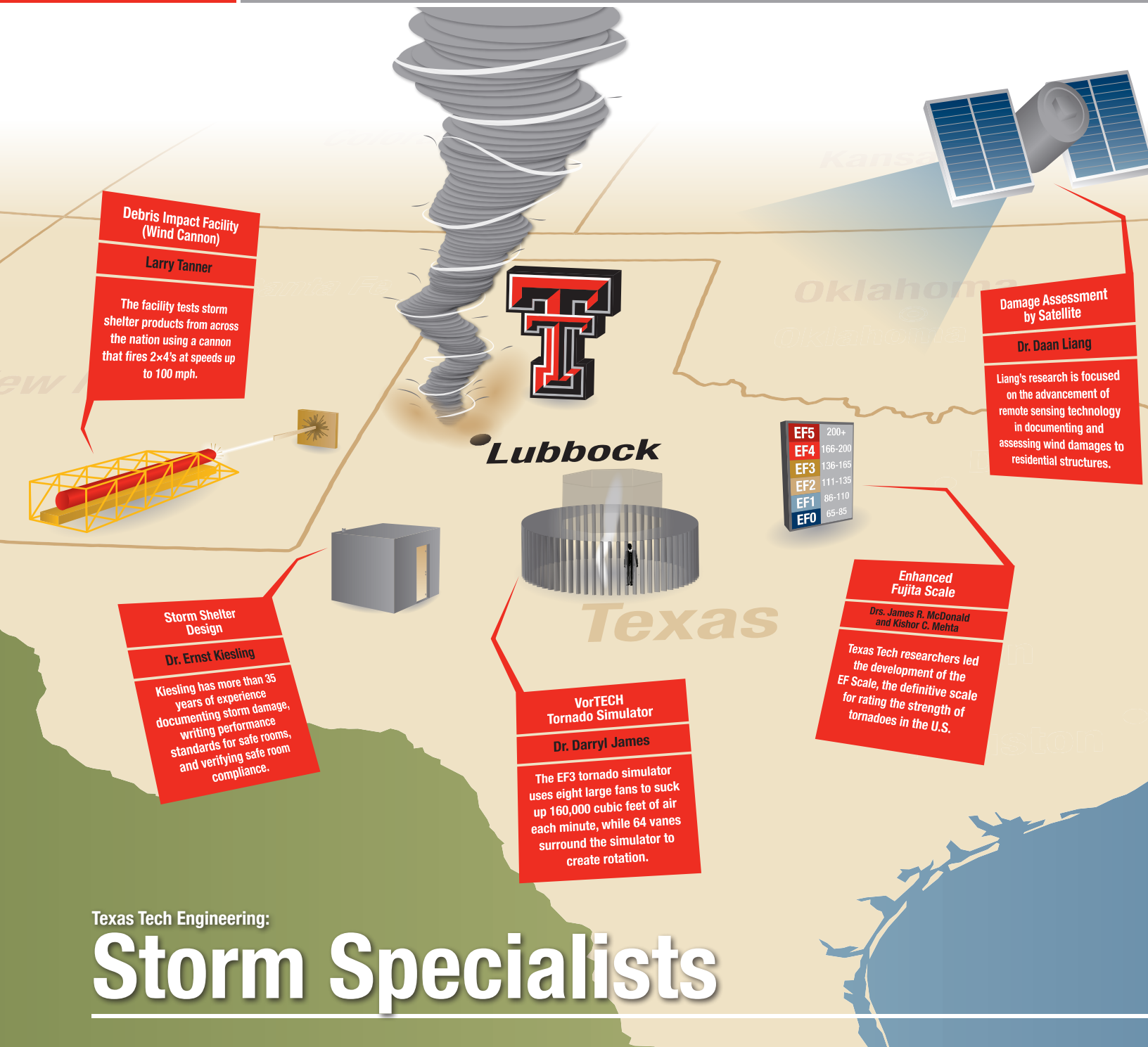




Engineering Our Future

Summer 2011

Texas Tech University - Edward E. Whitacre Jr. College of Engineering



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- 4 Students Receive High Honors
- 8 Eight Distinguished Engineers Named



Engineering *Our Future*

Summer 2011 Issue

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Dean's Report

I have been enjoying the last six months here in Lubbock since my arrival in Texas Tech. The university and city are filled with friendly people and I am excited about the future of the Whitacre College of Engineering.

As we move toward Tier One status, I hope to transform our students, faculty, staff, and alumni into what I call a "Community of Scholars." Many universities and colleges are merely a "collection of individuals." My time in the NASA Astronaut Corps taught me that in order for us to be successful, we must work as a team, and we must collaborate. We will cultivate that environment in the classroom, the laboratories, and throughout the college. This Community of Scholars mindset will propel us into the top tier of engineering schools in the nation and in the world.

I am pleased to report progress on a new building for the Bob L. Herd Department of Petroleum Engineering. We will raze the existing Health, Exercise, and Sport Sciences (HESS) Building, formerly known as the Men's Gym, located east of the Industrial Engineering and Mechanical Engineering buildings. We will then build a new 40,000 square foot building that will be closer to the Engineering Key and customized specifically for the needs of our petroleum engineering students and faculty. Look for more information on this building in the next issue of this magazine.

