, called Sense-Sational Science, has trained local teachers how to incorporate sight, sound, smell, taste and touch into everyday lessons.

Chemistry Professor Bob Howard began the program a few years ago, and works now with Geosciences Professor Bryan Tapp and Education Professor David Brown on the interdisciplinary curriculum.

“The program is about giving teachers creative ways of presenting science to their students,” said Howard. “They get exposed to resource’s available in the community and professionals willing to share their unique expertise.”

Sense-Sational Science partners include Osage Nature Center, Gilcrease Museum, Tulsa Zoo and Living Museum, Oklahoma Aquarium, and the Tulsa Air and Space Museum and Planetarium.

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Sense-Sational Science partners include Osage Nature Center, Gilcrease Museum, Tulsa Zoo and Living Museum, Oklahoma Aquarium, and the Tulsa Air and Space Museum and Planetarium.

Another TU initiative is making the rule, “Look, don’t touch,” obsolete. Computer science students are working with the college’s Partner-in-Education school, Emerson Elementary, to incorporate tactile learning with technology.

Graduate student Cody Pollet is leading the effort to develop three touch-screen computers with child-friendly software that allow several students to interact simultaneously on each computer. Pollet plans to begin testing them in the classroom this fall.

Role models for future ENS students
Sharing their passion for math and science has led many ENS students to role models for underrepresented groups in their fields.

TechGirls is a 12-week YWCA program for girls that introduces science and technology in a motivating and creative way.

“It’s about showing them that science is fun, and they can do it,” said Computer Science Professor J.C. Diaz. “They get involved in science at a younger age, which prepares them for science in high school and beyond.”

The program empowers many girls who had never considered college or a career in technology before visiting TU. Simply being on a college campus and visiting with successful and friendly students is a great experience for these students, who often come from at-risk situations.

Introducing science and technology to girls at a young age is also the goal of the campus chapter of Society of Women Engineers (SWE), which sponsors two science and technology events for Girl Scouts.

“The girls learn about statistical distribution by sorting M&Ms, or learn about polymers by creating their own goop,” said Christi Patton Luks, associate professor of chemical engineering and SWE advisor.

If students would rather have someone else create their goop for them, TU students can help with that too. Mentoring high school robotics teams is part of the senior-level electrical engineering design and implementation course.

Student-mentors teach high school students how to build a robot for the FIRST national robotics competition. TU has worked with Jenks High School for 11 years and the Booker T. Washington High School for seven years.

Taking service to the community
Outside of Keplinger Hall, ENS students take a strong role in campus-wide service groups. Alpha Phi Omega (APO), a national service organization, has been a gateway for many ENS students to assist local organizations and campus efforts.

ENS promotes the philosophy that the best way to prepare for solving future problems is to participate in solving today’s problems,” said Ron Bonest, assistant professor of biological sciences and a faculty APO advisor.

TU’s chapter of Beta Beta Beta, the national biology honor society, participates in a variety of community service activities like helping Emerson Elementary students direct preserved animal organs, something they wouldn’t have been exposed to otherwise.

Tri-Beta students have removed barbed wire from the Tall Grass Prairie Reserve, taught Brownies about science, donated funds to the Oklahoma Aquarium, and worked with high school students at the ENS Open House.

“These are the best and brightest students,” said Karen McMahon, instructor of biological science. “But, in spite of a demanding academic schedule, they make time for service because that is the culture here.”

Faculty and students agree that service-learning projects feel good, but they also teach marketable skills, like how to develop turnkey projects using a wide range of talents.

“Students apply what they’ve learned to real-world situations,” Bellovich said. “In those situations, there are no answers in the back of the book. They have to know what they are doing.”

For information on how to support service initiatives in the College of Engineering and Natural Sciences, contact Miranda Smith at (918) 631-3287, or miranda-smith@utulsa.edu.
‘Green crude’ research at TU looks beyond biofuels

TU researchers in partnership with Sapphire Energy have succeeded in producing gasoline from “green crude,” a crude oil equivalent derived from algae via renewable processes. The promising technology includes a patent-pending refining process developed at TU. Fuels derived from green crude have been used successfully in several test flights with the commercial airlines Continental and JAL.

“The whole philosophy is totally different from other alternative fuel projects,” said Geoffrey Price, professor of chemical engineering and chair of the Department of Chemical Engineering at TU. “This isn’t biodiesel or ethanol or so-called ‘third generation’ biofuels, and it’s not some alternative to gasoline that requires a huge investment in infrastructure. It is gasoline, just made from another source.”

The process takes three inputs — sunlight, carbon dioxide (CO₂), and photosynthetic microorganisms (like algae) — to produce a chemically rich component that Sapphire Energy calls “green crude” that can be refined to replace petroleum-based products. It doesn’t require large amounts of fertilizer, farmland or fresh water.

“Algae can grow almost anywhere. The exciting thing about this project is that we aren’t using any cropland to produce the algae, and the process can use non-potable water and nonarable land,” said Daniel Crunkleton, associate professor of chemical engineering and director of TU’s Alternative Energy Institute.

With research and development, fuel made from algae is projected to produce about 30 percent of the crude oil requirements of the entire country — using about one-quarter of the land that is currently used to grow corn in the United States. This contrasts with ethanol production from corn, which yields only 4 percent of U.S. fuel requirements using the equivalent of 24 million acres of farmland.

The green crude is compatible with the existing petroleum infrastructure, from refinement through distribution and the retail supply chain. That downstream compatibility is one of the many advantages that caught Price’s attention. As a 30-year veteran researching important processes in oil refining, he knew that alternative fuels could more easily become mainstream if they conformed to the manufacturing and distribution system already in place.

“In addition to difficulties in making and using other proposed fuels such as ethanol, biodiesel and hydrogen, we would also need to overhaul the existing downstream system to use them,” Price said. “Green crude can be refined at existing refineries, the products can be transported in existing pipelines, sold at gas stations and used in existing vehicles. That’s one of the keys to bridging the gap between fossil and renewable fuels.”

Green crude’s possibilities as a renewable fuel extend beyond its independence from food crops or agricultural land. The algae also use large quantities of CO₂, removing greenhouse gases from the atmosphere.

“The process is essentially carbon neutral,” Crunkleton said. “Vehicles running on green crude emit CO₂, but an equivalent amount of those emissions is then reabsorbed by the algae even though the algae may be thousands of miles away from the vehicle. This results in a closed chemical loop when the earth’s atmosphere is viewed as a whole.”

“What we found at TU was an inventive, enthusiastic team with the knowledge base to help us revolutionize the way we think of energy.”