Severe storms have broken out across the United States this spring and summer. Residents in Alabama, Mississippi, and Missouri have faced devastation and destruction from strong winds and tornadoes. Texas Tech engineers have been among those that have responded to these incidents, surveying damage and collecting data on the impact of storms on buildings, homes, and property. These, "Storm Specialists," (page 6) are working to understand the nature of tornadoes, high winds, and severe thunderstorms so that we can build safer buildings and homes. Our faculty and researchers are key advisors on storm-related issues to government agencies like the Federal Emergency Management Agency and the National Weather Service.

This year's recipient of the McAuley Distinguished Engineering Student Award, the college's top student award, is Joelle Fuhrmann (page 3). Her dedication to excellence and her service to her country are indicative of the spirit of Texas Tech Red Raider engineers.

Our students are competing internationally and several have received major awards, scholarships, and contests (page 4). Our alumni are proving that Red Raider engineers "hit the ground running" after graduation through the naming of four of our Dallas/Fort Worth area alumni as "Young Engineer of the Year" (page 15).

Outreach to future engineers is an important part of our duty as engineers. The college has hosted and participated in several STEM outreach and robotics competitions recently. The recent Get Excited About Robotics (GEAR) competition in Lubbock is featured in this issue (page 5).

We were proud to recognize eight of our alumni in April as a part of our Distinguished Engineer Awards Luncheon. The college named Dennis Carroll, Randy Crawford, Terry Fuller, Paul Grimmer, William Guion, Mary Anne Hicks, Jack Rentz, and Walter T. Winn Jr. as recipients of the 2011 award (page 8).

In this issue, we feature two profiles from graduates of the Department of Mechanical Engineering, James Baumgartner (page 10) and Clark Butts (page 12).

Our alumni news section features updates from graduates of the college (page 14).

Send us your updated information or stories at www.TTUalum.com. I hope you enjoy reading about the activities and events of the college, and I look forward to meeting you as I travel this summer and fall.



Dean Al Sacco Jr., Ph.D.
Whitacre College of Engineering

Al Sacco, Jr.

Fuhrmann Named 2011 Distinguished Engineering Student

The Whitacre College of Engineering has named Joelle Fuhrmann the recipient of the McAuley Distinguished Engineering Student Award for 2011.

This award, provided by members of the Whitacre College of Engineering Dean's Council, is named in memory of James A. McAuley, an active member of the Dean's Council, and a Texas Tech Distinguished Engineer.

Fuhrmann, of Muenster, competed for this honor and was selected because of her outstanding academic achievements, honors, activities, interests and aspirations. Academically, she has been on the Texas Tech President's List or the Engineering Dean's List each semester that she has been at the university. She will graduate with a 3.9 GPA in May 2011 with master's and bachelor's degrees in environmental engineering with honors.

After graduation, she will be commissioned as an officer in the U.S. Air Force working in the 60th Civil Engineering Squadron at Travis Air Force Base, specializing in environmental engineering. She hopes to help bring clean, safe drinking water to communities around the world.

Fuhrmann held leadership positions in many student organizations at the university, including the Air Force Reserve Officer Training Corps, most recently as long range planner; the Society of Professional Engineers as vice president; Engineers Without Borders as treasurer; as a representative of the Civil and Environmental Engineering Department Student Advisory Council; and other organizations.

In recognition of her scholarship, she has been named a member of five honor societies, including the National Society of Scabbard & Blade, Kappa Mu Epsilon (mathematics), Phi Kappa Phi, Alpha Lambda Delta and Gamma Beta Pi.



Joelle Fuhrmann is the recipient of the McAuley Distinguished Engineering Student Award for 2011.

She has received numerous awards and honors, including the Outstanding Engineering Scholar Award, the Texas Tech in Human Form Award, and the Air Force ROTC Field Training Superior Performer award.

In addition to her classroom instruction, Fuhrmann has been a graduate assistant, student assistant, or teaching assistant in the Department of Civil and Environmental Engineering since 2008, assisting with courses and conducting research on water recovery efficiency for prolonged NASA space flights.

She has volunteered with Hugh O'Brian Youth Leadership Seminars, Guadalupe Kids, the Boys & Girls Club of Lubbock and the T-STEM Summer Engineering Program. **E**



U.S. AIR FORCE

Fuhrmann will work in the 60th Civil Engineering Squadron at Travis Air Force Base

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Student News

P3E Student Laity Wins IEEE DEIS Student Essay Contest

George Laity, a doctoral student in the Center for Pulsed Power and Power Electronics, wrote an essay that was selected as the winning submission by the Institute of Electrical and Electronics Engineers (IEEE) Dielectrics and Electrical Insulation Society (DEIS) Society during their first annual student essay contest.

The essay will be published in an IEEE magazine for engineers worldwide and was titled "Relating Physics of Electret Charging Using Vacuum UV Photo-Ionization to Seed Electron Production during High Altitude Plasma Breakdown."

Last fall, Laity was awarded a \$5,000 fellowship from IEEE DEIS. This fellowship is awarded to Ph.D. students who are pursuing research topics in the area of insulating materials, breakdown, charge transport, electrostatic phenomena, high voltage effects, or related subjects. Five Ph.D. students were awarded this graduate fellowship worldwide. **E**

Foster Receives Arthur H. Guenther Pulsed Power Student Award

Jonathan Foster, a doctoral student in the Center for Pulsed Power and Power Electronics, has been named the recipient of the outstanding Pulsed Power student award, the Arthur H. Guenther Pulsed Power Student Award.