Price and Crunkleton have been working with Sapphire Energy for about two years, and a patent-pending refining process is jointly owned by Sapphire Energy and The University of Tulsa. The innovative process takes components of the green crude and refines them into high-octane gasoline in a single step that meets most ASTM standards for gasoline, and can be further refined and blended by traditional means.

According to Sapphire Energy, TU’s depth of experience in benchmark-setting technology for the oil industry made the university an ideal partner.

“We needed downstream experts in traditional fossil fuels who were used to creating viable industry solutions,” said Brian Goodall, Sapphire Energy vice president of downstream technology.

In addition to working with TU, Sapphire is also collaborating with researchers at the University of California, San Diego and The Scripps Research Institute. The company has attracted funding from ARCH Venture Partners, Wellcome Trust, Cascade Investment and Venrock.
Features

Petroleum Abstracts celebrates 50 years
College fundamental in growing this important industry service

Some of the college’s legendary leaders played pivotal roles in Petroleum Abstracts’ creation and development. In 1960, Scott Walker, then the dean of the College of Engineering and Natural Sciences, sought ways to enhance the reputation and support of the university as well as advance its educational mission. When Pan American Petroleum offered the college its collection of cataloged abstract cards covering petroleum technology, Walker recognized an opportunity to centralize industry data.

With the university’s backing and the support of President Ben Graf Henneke, he began to build an exploration and production abstracting service.

Walker appointed E.T. Guerrero as director of Petroleum Abstracts. Guerrero was then the chair of petroleum engineering and would become a dean of the college. With only four months under the first publication, Guerrero faced countless challenges in pulling together a world-class technical journal in a short amount of time.

“Because of Guerrero’s experience in the industry and his focus on quality, he established a solid bulletin with the highest technical standards,” said John Bailey, associate director of Petroleum Abstracts and author of a history of the service. “He was the backbone of Petroleum Abstracts, and he laid the strong foundation from which we were able to grow and prosper.”

Petroleum Abstracts’ core mission was to manage a huge influx of information and organize it to be easily searchable by its subscribers. Because of this need, the service pioneered the use of computers at TU, with Paul Buthod, professor of chemical engineering, and several graduate students providing part-time help. In 1969, Bailey was hired to spearhead a full-time effort to bring the service (and the university) into the computer age. In 1970, TU obtained its first computer system, a Xerox Sigma 6, complete with the latest technology of the time — punch cards and magnetic tape.

Armed with critical information and the technology to deliver it, Petroleum Abstracts built a large subscriber base and expanded its product line.

The searchable, online TULSA Database was introduced in 1973 and is Petroleum Abstracts’ most popular product. Then came the Petroleum Abstracts Document Delivery Service (PADDS), which provides full-text copies of all available material cited by Petroleum Abstracts.

The original service, the Petroleum Abstracts bulletin, now contains more than 700 entries each week from around the world. The bulletin, TULSA Database and PADDS are important tools used by industry professionals and researchers to make informed business decisions regarding upstream operations.

“This achievement is the result of the exceptional dedication of our staff and the leadership provided by the College of Engineering and Natural Sciences in our early years,” said Tom Burchfield, director of Petroleum Abstracts. “We look forward to continuing to meet the information needs of the energy industry.”

Petroleum Abstracts spearheaded the effort to bring the first computer system to TU in 1970.

Leaders in the College of Engineering and Natural Sciences have revolutionized the energy industry in many important ways, and one of the college’s most successful start-ups is celebrating two important milestones.

Petroleum Abstracts has begun a yearlong celebration to commemorate its 50 years in the industry and its one-millionth entry in the weekly Petroleum Abstracts bulletin, published June 13, 2009.

“With its worldwide reach, Petroleum Abstracts has greatly increased awareness and support for TU’s research and academic programs,” said Steven Bellovich, dean of the College of Engineering and Natural Sciences. “We are proud to have had a crucial role in a leading information service for the oil and gas industry.”

Petroleum Abstracts provides important information to energy companies in upstream development, covering the worldwide scientific and technical literature and patents relevant to oil and gas exploration and production.

University of Tulsa students, faculty and administrators welcomed 11 enthusiastic Chinese students from the China University of Petroleum-Beijing this June. The students represent the first cohort of an innovative dual degree (2+2) program between TU and the Chinese university.

“We are honored to work with these accomplished students from one of the most prestigious universities in China,” said TU President Steadman Upham. “The 2+2 program creates opportunities for collaboration in research, as well as student and faculty exchange programs that will greatly benefit both institutions.”

The 2+2 program evolved from collaboration at a grass roots level among faculty at both institutions, said Cheryl Matherly, associate dean of the TU Center for Global Education. “The student exchange and research initiatives center around each university’s core strengths, which are our energy programs,” she said.

The Chinese students, four men and seven women, have completed the first two years of their degree at the China University of Petroleum-Beijing and will finish the second two years of their degree at TU.

At the end of their two years at TU, the students will earn a bachelor’s degree from both universities. The students can choose to major in petroleum engineering, chemical engineering, geosciences or finance.

Although most of the students had never been to the United States before, their reviews of Tulsa and TU were glowing.

“My first impression was how beautiful the scenery is on campus,” said Qian Sun, a petroleum engineering major. “People are really enthusiastic here, and we received a warm welcome.”

When asked about major differences between the university system in China and the United States, one part of their U.S. experience had taken them by surprise.

“The textbooks here are very expensive!” said Sha Sha, a petroleum engineering major. “Maybe it is because I’m taking engineering classes.”

To help ease their transition to life in America, TU students, administrators and volunteers introduced the students to a variety of Tulsa-area cultural activities this summer, including tours of downtown, Drillers’ baseball, the Porter Peach Festival and home-cooked meals hosted by Tulsa families.

“We were able to meet the mayor and ask many interesting questions, like how to become mayor and what she liked about China,” said Sha Sha. “She said Beijing’s transportation system was much better than Tulsa’s, which made me rethink the way I view my city.”

The 2+2 program is part of a growing number of TU activities in China. A number of other collaborations are anticipated with China University, including TU students studying at China University and expanded faculty research collaborations. Additionally, TU has agreements with the RIPED, the research group for PetroChina, and the China University of Geosciences.

Partnership with China University creates opportunities for collaborative research

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China University of Petroleum-Beijing students pose outside the Center for Global Education at TU during their first summer in Tulsa.
TU offers free tuition to qualified veterans

TU student-veterans meet with the media in the Albert E. Schwab Veterans Lounge at TU to talk about the university’s Yellow Ribbon Program.

Qualified veterans will receive 100 percent paid tuition as part of a new initiative at The University of Tulsa. TU is fully participating in the Yellow Ribbon Program, which is an extension of the Post-9/11 GI Bill. The university will provide tuition and other benefits for veterans pursuing undergraduate, graduate or law degrees at TU.