The Institute of Electrical and Electronics Engineers (IEEE) Nuclear and Plasma Sciences Society (NPSS) Pulsed Power Science and Technology Committee's Outstanding Pulsed Power Student Award was established in 1997. In 2007 this award was renamed the Arthur H. Guenther Pulsed Power Student Award following the passing of the former Peter Haas award recipient. It is offered annually, but presented biennially at the Pulsed Power Conference.

This award is designed to encourage student contributions and participation as principal or sole authors of papers and to recognize outstanding student contributions in pulsed power engineering, science, or technology. **E**

IE Student Pruitt Receives SMART Scholarship

Lindsey Pruitt, an industrial engineering major, has been named a recipient of a 2011 scholarship offer from the Department of Defense Science, Mathematics, And Research for Transformation (SMART) program.

The SMART Scholarship for Service Program is an opportunity for students pursuing an undergraduate or graduate degree in Science, Technology, Engineering, and Mathematics disciplines to receive a full scholarship and be gainfully employed upon degree completion.

She will work with the U.S. Army Training and Doctrine Command (TRADOC) Analysis Center in White Sands Missile Range, New Mexico, to perform cost and quality evaluations of the army's upcoming warfare tactics, machines, and training programs.

She will graduate from Texas Tech in the spring of 2012. **E**

Hinojosa and Kumar Win First Place in CCET/IEEE Paper Contest

Miguel Hinojosa and Rajnish Kumar, graduate students in the Department of Electrical and Computer Engineering, won first prize in the graduate division at the Third Annual Center for the Commercialization of Electric Technologies (CCET) Institute of Electrical and Electronics Engineers (IEEE) Region 5 Student Paper Contest.

The paper was titled "Automatic Phase Identification System Design," and was presented in Baton Rouge at the Region 5 IEEE meeting.

Argenis Bilbao, a graduate student in the Department of Electrical and Computer Engineering, won second place in the Region 5 IEEE student paper competition with his paper "Remote Structural Health Monitoring System." Bilbao's work is a collaboration between the Department of Electrical and Computer Engineering and the Department of Civil and Environmental Engineering, in which he and his senior lab partner worked with Drs. Jennifer Rice and Jamie Chapman for the paper and research. **E**

500 Elementary and Middle School Compete in Robot Challenge

The Whitacre College of Engineering hosted 500 students from more than 30 schools from across the South Plains as they participated in Get Excited About Robotics (GEAR) Competition Day.

GEAR is an eight-week LEGO robotics challenge for elementary and middle school students in grades K-8. Student teams build and program LEGO robots, using MINDSTORMS NXT kits to perform specified tasks. To solve the challenge, students learn engineering skills through a teaming exercise in designing, building, programming, testing, and troubleshooting

wheeled LEGO robots that perform and compete on an eight-foot-by-eight-foot field.

Texas Tech freshmen engineering students mentor the elementary and middle school students and assist with robot programming.

During the last four years, Texas Tech served as a local GEAR hub for the competition in Lubbock. During this time period, the competition has grown from a trial run held with Harwell Elementary School in 2006 to a competition with 150 participating teams. **E**

Elementary and middle school students build and program robots to complete a task at GEAR Competition Day on the Texas Tech campus. Texas Tech engineering students mentor the students, assisting with problem solving and programming.



Whitacre College of Engineering Among America's Best

The Whitacre College of Engineering overall graduate engineering program and six individual degree programs are ranked in the 2012 edition of Best Graduate Schools by U.S. News Media Group.

"I am not surprised that our faculty and staff in the Whitacre College of Engineering are among the best in the nation," said Al Sacco Jr., dean of the Whitacre College of Engineering. "Further, it is indeed gratifying to see our rankings continue to improve as we move toward Tier One status."

- The overall graduate engineering program moved up to a ranking of 95th among 198 programs nationwide.

- The Department of Industrial Engineering ranked 29th in the Industrial/Manufacturing category.
- The Department of Electrical and Computer Engineering ranked 66th in the Electrical/Electronic/Communications category and 72nd in the Computer Engineering category.
- The Department of Chemical Engineering ranked 68th in the Chemical category.
- The Department of Civil and Environmental Engineering ranked 73rd in the Civil category.
- The Department of Mechanical Engineering ranked 93rd in the Mechanical category.
- The Department of Computer Science ranked 121st in the Computer Science category. **E**



Storm Specialists

Texas Tech Engineers Lead the World in Storm-Related Research

More than 40 years ago, a massive tornado tore through the heart of downtown Lubbock. It left a path of destruction a mile and a half wide, crippling the city. Twenty-six people were killed, and more than 1,500 were injured.

Since then, the Wind Science and Engineering Research Center (WISE) has become the leading research facility of its kind, with a focus on testing wind speed resistance in relation to storm shelters.

VorTECH Tornado Simulator

Recently, they took their research a step further by studying how tornadoes do their damage, with the construction of a tornado simulator at Reese Center, about 10 miles west of the main campus.

Dr. Darryl James, a professor of mechanical engineering and WISE associate, and his team spent more than a year and a half building the device known as VorTECH.