“Our nation owes a debt to the selfless men and women who have served our nation in the armed forces,” said TU President Steadman Upham. “TU’s full participation in this program is a small measure to help honor their contribution of service.”

The College of Engineering and Natural Sciences is a popular choice for veterans, who often build on what they learned while serving in the military.

High-tech and secure

After 10 years in the Navy, Nathan Singleton, a computer science graduate student, updated his specialization in communication systems and electronic warfare to better “track the bad guys.”

His work in data fusion — taking an influx of data from various inputs and distilling it into meaningful information — has many applications in military tactical analysis. “Data fusion can help anticipate IEDs [improved explosive devices] and even develop a grid of where the enemy could be,” Singleton said.

Another aspect of his work, information security, is critical in military situations, Singleton stressed. For example, the Pentagon must protect sensitive data stored on military computers and safeguard against digital sabotage of electronically controlled weapons.

“TU is one of the best schools in the country for computer security,” said Singleton, who plans to pursue his doctorate at TU as well. “As a veteran, there’s a great draw for me to use what I know to work for the government, the military specifically.”

Engineering solutions

Jesse French, a mechanical engineering doctoral candidate, served in the U.S. Army for eight years, mainly as a helicopter test pilot in Asia. He then remained in the region for two more years, doing missionary work in China, South Korea, North Korea and Mongolia.

His experiences as a missionary in northeast Asia sparked an interest in sustainable agricultural technologies and energy systems. At TU, he is the driving force behind Sustainable Energy for North East Asia (SENEA), a volunteer group of engineering students committed to making people’s lives better through engineering projects.

To supplement his departmental research into sustainable energy, French has held a number of research positions with local corporations, including Preferred Energy, LLC and Citadel Technologies, and presented at national and international conferences, such as the 2009 ASME Energy and Sustainability Conference.

French’s goal is to become a mechanical engineering professor and inspire future engineers to love the discipline as much as he does.

Transition to civilian careers

After serving in the Air Force for six years, Chris Dean decided TU — with its faculty mentorship, educational rigor and career preparation — was the best fit to further his education and help him transition to civilian life.

“TU is a great fit for veterans because of the one-on-one attention given to guide you through your veteran benefits and university enrollment,” Dean said. “Here it’s not a process; it’s more like a friend helping a friend.”

Because of that intimate atmosphere, Dean, a senior chemical engineering major and pre-med minor, has taken advantage of several opportunities at TU to further his career goals.

As part of the Tulsa Undergraduate Research Challenge (TURC), he works with Ty Johannes, assistant professor of chemical engineering, on the latest renewable biofuel technologies. He’s a member of the student chapter of the American Institute of Chemical Engineers and attends the annual AIChE conference to get a feel for the market. He also attends presentations on campus by speakers in his field.

“I really enjoy listening to the engineering speakers, going to conferences and talking with professionals in my area,” he said. “I’m able to ask whether they like their jobs and get a feel for the profession. It gives me an idea of what’s out there in the job market.”

Future TU student-veterans

In order to attract highly qualified men and women who have served their country, TU has made veteran support a priority with increased services, meeting areas and networks available. The faculty, staff and students in the College of Engineering and Natural Sciences warmly welcome this new wave of veterans, whose unique set of skills and experiences will enrich the college community for years to come.

For more information about what TU has to offer student-veterans, please visit www.utulsa.edu/veterans.

TU leads the state in nationally competitive scholars

Study abroad, undergraduate research and renewable energy all common interests

TU student-veterans meet with the media in the Albert E. Schwab Veterans Lounge at TU to talk about the university’s Yellow Ribbon Program.

TU students have won more nationally competitive scholarships in the past decade than all other Oklahoma colleges and universities combined. During that time, the College of Engineering and Natural Sciences has produced the majority of these scholars, and this year is no exception.

Six of the seven 2009 scholars were science and engineering students; collectively they will receive more than $250,000 in educational funding. The 2009 College of Engineering and Natural Sciences scholarship winners are:

- Nathan Brooks and Frank Grove, National Science Foundation (NSF) Graduate Research Fellows; Matt Matlock, NSF honorable mention
- Caitlin Clancy and Anne Gambrell, Goldwater Scholars; Matthew Behlmann and Erin Stratford, Goldwater honorable mentions
- Maria Holland, Udall Scholarship
- Julie Kelkar, Phi Kappa Phi Fellowship

Common factors among recipients included their dedication to undergraduate research, sustainable energy initiatives and study abroad programs.

All six winners participated in the university’s nationally renowned Tulsa Undergraduate Research Challenge (TURC). This innovative program provides the unique opportunity for undergraduate students to conduct original research while working directly with faculty mentors.

Three of the 2009 scholars participated in the TU-based student group Sustainable Energy for North East Asia (SENEA). Since 2006, SENEA has conducted summer research and service projects on the northern border of China. The students designed and implemented energy and building solutions to improve the lives of those living in the rural community. Projects have included wind turbines, bio-gas digesters, solar ovens, compressed earth block brick press and aquaponics systems.

Five of the scholars also participated in study abroad programs. TU has more than six times the national average of science and engineering students who study abroad.

Features

(From left to right) Scholarship winners Julie Kelkar, Nathan Brooks, Alex Burch (NSF), Anne Gambrell, Caitlin Clancy and Maria Holland
Hawaiian twist on traditional curriculum

Malia Cockrell will explore her Hawaiian heritage next semester at the University of Hawaii. TU officials allowed her to adjust her curriculum and scholarships to make room for her cultural experience.

Because her university scholarships stipulate consecutive payments, the sophomore mechanical engineering major faced a loss of funds if she took a leave of absence. However, after stating her case and documenting her plans, she was able to convince them to make an allowance.

“I was afraid if I wasn’t able to make time now, I would never be able to take advantage of an opportunity like this once I start my career,” she said. “I’m grateful they were flexible enough to help me have this experience.”

Cockrell will study Hawaiian culture, music and language. She also hopes to advance her hula skills: She has been active for many years in Hula Halau O Leilani, a Tulsa-based cultural dance group, and has performed in many local and regional festivals.

ChE students win national Web contest

The University of Tulsa student chapter of the American Institute of Chemical Engineers (AIChE) has won the national organization’s 2009 Best Student Chapter Web site contest. Students launched the site in early February to provide an insight into the day-to-day activities of the chapter to AIChE members and prospective students. The site includes an events calendar, news and the TU AIChE constitution.

The chapter received the recognition in May and $100 for the club’s use. To see the award-winning site, visit http://tuaiche.wik.is/.

Study abroad photo contest winner comes from the college

Lori Hastings, a senior biology major and Spanish minor, won second place in the TU Center for Global Education’s 2009 photo contest.