“VorTECH was designed to simulate tornadic winds in the mid-EF3 range or less,” James said. “Approximately 92 percent of all tornadoes have maximum wind speeds of about 150 miles per hour or less.”

The simulator uses eight large fans to suck up approximately 160,000 cubic feet of air each minute,



The VorTECH simulator uses large fans to pull air up, while vanes surround the simulator to create rotation.

while 64 strategically placed vanes surround the simulator to create rotation.

The force of the wind is measured by dozens of pressure sensors applied to structural models. The data collected will contribute to understanding vulnerability.

“If we can understand how the tornadoes interacts and damages a structure, then maybe we can develop building codes to improve the safety of homes,” James said.

Inside the VorTECH simulator, looking down at the floor and into the basement observation area, the beginning of tornadic rotation is seen as fog circulates around the center point of the simulator.



Damage Assessment by Satellite

Dr. Daan Liang, assistant professor of construction engineering studies investigates building damages caused by hurricanes, tornadoes, and storms using satellite images and aerial photos along with ground survey results. He studied the effects of Hurricane Katrina using these methods. He is also studying the economic resilience of communities after hurricanes using the same methods.

“In my research, we are focusing on investigating the long-term impact of hurricane damages on communities,” Liang said. “Specifically, we are examining key factors affecting the speed and magnitude of disaster recovery with respect to local economy and built environment.”

Liang has studied probability models to determine how the construction of buildings affects their vulnerability against severe windstorms.

Enhanced Fujita Scale

Dr. Kishor Mehta, P.W. Horn Professor, professor of civil and environmental engineering, and former director of WISE, helped lead a team that developed the new Enhanced Fujita Scale that was implemented by the National Weather Service in February 2007. He is a member of the National Academy of Engineering for his studies of structural damage caused by windstorms and leadership in developing structural design standards for wind loads.

The original F Scale was developed in 1971 by the late University of Chicago professor Dr. T. Theodore Fujita to rate tornadoes and estimate associated wind speed based on the damage they cause. The new EF scale refines and improves the original scale. Limitations of the F Scale have led to inconsistent ratings, including possible overestimates of wind speeds.

Drs. Mehta and Jim McDonald of Texas Tech led a group representing Fujita Scale users – including nationally renowned meteorologists and wind engineers – that began working to revise the scale in 2001. The wind speed ratings were revised based on based on 30 years of damage assessment data recorded by Texas Tech from tornado sites across the nation.

Storm Shelter Design

Dr. Ernst Kiesling, professor of civil engineering and executive director of the National Storm Shelter

Association (NSSA), has more than 30 years of experience in the design, standards-writing and quality control of storm shelters.

The 1999 tornado in Oklahoma City drew attention to the need for standard building codes for above ground storm shelters. A shelter designed using plans similar to Texas Tech’s plans survived the storm and is credited with saving the lives of two women. The Federal Emergency Management Agency began awarding grants for residents to build wind-resistant shelters, but the lack of shelter standards and experience in design and construction of shelters led to many quality issues.

Kiesling then invited a number of shelter manufacturers to Texas Tech to discuss the issues and plan a course of action. The NSSA grew out of that meeting. Shortly thereafter, Kiesling was appointed executive director.

As a result of their research, Texas Tech scientists and engineers have contributed to two Federal Emergency Management Agency publications, “Taking Shelter from the Storm,” and “Design and Construction Guidelines for Community Shelters.”

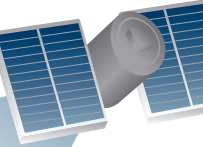
Debris Impact Facility - Wind Cannon

Larry Tanner, research associate in the Department of Civil and Environmental Engineering, manages the debris impact testing facility at the Reese Technology Center and directs the next generation of air cannon launching to test missiles and the impact resistance of various building materials for shelter research. Tanner’s role in storm documentation is to survey building performance, to see how or why buildings fail and others do not, to view those modes of failure, and to determine wind speeds, which relates to hurricanes, tornadoes and other storm events. He makes observations of debris fields to see what kind of debris is there, some of which prickly buildings, and to understand where people took shelter in various buildings, homes and businesses and how that shelter performed.

“All of this knowledge becomes lessons learned,” he says, noting that the information then becomes storm reports for agencies, such as the Federal Emergency Management Agency, the National Institute of Standards and Technology, the National Science Foundation and the National Weather Service. Tanner has studied the aftermath of many hurricanes, tornadoes, and storm events, and has recently been involved in efforts in Alabama and Joplin, Missouri. **E**



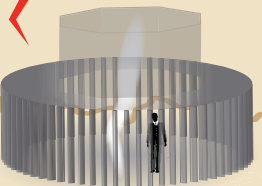
Damage Assessment by Satellite



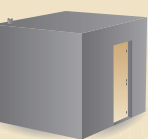
Enhanced Fujita Scale

EF5	200+
EF4	166-200
EF3	136-165
EF2	111-135
EF1	86-110
EF0	65-85

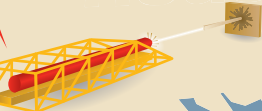
VorTECH Tornado Simulator



Storm Shelter Design



Debris Impact Facility (Wind Cannon)





Distinguished Engineers

Eight Recognized at 2011 Distinguished Engineer Awards Luncheon

The Texas Tech Edward E. Whitacre Jr. College of Engineering named Dennis Carroll, Randy Crawford, Terry Fuller, Paul Grimmer, William Guion, Mary Anne Hicks, Jack Rentz and Walter T. Winn Jr. as recipients of the 2011 Distinguished Engineer Award on April 15.

The Distinguished Engineer Award was established during the 1966-67 academic year to recognize the most outstanding alumni of the college. Since that time, 199 graduates have received this honor.

Recipients of the award must be distinguished in their profession, an inspiration to their peers and

have demonstrated a continuing interest in areas outside the field of engineering.

“The Distinguished Engineer Award is an opportunity for the Whitacre College of Engineering to recognize our exceptional alumni,” said Al Sacco Jr., dean of the college. “Our entire scholarly community is proud of the accomplishments of our latest group of alumni to earn the title ‘Distinguished Engineer.’ These individuals have distinguished themselves in various and unique ways as outstanding engineers and business leaders and are a testimony to the outstanding education provided by our faculty and staff to all our students: past, present, and future.”

(Back row from left to right) William Guion, Randy Crawford, Walter T. Winn Jr. and Terry Fuller.
(Front row from left to right) Paul Grimmer, Jack Rentz, Mary Anne Hicks, and Dennis Carroll.



Carroll is the director of innovation for the Government Solutions Group (GSG) of Affiliated Computer Services, a Xerox Company. GSG provides software solutions for federal, state, and local government services. He earned Bachelor of Science, Master of Science, and Doctor of philosophy degrees in computer science from Texas Tech in 1987, 1989 and 1991, respectively, becoming the first person to enter as a freshman and exit with a doctorate in computer science at Texas Tech.



Dennis Carroll

Crawford worked as an engineer and manager in petroleum production, well completions and stimulation, contract research, fertilizer, and municipal trash collection and disposal. He received a Bachelor of Science in chemical engineering from Texas Tech in 1949 and a Master of Science and Doctor of philosophy in chemical engineering from the University of Texas at Austin.



Randy Crawford

Fuller is president and founder of Phoenix PetroCorp Inc., an independent oil and gas production company with operations in Texas, Oklahoma and Kansas. He is currently national president for the Red Raider Club. He also serves on the executive committee and is a board member of the Texas Tech Foundation. He graduated with a Bachelor of Science in petroleum engineering in 1977.



Terry Fuller

Grimmer owns and leads two companies, Eltron Research & Development in Boulder, Colo., and Continental Technologies, located in Ponca City, Okla. Eltron R&D develops novel materials and catalysts for the energy and chemical industries. Continental Technologies designs and fabricates pilot and demonstration-scale plants for other companies



Paul Grimmer

doing research and development. He graduated with a Bachelor of Science in chemical engineering in 1977.

Guion is a vice president with Southwest Research Institute (SwRI) in San Antonio, where he is responsible for the operation of the Signal Exploitation and Geolocation Division. He earned Bachelor of Science, Master of Science, and Doctor of philosophy degrees in electrical engineering from Texas Tech in 1966, 1968 and 1970, respectively.



William Guion

Hicks is the vice president of infrastructure program management at AT&T. She is responsible for introducing new technology into AT&T's global network and managing large scale network deployments. She received a Bachelor of Science in industrial engineering from Texas Tech in 1979.



Mary Anne Hicks

Rentz is the founder, president, and CEO of RENTECH Boiler Systems Inc. The company designs and sells a wide variety of custom-designed and manufactured industrial steam boilers that are used by the refining, power generation and chemical industries. He graduated with a Bachelor of Science in mechanical engineering from Texas Tech in 1974.



Jack Rentz

Winn is the owner of Winn Professional Engineers and Constructors LLC, a firm that specializes in water system supply, storage and distribution improvements projects. He earned a Bachelor of Science and a Master of Science in civil engineering from Texas Tech in 1972 and 1973, respectively. **E**



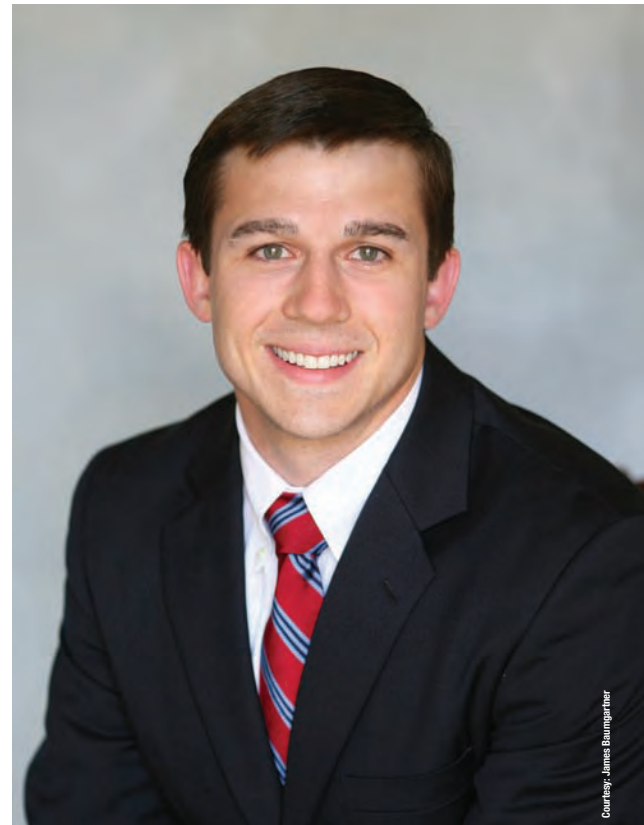
Walter T. Winn Jr.