Hastings shares the prize with fellow TU study abroad student, Brooke Baker. Their photo of the Perito Moreno Glacier in Argentina was chosen by their peers as one of the best study abroad pictures of the year.

Hastings studied abroad the summer of her junior year in Santiago, Chile as part of the University Studies Abroad Consortium (USAC) program. While in Chile, Hastings and Baker took Spanish courses and traveled the continent, making it all the way to Patagonia in the remote southernmost region of South America.

To help fund their adventures, Hastings and Baker organized meetings with several outdoor companies to present winter clothing and gear sponsorship proposals. The outdoor apparel companies Backwoods and Sportsman’s generously provided their gear.

Biography student’s drawing chosen for publication

The artwork of Stephanie Makaula was chosen for the spring 2009 Human Anatomy & Physiology Society (HAPS) Educator cover.

Makaula is a junior biological science major and came to TU with the prestigious Jack Kent Cooke Undergraduate Transfer Scholarship worth up to $30,000 a year. After TU, she plans to attend medical school to be a physician/researcher in the field of pediatric endocrinology.

She is a member of the Pi Alpha Chapter of Tri-Beta, the national biological honor society. Karen McMahon, the faculty advisor to Pi Alpha and biological sciences instructor, encouraged and helped Stephanie submit her art work to be considered for the HAPS cover.

ME students design hydrogen-powered cart for TU president

Recycling a green power source and fitting it onto a recycled vehicle may be the height of sustainable energy creativity.

Last year, a group of mechanical engineering students achieved that goal. They recycled a hydrogen tank and fuel cell from a previous ENS project and redesigned it to power a used golf cart. They presented the golf cart as a surprise gift to TU President Steadman Upham for his use around campus.

The project began as a class assignment for the mechanical engineering automotive design course and evolved into the senior design project for the team.

“The team worked hard to create a totally new vehicle,” said John Henshaw, mechanical engineering professor. “Of course, they went through many stages of planning and solving logistical and engineering problems. But, they did it.”

Henshaw said the team knew they could use the hydrogen tank and fuel cell but had to determine what kind of vehicle they could use with it. It had to be large enough to house the equipment, but small enough to fit within their budget, time and space constraints.

“A golf cart was ideal, and the team found an older one at a good price,” Henshaw said.

Team member Amanda Colyer, mechanical engineering senior, said students spent two full semesters getting the cart completed. She credited several faculty members for helping the team work through various problems.

“There seemed to be a new problem every day, but we worked through them,” she said. “In the fall, we got the cart and built the support structure. In the spring, we focused on getting everything to work.”

The cart was ready to be unveiled last April. The students decided to surprise President Upham with the cart so he could use it around campus to showcase the talents of ENS students as well as the university’s commitment to sustainable energy.

“The president said he had no idea the students were doing this,” Henshaw said. “His staff arranged for him to meet us, and the students surprised him with the cart. He was absolutely tickled, like a kid at Christmas.”

Colyer said seeing the president’s reaction was a fantastic reward for all their hard work.

“Sometimes we thought there was no way we would make our deadline,” she said. “But we got done on time and got to surprise the president. He asked a lot of questions and had us ride around with him. He kept saying, ‘This is so cool!’ and grinning from ear to ear. That felt good.”

Henshaw agreed that seeing a satisfied customer may have been the best part of the project.

“Engineers don’t always get the warm fuzzy feeling of seeing their work being appreciated by the end user,” he said. “These students know that the cart exists only because they created it and made it work. That is an amazing feeling.”
EWB students to build eco-latrine in Bolivia

Students have joined forces with the local professional chapter of Engineers Without Borders (EWB) to increase services to a poor indigenous village in Bolivia.

“Having professionals work side-by-side with the students adds a different dimension to the project,” said Christi Patton Luks, applied associate professor of chemical engineering and adviser to the student organization.

The groups are focusing their efforts on the village of Piqueria-Cotani, Bolivia. Home to about 50 families, the farming village is situated high in the Andes mountains.

Two ENS students and two Tulsa professionals visited the village last spring to conduct a site evaluation and build relationships with the villagers. Based on the desires of community members and an analysis of the resources available, the group decided to build four composting toilets for the village.

“These ‘eco-latrines’ will keep the local water supply uncontaminated and provide needed fertilizer for farming,” said Laura Ford, associate professor of chemical engineering and co-sponsor of the student program. “In the developing world, thousands of people suffer or die every day because they lack basic infrastructure such as potable water, sanitation, irrigation and transportation.”

The latrines will be built with adobe bricks made on-site with a method and equipment EWB students have developed in the past few years. Patton Luks said the villagers had hoped the toilets could be built with expensive, purchased bricks but that was not feasible.

“The materials have to be inexpensive and available on-site, since the village is so high in the mountains,” Patton Luks said. “Even with the inexpensive adobe bricks, this project will cost about $35,000. Fortunately, we had a successful fundraising event that will help.”

On August 27, more than 100 local supporters attended the “Make an Eco Impact” wine tasting and silent auction. The $7,000 raised that evening will help pay for nine students and seven professional engineers to travel to Bolivia and complete the project.

“The Tulsa community support for this has been fantastic,” Patton Luks said. “Whatever we needed, from silent auction items to refreshments, it was provided by generous supporters. It’s really amazing.”

The two teams will each spend one week in November building the latrines. Petroleum engineering senior Keith Kostelnik will stay the entire two weeks and serve as the site supervisor.

Before heading south of the equator in November, the group will continue work on a prototype latrine in north Tulsa. Over the next few years, team members can experiment with the prototype to make it more efficient, cleaner or more attractive. They can then use their results to implement changes in the village.

Another group will return to Bolivia in the spring of 2010 to check on the toilets and to start finding the next project.

“Even small projects like this can have a major impact on the lives of hundreds of people,” said Ford. “We are helping the people in the village of Piqueria-Cotani and in the villages downstream.”

SENEA developing human/electric vehicles for sustainable transportation

For decades, stranded motorists with empty gas tanks have wished they could somehow find another power source to help them reach a service station.

Sustainable Energy for North East Asia (SENEA), led by junior mechanical engineering student Allison Johnston, is developing vehicles that will do exactly that for villagers who live in a remote area of China.

SENEA students help third-world communities take advantage of sustainable strategies to improve their quality of life. One project this year is developing and building human-powered vehicles, known as HePVs.

“The reputation of SENEA is spreading, creating a demand for its technical expertise.”

“It’s really a combination of an electric vehicle and human power,” said Jesse French, mechanical engineering doctoral student and technical adviser to SENEA. “The small utility vehicle allows the driver to use a combination of electrical power and pedaling to reach their destination.”