Alumni Profile

Baumgartner Graduates, Establishes Scholarship Within Two Years

James Baumgartner is a recent graduate of Texas Tech, graduating Magna Cum Laude from the Whitacre College of Engineering in May 2009 with a Bachelor of Science in mechanical engineering. During his time at Texas Tech he served as president of the 67-member Student Senate and internal vice president of the Student Government Association. As an active member of the student body, he worked to represent student needs on a variety of committees including chair of the Medical Services Fee Committee, Student Service Fee Committee, Information Technology Fee Advisory Committee, and helped distribute approximately \$450,000 to student organizations on campus. He was an active member of Delta Tau Delta Fraternity, ASME, National Society of Leadership and Success, the Texas Tech Homecoming Court, and the Honors College.

He recently began his career as a contracts engineer within the Project Management & Execution function of ExxonMobil Development Company. Shortly after joining the company, he spent several months in Brisbane, Australia working to build critical infrastructure for ExxonMobil's Papua New Guinea Liquefied Natural Gas project. He is currently in Houston working as a contracts engineer on ExxonMobil's Iraq West Qurna I Project. As a member of the Iraq Project he supports major ExxonMobil



Baumgartner works in Houston as a contracts engineer on ExxonMobil's Iraq West Qurna I Project.

Development Company contracting efforts including a multi-million dollar Engineering, Procurement, and Construction Management contract recently awarded to Fluor Corporation in February 2011 for oil field and infrastructure development in Iraq. He also serves in a variety of auxiliary roles including active

support of the ExxonMobil United Way Campaign and the Project Execution Safety Advocacy Team.

Personally, Baumgartner maintains an energetic lifestyle in Houston, Texas. He competes in triathlons and half and full marathons across the state including the San Antonio Rock N' Roll Marathon and Ft. Worth Cowtown Marathon. He regularly attends services at Second Baptist Church where he actively participates in his Sunday school class, small group bible study, and community service projects.

With the help of matching funds from ExxonMobil, Baumgartner recently established a \$25,000 endowment fund creating scholarship opportunities for young leaders within the Whitacre College of Engineering. When asked what prompted his gift, he said, "I wanted to start a tradition of giving back to the university that helped me get where I am." He added, "Scholarships were important to me. They helped me go to school. It's important for me to do the same for others and invest in their future."

With a bright future ahead, Baumgartner hopes to utilize the engineering, communication and leadership skills he acquired at Texas Tech to advance his career at ExxonMobil and give back to Texas Tech and the greater Houston community.



While working in Australia, Baumgartner traveled to Sydney, where he is pictured here in front of the Sydney Opera House.

Engineering Our Future asked James some additional questions about his time at Texas Tech and his career. The questions and his responses are recorded here:

What is your fondest memory of your time on campus?

All the campus activities I was involved in, exciting sporting events, and challenging classes bring back great memories. The fondest memory is definitely the year I spent serving as Internal Vice President for the Student Government Association. That is a fantastic organization that taught me a lot of the skills I use today from basic office organization, to time management (managing engineering classwork with extracurricular work), to leadership skills. I made some of my closest friends through SGA who I still keep in touch with today.

What is most interesting about being an engineer?

The most interesting thing about being an engineer is being able to solve not only technical problems, but business and commercial issues as well. A lot of people still picture the "typical engineer" sitting behind his computer screen working with CAD software all day. It's exciting to be out traveling and working for a large international company and using analytical thinking skills to find solutions for complex projects.

What do you want your legacy to be, both professionally and personally?

I strive to be a person who follows through on his word. My faith requires a commitment to love God and to love others. My family and friends require a commitment of love and energy. Organizations I am involved in require a commitment of resources and time. The legacy I strive to leave, personally, is to be known as a man who honors those commitments to the best of his ability everyday.

Professionally, I strive to follow through on the "little things" like meeting deadlines, communicating effectively, and producing quality work. A daily commitment to excellence helps fuel my greater values of operational integrity, sound business judgement and organizational leadership. The legacy I strive to leave, professionally, is to be known as an ethical person who follows through on his business commitments for the greater profit of the organization. **E**

Baumgartner (Left), stands with his mother, Patricia Baumgartner, at halftime for the 2008 homecoming game at Jones AT&T stadium. Baumgartner was a member of the Texas Tech Homecoming Court.





Alumni Profile

Butts Pioneers Novel Cryogenic Technology for Natural Gas Industry

Clark Butts always knew that he wanted to own his own company. He has a true entrepreneurial spirit and it did not take him long after graduating from Texas Tech with a mechanical engineering degree in 1973 to open a business. That business is still growing to this day.

Butts came to Lubbock in the fall of 1969 to study mechanical engineering at Texas Tech. On the first day of his freshman year, he met Shirley Sewell. Two years later, they were married and will celebrate 40 years of marriage in July. Shirley graduated in May 1972 with a Bachelor of Science in education, and Butts finished with a Bachelor of Science in mechanical engineering in the summer of 1973.

When the Butts first left Lubbock, they moved to LaPorte, TX, where he accepted a job as a mechanical project engineer for DuPont. A few years later in 1976, he had the opportunity to move to Midland, Texas to work a similar job with The Ortloff

Clark and Shirley Butts in Peru in 2007.



Clark Butts completed a Bachelor of Science in mechanical engineering from Texas Tech in the summer of 1973.

Corporation. While at Ortloff, he became a licensed professional engineer, but he still had the desire to branch off on his own.

In 1980, the Butts recognized that the oil and gas economy was booming and started BCCK Engineering. BCCK began with traditional natural gas processing and treating systems, oil field production installations and petrochemical facilities in the southwest United States. Over time, as engineering projects became both more complex and more varied, the client base expanded geographically and their technology expanded to profitably treat and process non-traditional gas.

After founding BCCK, Butts saw an increased demand for an efficient, economical nitrogen rejection process for natural gas streams with volumes less than 30 million standard cubic feet per day. He and his team developed and patented a technology called the Nitech™ process. This method uses cryogenics to separate nitrogen from natural gas. The Nitech™ process also has been implemented to reduce coal mine methane, thus reducing the emission of greenhouse gases. The company also can remove CO₂ from natural gas streams where CO₂ contents are found to be high.

In addition to BCCK, Butts has a “sister company”



(Above and right) BCCK facilities for nitrogen rejection, NGL recovery, CO₂ removal, helium recovery, and oxygen removal.

called NG Resources Corporation, which was established to build, fabricate and construct premium cold boxes, skids and pipe rack for the gas processing industry. NG Resources has a 40 acre facility located just northeast of Midland, TX consisting of a 12,000 square foot structural fabrication shop, a 15,000 square foot pipe/vessel fabrication shop and a 2,000 square foot cutting facility. Within the last three years, NG Resources has significantly increased the welding stations from 11 to 43.

BCCK has also established alliances with representatives in China, Australia and Russia as well as Europe. These partnering relationships allow BCCK's natural gas treating technologies to be marketed to meet today's industry challenges.

Clark and Shirley are proud Red Raiders and they have continually hired Texas Tech graduates to work for BCCK. There are currently eight engineers and two non-engineers on their professional staff, comprising one-quarter of the professionals employed by BCCK in Midland.

They also enjoy coming to Lubbock to watch Lady Raider Basketball games in their free time.

Engineering Our Future asked Clark some additional questions about his time at Texas Tech and his career. The questions and his responses are recorded here:

What is your fondest memory of your time on campus?

In reflection on my time on campus, my fondest memories are a composite of challenging classes, sports activities including Red Raider football and basketball, and an incredible first year in the dorm. Sneed Hall was fondly, although maybe not always, referred to as the “Animal Shelter.” Many of the varsity athletes lived in that dorm at the time and that experience was enlightening to a small town boy! I somehow managed to secure a valuable mechanical engineering degree and find a great young lady to become my lifelong partner, all in my time at Texas Tech. Both accomplishments were truly gratifying and life changing.

What is most interesting about being an engineer?

There is a tremendous satisfaction to solving a problem, designing a solution, and finally implementing the facility. I am very fortunate to be able to work in a challenging industry where the demand for new ideas and concepts has never been higher. Within the arena of using cryogenics for the separation of natural gas impurities, I have found an immensely challenging and rewarding profession.

What do you want your legacy to be, both professionally and personally?

I wish for my legacy to include words like “fair” to fellow workers, clients, and suppliers. I hope to be remembered as someone who contributed to the natural gas processing sector and a creator of solid engineering solutions. I wish to be remembered as someone who can be trusted, a person of faith, and a person that makes a positive mark on society. **E**





Alumni Updates

Whitacre College of Engineering Alumni Updates

1964

Jimmy Naylor, a 1964 graduate with a Bachelor of Science in electrical engineering, received the IEEE Milestone in Electrical Engineering and Computing Contribution Recognition Award for his work on the world's first Monolithic 16-Bit Digital-to-Analog Converter (DAC) for Digital Audio in 1981. This advancement enabled the development of affordable compact disc players.

1968

Norman Glenn, a 1968 graduate with a Bachelor of Science in engineering physics, has worked for the U.S. Navy at Pearl Harbor for 40 years. He began testing submarine reactor plants and is now the chief base engineer for the two largest Navy bases in Hawaii. He received the Meritorious Civilian Service Award for his accomplishments at Pearl Harbor.

Daniel Griffin, a 1968 graduate with a Bachelor of Science in electrical engineering, lives in Livermore, California, and is now retired.

1970

Michael L. McCrary, a 1970 graduate with a Bachelor of Science in mechanical engineering, retired in 2010 after a long international career with BP and Amoco. He has joined Westney Consulting Group in Houston, a project and risk management consultancy organization.

1980

Mark Reynolds, a 1980 graduate with a Bachelor of Science in electrical engineering and a 2005 graduate with a Master of Engineering, works with the Desoto Drilling team at Southwestern Energy as a drilling data analyst. He is also an adjunct professor of Computer Science at LoneStar College.

1981

Les Record, a 1981 graduate with a Bachelor of Science in electrical engineering technology, works for LifeSize Communications in Austin.

1985

Brett W. Henderson, a 1985 graduate with a Bachelor of Science in electrical engineering, was recently promoted to director of upstream projects in Europe, Eurasia, and the Middle East for Chevron in Houston.