The students will enter the He-PV in an American Society of Mechanical Engineering competition soon. Regardless of how well it does in the competition, the students hope to take the He-PV design to the Jilin Province of China. For several years, SENEA has worked with a remote community in that area, providing technology such as wind turbines, biogas energy converter, a weather station, an earth block press and a solar oven.

Two students traveled to China last spring and two more went there this summer. They conducted maintenance and collected data on the current equipment, made preparations for future projects, and talked to community members to see if there were any new needs.

The reputation of SENEA is spreading, creating a demand for its technical expertise.

“The vocational college in the region asked us to teach a course on sustainable energy,” Johnston said. “We sent them a curriculum, and now we are figuring out how to staff the position year round.”

If the college accepts the curriculum, TU undergraduate students could be teaching Chinese students the techniques to build their own sustainable energy products, meaning the hard work of SENEA will continue to spread across the area. But, the reputation of SENEA isn’t just spreading across China. The group is being asked to help with projects around the globe.

“We’ve had several organizations ask us to help them with projects in other Third-World areas, but there’s only so much we can take on,” said French. “When students have to say ‘no’ to a worthy cause, it is a major moral decision. While we are happy to share our drawings and instructions, we often have to tell them we can’t dedicate time to their project. It is quite sobering.”

Students said yes, however, to one new project in Haiti.

“A group from Missouri is building a free school and orphanage in Haiti,” French said, “and they need clean water for the children. SENEA agreed to develop a micro-hydro turbine to power a small water filtration system.”

As the fall semester began, Johnston was gearing up for a busy year.

“We need to recruit new students, determine what our priorities for the year will be, and finish the projects that are still pending,” she said. “There is a lot of work to do.”

High on the to-do list is completing the He-PV so it can be tested and perfected. French said the He-PVs can greatly impact the lives of those in the village. They will be able to transport goods and supplies in a convenient, sustainable way.

“They won’t have to worry about being stranded on a remote road without enough electricity to get home,” French said. “They’ll just start pedaling.”
Companies recruit ENS students for internships

Last summer, ENS students completed paid internships around the globe, sponsored by private corporations as well as federal grants.

Chemistry majors Greg Medders and Zach Winkler completed National Science Foundation Research Internships. Winkler was one of 10 students researching molecular virology at Colorado State University (CSU), while Medders traveled to Pisa University in Italy.

“My internship was designed to encourage international collaboration, so I worked side-by-side with an Italian professor every day,” said Medders. “The experience helped me expand my own research practices so I am better prepared for graduate school next year.”

Winkler, who assembled a system to study alpha viruses and how they replicate in the body, said his experiences with the Chemistry Summer Undergraduate Research Program (CSURP) and the Tulsa Undergraduate Research Challenge (TURC) gave him the research tools needed to be competitive for the CSU internship.

“But this internship allowed me to see how research is done on a national level,” Winkler said. “It created a new foundation of knowledge on which I can build.”

Mechanical engineering senior Casey Davis is spending a semester off classes to complete the internship. But I can reduce emissions in aircraft,” he said. “I’m having to take a new approach for the work, the company has trusted Priestley to work on several projects, sit in on presentations about prospect wells, and complete training seminars.

“I had never considered the oil and gas industry field before, but I worked on a project that reduced the carbon footprint of drilling, and I loved it.”

“I stayed very busy,” Priestley said. “I love JMA, and my experience was fun and educational.”

Mechanical engineering senior Tanner Hesse was one of 300 interns who spent 10 weeks at the Idaho National Laboratory, the birthplace of nuclear energy. After a three-week training period, Hesse had seven weeks to complete his work assembling a water chemistry board.

“I literally worked on the nuts and bolts of the project,” Hesse said. “I worked on building a test apparatus (the water chemistry board) out of titanium tubing and stainless steel valves.”

Hesse said his internship experience solidified his future research choices and encouraged him to seek an advanced degree in energy conversion and storage.

Broadening the thinking and perspectives of students is a great by-product of the internship. For some, it helps them discover what they do not want to do. For others, it crushes old assumptions and opens up new opportunities the student would have never considered before.

Caitlin Clancy, a senior mechanical engineering major, never considered a career in the energy industry. However, after hearing a presentation on internships at ConocoPhillips, she wanted one of those internships.

“I worked on directional drilling at the Farmington, New Mexico natural gas field,” she said. “I had never considered the oil and gas industry before, but I worked on a project that reduced the carbon footprint of drilling, and I loved it.”

“A college student in charge of a multimillion dollar project was a bit intimidating for Clancy, but soon she began to feel comfortable with the level of trust the company put in her.

“It has motivated me to keep working hard in college and take any opportunity that presents itself,” she said.

PE student studies art in Florence

Last spring, petroleum engineering senior Kyle Bonney studied in Italy, home of the most iconic engineer-artist in history, Leonardo Da Vinci. Like Leonardo, Bonney has the unlikely talent of practicing both engineering and art.

Bonney participated in a Florence study abroad program through the American International University in London. Some 200 American students took part in the program, which focuses on the classical artwork filling the city as well as practicing original studio art.

“I am pursuing a minor in studio art, which I love,” said Bonney. “A friend told me about the program, and Florence seemed like the perfect place — in the birthplace of the Italian Renaissance.”

Bonney said studying in Florence gave him the chance to truly focus on his artwork for a long period, something his demanding academic schedule doesn’t allow in Tulsa.

“I spent two full days a week in drawing and painting classes,” Bonney said. “One day a week I was a tour guide at the Basilica of Santa Croce, where Michelangelo and Galileo are buried. I also toured all over the region and even ran a half-marathon through Florence.”

Bonney said he plans to graduate this spring and is seeking a career in the oil and gas industry.

“Being at TU, I have had the unique opportunity to explore multiple interests besides engineering, especially art,” he said. “Soon I will be focusing most of my time on my career, so I am glad I pursued these interests while it was easy to do so.”
A special “Legends of Production and Operations” event at the annual Society of Petroleum Engineers (SPE) conference in early October honored two University of Tulsa petroleum engineering faculty members as pioneers in the first generation of production and operations technology.

Professors emeriti James Brill and Kermit Brown were selected by editors of the SPE magazine, Journal of Petroleum Technology, to share their stories and inspire a new generation of engineers to invent technologies that move the industry forward.

“The University of Tulsa has long been recognized for its expertise in the production of oil and gas, said Brill. “Four of the eight SPE members recognized as Legends have ties to TU.”

In addition to honorees Brown and Brill, other SPE Legends include TU alumnus Joe Mach (BSPE ’71) and Harry McLeod, Jr., a former director of information services (now called Petroleum Abstracts) who also taught well completion courses at TU.