1997

Bernard Boueri, a 1997 graduate with a Master of Science in civil engineering, works for Ontario Power Generation in Toronto, Canada.

2004

W. Shane Walker, a 2004 graduate with a Bachelor of Science in civil engineering, received a Ph.D. from The University of Texas at Austin through the Environmental and Water Resources Engineering program, and joined the faculty of The University of Texas at El Paso (UTEP) as an Assistant Professor in Civil Engineering in September 2010.

2010

Arica McGovern, a 2010 graduate with a Bachelor of Science in mechanical engineering, now works for HESS Corporation.

Evan Smith, a 2010 graduate with a Bachelor of Science in mechanical engineering, is a project engineer for Subsea Field Development at Oceaneering Intervention Engineering in Houston.

Faculty

Hubert (Heich) Heichelheim, emeritus professor of chemical engineering, passed away on December 9, 2010. He joined the Department of Chemical Engineering in 1963 and retired in 1996. He was uniformly admired for his classroom teaching and his advisement of students.

Sudqi H. Alayyan, emeritus associate professor of engineering technology, passed away on June 14, 2011 in Lubbock, Texas. Alayyan began working as a lecturer in the Department of Engineering Technology at Texas Tech in 1978, where he was awarded tenure and made associate professor in 2001. He served as coordinator and undergraduate advisor until his retirement in 2010.

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DFW Area Alumni Win Young Engineer of the Year Awards

Individual chapters of the Texas Society of Professional Engineers (TSPE) and the American Society of Civil Engineers (ASCE) recognize outstanding young engineers each spring with the Young Engineer of the Year award. Four Red Raiders in the metroplex have received Young Engineer of the Year awards.

TSPE Young Engineer of the Year Award Winners

The TSPE Young Engineer of the Year award is presented to individuals who exhibit outstanding contributions to public welfare and advancing the profession of engineering by an engineer less than 34 years of age.

Josh Logan, PE., was named the Young Engineer of the Year by the TSPE Fort Worth Chapter. He received a Bachelor of Science in civil engineering in 2001 and is employed by Halff Associates, Inc. in Fort Worth.

He joined Halff in 2002 and is now managing an array of drainage, public works and ecosystem restoration projects. He has significant experience with site development, drainage, and stream restoration.

Logan is active in the Fort Worth Chapter of TSPE and has served on a number of committees. He was the chapter's MATHCOUNTS coordinator for four years and is currently the education director. MATHCOUNTS is a nation-wide club and competition program that promotes middle school mathematics achievement with a foundation for success in science, technology, engineering and mathematics careers.

Daniel Martinez, PE., was named the Young Engineer of the Year by the TSPE DFW Mid-Cities Chapter. He received a Bachelor of Science in civil engineering from Texas Tech in 2001.

He has engineering experience in hydrology, hydraulics, civil design, and water resources. His accomplishments include major storm drainage improvements in Colorado Springs and numerous drainage reports and flood studies for municipalities in the Dallas-Fort Worth Metroplex.

Martinez has been a member of TSPE since 1998. He is treasurer of the DFW Mid-Cities Chapter and volunteers to help coordinate MATHCOUNTS. He also is a member of the ASCE, the Texas Floodplain

Management Association, and the Institute of Noise Control Engineering.

Jack Young, E.I.T., C.E.M., was named the Young Engineer of the Year by the TSPE Dallas Chapter. He received a Bachelor of Science in civil engineering from Texas Tech in 2008 and is currently employed by Halff Associates, Inc.

He joined Halff in 2008 as a civil engineer focused on water resources engineering projects in the firm's Richardson office. Since joining Halff, Young has served as project engineer for several municipal projects including emergency action plans, municipal hydrology and hydraulic studies, and stormwater analysis and design. He has also done extensive work with the FEMA Map Modernization project.

Young is active in the Dallas Chapter of TSPE and has served on a number of committees. He is currently the local chair of MATHCOUNTS.

ASCE Young Engineer Award Winner

The ASCE Young Engineer Award is given to younger members of ASCE (35 years of age or younger) who are judged to have attained significant professional achievements by the degree to which they have served to advance the profession; exhibited technical competence, high character and integrity; developed improved member attitudes toward the profession; and contributed to public service outside their professional careers.

Sam Hinojosa was named the Edmund Friedman Young Engineer of the Year for the ASCE Fort Worth Branch. He received a Bachelor of Science in civil engineering in 2003 and is employed by Halff Associates, Inc. in Fort Worth. as a Project Engineer.

He joined Halff in 2004 and as a project engineer, worked on projects related to stormwater and floodplain management in cities including Fort Worth, Grand Prairie, Mansfield, Richland Hills, and Austin. His projects have ranged from design to fully dynamic two-dimensional modeling of stormwater and riverine systems.

Hinojosa is active in the Fort Worth Branch of ASCE and is currently the vice president and secretary. **E**



Alumni News



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(L-R) Dr. Bernard Harris Jr. (STS-55, STS-63); Dr. Ellen S. Baker (STS-34, STS-50, STS-71);
Marsha S. Ivins (STS-32, STS-46, STS-62, STS-81, STS-98); Dean Al Sacco Jr. (STS-73);
Evelyn Husband Thompson, widow of Rick Husband (STS-96, STS-107);
and Matthew Husband, son of Rick Husband.