At another SPE conference event, Mohan Kelkar, an Engineering Faculty member, was honored for excellence in his profession with the 2009 SPE Distinguished Achievement Award for Petroleum Engineering Faculty. Also honored was Brill, who received the designation of Honorary Member, the highest international honor SPE bestows. Both were recognized during the SPE Awards Banquet, one of the most important events of the conference.

Biology professor awarded national ornithology honor

Charles R. Brown, professor of biological sciences, has received the 2009 Eliot Coues Award from the American Ornithologists’ Union.

The AOU, the oldest ornithological society in North America, gives one such award annually for extraordinary contributions to ornithological research. Past recipients include many internationally known ecologists and avian biologists.

Co-recipient of the award was Brown’s long-time research partner, Mary Bomberger-Brown of the University of Nebraska-Lincoln and a former research associate at TU.

The AOU called Brown and Bomberger-Brown a “stellar team” that has changed the way ornithologists and behavioral ecologists think about bird colonies. Their work with cliff swallows “ranks as one of the most outstanding and most complete studies of any avian species.”

NASA funds TU allergy expert

NASA will support research by allergy expert Estelle Levitina, TU professor of biological science and chair of the biological science department. Levitina’s research will explore the integration of airborne dust prediction systems and vegetation phenology to track pollen for asthma alerts in public health decision support systems.

The amount of the award is $165,755, and research will be conducted from September 2009 to August 2013.

Dude, Can You Count?

In his new book, Dude, Can You Count?, Christian Constanda, professor of mathematics, takes an offbeat approach to inspiring a sound mathematical education. The book is addressed to a wide readership, from high school students to anyone interested in popular science.

Fusing algebra class with exciting narratives, the book blends animated conversation, fact, humor, wit, light scholarly argument and elementary challenges.

Dude, Can You Count? will be available in mid-January, but pre-orders can be made at www.amazon.com/Dude-Can-Count-Christian-Constanda/dp/1848825382.

Constanda holds the Charles W. Oliphant Endowed Chair in Mathematical Sciences and is the author, editor, or translator of 16 research books, and the author of over 125 peer-reviewed articles.

In 2002, his textbook on partial differential equations was selected as an Outstanding Academic Title by Choice magazine of the American Library Association.

ME faculty deliver keynote address at fluids engineering division conference

Professor Siamack Shirazi and Associate Professor Brenton McLaury presented the keynote address at the 11th International Symposium on Liquid-Solid at the ASME Fluids Engineering Conference held in August in Vail, Colorado.

The title of the keynote presentation was “Predicting Erosion in Multiphase Flow: Challenges and Success Stories.” This work has been supported by the Erosion/Corrosion Research Center at TU under the direction of Ed Rybicki, the Harry H. Rogers Chair in Mechanical Engineering.

Shirazi also was recognized for receiving the ASME Fellow Award at the conference during the Honors and Awards Banquet.

TU bioinformatics teams with research quadrangle

The Institute of Bioinformatics and Computational Biology (IBCB) has become a central force in the efforts of the Tulsa Research Quadrangle, a group that is developing the region as a hub for medical research.

Formed in 2007, the Tulsa Research Quadrangle includes The University of Tulsa, University of Oklahoma-Tulsa, Warren Medical Research Institute and Oklahoma Medical Research Foundation. The research group coordinates the collective resources and expertise at each institution to build working relationships on projects.

In April, IBCB organized the Tulsa Research Quadrangle’s first conference. The Tulsa Neuroinformatics Symposium was held at the Laureate Psychiatric Clinic and brought together scientists to explore and discuss the role of informatics in understanding brain behavior.

John Hale, professor of computer science and an IBCB principal investigator, organized the Tulsa Neuroinformatics Symposium, which hosted over 90 researchers, faculty, psychiatrists, neuroscientists, geneticists and students.

“It’s really about getting everyone in the same room and watching collaboration happen,” Hale said. “We have outstanding minds and great facilities in the area. It’s a natural fit to combine our efforts.”

“We have outstanding minds and great facilities in the area.”

Bioinformatics is a new discipline that applies the power of computer programming to critical research in medicine. Bioinformatics has helped crack genetic codes, track disease across a population and produce life-saving treatments.

Neuroinformatics applies bioinformatics techniques to neuroscience and psychiatric studies, tracking activity and investigating patterns in the brain.

At the Tulsa Neuroinformatics Symposium, Mark Buchheim, associate professor of biological science, gave a presentation on the interdisciplinary work being done to advance bioinformatics research at TU.

In addition to Hale and Buchheim, those leading the way at TU are Bill Cobelli, associate professor of mathematics; Richard Redner, professor of mathematics; Brett McKinney, William K. Warren, Jr. Chair in Bioinformatics; Kenton Miller, associate professor of biological science; Glen Collier, professor of biological science; Eun Soo Han, assistant professor of biological science; Jacob Crowley, research associate in biological science; Peggy Hill, associate professor of biological science; and Estelle Levetin, professor of biological science.

Their work covers a wide range of topics, all using large amounts of data in an efficient way to better understand biological issues:

- applying statistical analysis to better diagnose eating disorders
- optimizing the use of MRI data for pain management
- tracking molecular evolution and natural selection through DNA
- analyzing the relationship of gene expression, aging and caloric restriction
- using combinatorial mathematics to uncover neural networks
- characterizing links between MRI and DNA data for a host of neurological and psychological disorders
- using the tools of bioinformatics to study interactions between immune response cells

For more information about bioinformatics at TU, visit www.utulsa.edu/ibcb.
Secret life of professors

This story is part of an ongoing series that explores the unexpected interests and talents of ENS faculty.

Whether it's exploring a foreign city or hiking through the wilderness, traveling on holiday allows an escape from work, creates memories with family and friends, and recharges batteries exhausted by demanding work. It's easy to appreciate the benefits of getting away from it all.

Two ENS faculty members have made their travels something more than just an escape. They have used their passion for traveling and high adventure as an avenue to achieving a channel of creativity not normally tapped within their chosen discipline.

45 years of Yellowstone

In 1963, Biology Professor Kenton Miller was a high school graduate with no immediate plans to begin college. He was playing drums for a rock band in his hometown of Lawton, Oklahoma when a friend suggested they escape to Yellowstone for a month.

“While we were there, we agreed to come back as often as we could,” Miller said. “Other than a few years when I was building my family and career, we have done that.”

Since then, Miller estimates that he has hiked every trail in Yellowstone — all 1,300 miles of them. He and his wife have continued to enjoy Yellowstone so much that they have collaborated to develop a hiking guide to be published in fall 2009.

“Ninety-eight percent of Yellowstone is backcountry, but most people don’t get 600 feet from a parking lot or boardwalk,” Miller said. “People are intimidated by the thought of going too far into the wilderness, and they are missing the real Yellowstone.”

The guide, titled Ten Easy Day Hikes in Yellowstone: A Geezer’s Guide, is intended to help people who might not normally feel that they are able to complete a challenging wilderness hike. These lakes would be manageable even for the elderly, disabled or families with small children.

Miller provided all the photography for the guidebook. Trained as a photographer during his Army career, Miller easily filled the handbook with his photos of sites and landmarks on the trail.

“I got to use my photography skills and take some beautiful shots,” Miller said. “But the photos also help the hikers know exactly where they are and that makes them feel safer.”

Miller said he hopes the recent PBS series by Ken Burns on the National Park System will inspire people to purchase his book on Amazon.com and make the trip to Yellowstone before it is too late.

“The trees are dying,” Miller said. “Beetles are killing the white pines, which are a major staple for bears and other wildlife. That, combined with several warm winters, an ongoing drought, and some other hazards are going to affect the area. People have to go and see it now.”

The travel bug

No one has to tell Sandip Sen to go and see. The computer science professor has been an avid world traveler since he left his home in Calcutta, India to pursue his master’s degree in the United States.

“When I left India in 1987, I had never been on an airplane, and my wife had never even seen Calcutta,” said Sen. “Since then, I have visited 48 states and about 40 different nations on five continents.”

Sen said he makes it a priority to travel to four or five destinations every year, often tying his visits to international conferences.

“We return to India to visit family every December,” Sen said. “Then, in the summers, my family and I will take two or three more trips. My 16-year-old son has visited more than 30 countries.”

Sen said his favorite location on earth (so far) is Alaska, which he visited in summer 2009.

“You are marveling at scenery and wildlife and realize there are no words to express what you are feeling,” he said. “Everyone just stands there and says, ‘oh’ or ‘wow’ or something. It’s crazy sounding but that’s all you can say.”

Sen’s passion for travel fit well into his other avocations — writing and photography. He shares many of his original and artistic photos, poems, and aphorisms on his Web site http://www.scmac.utexas.edu/~sandip. Sen particularly admires the writings of Rabindranath Tagore, a fellow Calcuttan who was the first Asian to receive the Nobel Prize for literature in 1913.

“Tagore was a true Renaissance person: a poet, novels list, dramatist, composer, painter and philosopher of the highest order,” Sen said. “His work is an inspiration for my life and challenges me to be creative and to seek beauty and perfection in things small and large, near and far.”

Sen said that, through travel, he is able to be constantly surprised and learn new things, a passion that he tries to pass on to his students.

“Exposure to new things is the essence of creative endeavor,” Sen said. “It keeps you young.”

Researches at The University of Tulsa have taken some of the guesswork out of the decision many athletes will face when it comes to one popular supplement — creatine.

In an article in the August issue of the journal Biochemical and Biophysical Research Communications, TU researchers have shown that the new popular nutritional supplement, creatine ethyl ester, is likely to be no better than taking the long-standing supplement, creatine monohydrate. The study was led by Gordon Purser, professor of chemistry, and three TU undergraduate researchers.

According to Purser, creatine is one of the most popular nutritional supplements for athletes hoping to add lean muscle mass to their body.

Purser pointed to numerous studies involving non-endurance athletes that have shown appropriate supplementation of their diet with creatine is safe and effective for adding lean muscle mass and producing strength gains.

Purser said the problem with creatine is that muscle cells absorb it poorly, and athletes have to take large doses of the supplement to generate an effective level, which can be hard on the kidneys. It can also cause bloating, and for body builders, the retention of water can result in a loss of muscle definition, something they want to avoid.

In an effort to improve the ability of cells to take up creatine, chemists modified the molecule using esterification, the chemical process of combining an organic acid, like creatine, with an alcohol to produce a new compound. An improved uptake of the new compound would mean smaller doses, which in turn are less taxing on the kidneys and would cause less bloating.

For many substances, esterification works well. As for the ester of creatine, no one knew, but supplement marketers didn’t wait to find out.

In 2005, an article appeared in Flex, a magazine for bodybuilders, that claimed creatine ethyl ester decreased bloating by being absorbed directly into muscle cells. After that article appeared, it seemed the public assumed the supplement worked. But, researchers at TU were not convinced.

“David Reading, one of my research students who is an amateur body builder, was the first person to bring the question of the stability of creatine ethyl ester to my attention,” says Purser. “So I let David begin the research to determine how stable the supplement was. What we discovered was surprising. The creatine ethyl ester was much more stable than we thought it would be.”

Reading, currently a medical student at the University of Texas Southwestern Medical Center in Dallas, graduated from TU before the project could be finished, so coauthors Laay Shaya, now a medical student at the University of Oklahoma Health Sciences Center, and Nicholas Katseries, who plans to enter medical school in 2010, continued the research. All three of these students were participants in TU’s Tulsa Undergraduate Research Challenge (TURC).

What they found is that creatine ethyl ester is very unstable in the bloodstream. Within a few minutes, the ester completely breaks down into creatine and ethanol. The decomposition is most likely much faster than absorption into the muscle cells. As a result, taking creatine ethyl ester is no different from taking creatine.

Does that make it harmful? According to Purser, no. The decomposition products of the ester are creatine, just like a traditional creatine supplement, and ethyl alcohol, as found in beer.

While not harmful, Purser said the myth surrounding creatine ethyl ester can lead to two detrimental effects. First, because athletes are told that it is absorbed better than creatine itself, they can take less of it. This means that they probably are getting less than the optimal amount of creatine to their muscles. Second, creatine ethyl ester costs about twice as much as creatine monohydrate, the traditional source of creatine for athletes.

Athletes should stick with the tried-and-true form of creatine, and save their money,” Purser suggests.

When asked if someone might become intoxicated from the alcohol produced by the decomposition, Purser laughed.

“Well, you would have to consume about 50 grams (20 times the recommended dose) of creatine ethyl ester to get the same amount of alcohol as in a can of beer,” he said. “If you did that, intoxication might be the least of your problems.”
Haydock receives 2009 Swearingen Leadership Award

Robert (Bob) Haydock, acquisitions manager at Williams, has received the 2009 Wayne Swearingen Leadership Award from the Executive Leadership Institute for Technical Professionals & Engineers (ELITE) program at TU.

"There was a tremendous amount of talent in the Class of 2009, so receiving this award was quite an honor," Haydock said. "The ELITE program has given me some practical tools to become a more effective leader in my organization."

The ELITE program targets professionals in engineering fields who are looking for training in leadership. More than 50 percent of ELITE graduates are promoted either during their training or shortly after its completion. Haydock received a promotion at Williams after graduating from the ELITE program.

The Wayne Swearingen Leadership Award recognizes one ELITE student each year who has shown noteworthy performance and who exemplifies the key attributes associated with the award’s namesake.

"We obviously have a lot of confidence in our employees to invest in them and send so many through this program," said Bryan Guderian, vice president of the Tulsa Region/International E&P at Williams. “The ELITE program really gives these individuals the confidence they need to take that next step into management.”

This May, the Swearingen family attended the graduation ceremony and met the recipient of the Wayne Swearingen Award and all the ELITE graduates.

"We were so honored to have the Swearingen family at the ceremony,” said Pat Hall, associate dean for CESE. “Wayne Swearingen was a one-of-a-kind leader in the energy industry. Bob Haydock was a perfect fit for this award, and we know he will carry on that spirit of leadership.”

Swearingen worked for more than 60 years in the petroleum business and became a passionate spokesman for domestic oil production and the independent producer. He was one of the driving forces behind the establishment of the ELITE program to serve a critical need.

Three winners have been chosen since the Swearingen Award was established in 2006. Recipients demonstrated strong teamwork, vision and inspirational skills. Their energetic, motivational, and positive attitudes made them stand out in their ELITE class.

For more information about upcoming ELITE training opportunities, visit www.cese.utulsa.edu, or call (918) 631-3088.

CESE exhibits at conferences

Thanks to all the TU alumni who stopped by the CESE booth to chat at the SPE annual meeting in New Orleans. CESE staff members enjoy catching up with alumni and finding out the amazing things they’re doing.

Our next conference will be The American Association of Petroleum Geologists, April 11–14 in New Orleans. Stop by the booth and visit if you are attending!

Hall to serve as vice president on ASEE Board

Pat Hall, associate dean for CESE, has been elected as vice president of the American Society for Engineering Education (ASEE) Professional Interest Council. In addition to her duties on the ASEE board of directors, she will serve on the selection committee for the ASEE National Outstanding Teaching Award, participate in the executive committee meeting in Washington, D.C. in November and help in the program planning of the annual convention.

ELITE program leadership welcomes new advisory board members

Several new members have been elected to the ELITE Advisory Board to help lead this innovative leadership program for engineers into exciting new directions. CESE and ELITE will benefit from the addition of such a distinguished group of engineering professionals:

• Robert Haydock – Williams
• Gina Hitz – QuickTrips Corporation
• Gary Jenneman – ConocoPhillips
• Jason Lawrence – Mckinsey Manufacturing
• Brian Shaw – TD Williamson
• Gioculda Tovar – Schlumberger
• Jeff Wilkie – Jeff Wilkie Consulting

For more information, visit www.cese.utulsa.edu.

Outstanding year for CESE

More than 2,200 professionals from around the world advanced their careers last year through programs from Continuing Engineering and Science Education (CESE) at TU. Expert instructors offered 86 classes in 13 cities, helping engineers and computer security professionals earn certifications, nontechnical people understand the basics of petroleum geology and ambitious engineers climb the corporate ladder by developing leadership skills.

Of the classes conducted, 49 were in-company seminars — training programs customized for specific company needs. In-company training has been increasingly recognized as the most cost-effective means to increase efficiency and quality. CESE is expanding its programs to include an extensive offering of computer security courses taught by the TU Institute for Information Security (ISEc) and National Security Agency-designated faculty development center and one of only 30 centers offering the Cyber Corps program, a federal initiative to train an elite group of computer security experts to defend U.S. computer networks.

For more information about what CESE has to offer, visit www.cese.utulsa.edu.

Spring Schedule

Fundamentals of Engineering Exam Review
February 13 – April 10, 2010 • Tulsa, Oklahoma Saturdays, 9:00 am – 12:00 noon (no class on April 3)

PE Mechanical Engineering Exam Review
February 13 – March 27, 2010 • Tulsa, Oklahoma Saturdays, 9:00 am – 12:00 noon

PE Electrical Exam Review
March 23 – April 8, 2010 • Tulsa, Oklahoma Tuesday and Thursday evenings, 6:00 p.m. – 9:00 p.m.
IN MEMORIAM

Robert Purinton, Jr. (BS ’76, MS ’86) passed away August 2, 2009 after a long battle with cancer. He was an active TU chemical engineering alumus who had graduated at the top of his class.

Purinton served on the Chemical Engineering (ChE) Advisory Board from 1997 up until a couple of years ago when he had to focus on his health. “I could always count on Bob to be at our Advisory Board meetings, and he always had helpful and insightful comments and suggestions. I miss his presence there,” said Geoffrey Price, professor and chair of the chemical engineering department. “Bob’s student days predate my tenure at TU, but those faculty members who were privileged to teach Bob still talk about him as one of the most exceptional students they ever taught.”

Purinton used his professional experiences to help current students, Price said. At ChE board luncheons with students, he mentored undergraduates in their career paths and made suggestions for job opportunities.

A faithful TU fan, Purinton cheered on his alma mater throughout the years at Golden Hurricane basketball and football games.

He represented TU well in his profession, winning many awards during his career as a chemical engineer, including a national IR100 award for innovative technical achievement. He developed several patented pipeline cleaning processes for Dowell.

Thanks to his work with Schlumberger, he and his family were able to travel around the world. They lived in Paris, France, for three years while he worked at the Schlumberger international headquarters.

Most recently, he worked for Tulsa Heaters, Inc. designing fire heaters for refineries, particularly in Canada.

The TU family is proud to have had such an accomplished and courageous alumnus.

Class Notes

1970s

Ron Hinn (BSPE ’77) has been elected the secretary of the Accreditation Board for Engineering and Technology (ABET). Hinn is an engineering consultant within the upstream oil and gas industry and is based in Houston.

Michael Wortham (BSChE ’78) has joined ConocoPhillips as the projects vice president for Indonesia. Wortham and his wife, Beverly, relocated to Jakarta, Indonesia, in November 2008, after his retirement from British Petroleum (BP) in Alaska in October 2008.

1990s

Cindy Adams Dickey (BSEE ’91) and her husband, Scott, welcomed a baby girl, Kristin Amelia Dickey, on April 11, 2009.

Adel A. Al-Ansari (MEPE ’94) works with Saudi Aramco as a drilling fluids specialist in EXPEC Advanced Research Center, Drilling Fluids and Cement Unit.

2000s

Gavin Manes (BSCS ’01; MSCS ’02; PhDCS ’04) was selected as a 2009 finalist for the Ernst & Young Entrepreneur of the Year Award in the Southwest Area-North. Manes is president and CEO of Tulsa-based Avansic, a digital forensics company.