



THE UNIVERSITY OF TEXAS AT EL PASO

# ENGINEERING **vistas**



## BUILDING TOWARD A NATIONAL RESEARCH UNIVERSITY

\$9 Million for  
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## Message from the Dean



Richard T. Schoephoerster

If you've had an opportunity to be on campus recently, and tried to get to the Engineering Complex, you know that one must navigate a complex maze of construction to find us. And if you've tried to hold a meeting in one of our conference rooms, you may have had to shout over the banging heard underneath, overhead,

or nearby outside. These are the spoils of the tremendous growth and expansion the College of Engineering is currently experiencing. The \$100M+ of construction investment in the College by the UT System and the state of Texas is in full gear, and we are finally only months away from taking advantage of these new facilities as we grow our education and research programs. I invite you to visit our website to learn more about the ongoing construction and track its progress.

This growth and expansion of our facilities and our programs is part of a concerted effort by the University to become a national research university with a 21st century demographic. The University has developed a strategic plan for research that I encourage you to read (it can be found at [www.utep.edu/Institutional](http://www.utep.edu/Institutional)). You will see that the College of Engineering has a prominent role in moving the University toward becoming a national research university. To be at that level, we must impact engineering education and research at a national level. In this issue of *Engineering Vistas*, you will learn of our plans to develop a new bachelor's degree program that we are calling Leadership Engineering. This program is the first stage in a potentially significant change in the engineering educa-

tion paradigm. There is much debate and discussion ongoing nationally regarding the need to broaden the skill set of engineering graduates, as well as increase the opportunities to integrate practical experience into the engineering curriculum. We believe the Leadership Engineering program will put UTEP at the forefront of this discussion. And it will attract the future leaders of the profession, and of the nation. Samuel Florman, author of *The Existential Pleasures of Engineering* and *The Introspective Engineer*, states the need for Leadership Engineers very succinctly and to the point: "We live in a technological age, and if our society is to flourish, many of our leaders should be engineers, and many of our engineers should be leaders."

We also live in an age in which urban centers drive the shifting national demographics and are where more than 80 percent of the population lives and works. Urban universities, like UTEP, now carry much of the role that the original land-grant institutions played in the education of the general population, and collectively affect the national economy by each university having a major impact on its regional economy. The "Urban University Renaissance Act of the 21st Century" is a bill recently introduced into Congress, and it calls for the development of collaborative clusters of businesses in a particular industry with higher education research institutions to promote regional economic growth. The Texas Emerging Technology Fund has a similar goal, and our recent funding in this area promises to revolutionize manufacturing across many industries, including aerospace, electronics packaging, and biotechnology. This is one example of our efforts in creating a stimulating and innovative environment for our students, and at the same time creating jobs and stimulating the regional economy. To learn of more examples and stay up to date with UTEP Engineering activities, visit our website ([engineering.utep.edu](http://engineering.utep.edu)) often.

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## On the Cover...

### Engineering Construction, Renovations & Improvements

The Chemistry and Computer Science Building, located directly south of the Engineering Annex, is expected to be completed in 2011. The 140,000-square-foot facility will provide researchers and students with expanded and upgraded classroom and lab space, as well as opportunities for the colleges of science and engineering to collaborate on research projects.

Renovations and other projects include

the Biomedical Engineering and Bioinformatics Annex, the Research and Academic Data Center, the W.M. Keck Center for 3-D Innovation expansion, the Center for Space Exploration Technology Research Propulsion Lab, the Nanotechnology Fabrication Center, the Engineering Design Studio, a Technology Café, and renovations to the Engineering Student Services areas. Renovations and projects are also expected to be completed in 2011.

# State-of-the-Art Advanced Printed Electronics Research Center to be Established at UTEP

Texas Emerging Technology Fund, Lockheed Martin and UT System combine for \$9 million in support of SPEC Center's Advanced Fabrication Technologies

Imagine buying wafer-thin, high-definition television sets by the roll and applying them to the walls at home. Or imagine being able to replace your lost cell phone within minutes by hitting the "print" button on a computer.

It may sound like science fiction, but it's not. This is the future of electronics manufacturing, and the technologies behind it are being developed at The University of Texas at El Paso.

Gov. Rick Perry recently approved a \$3 million state investment through the Texas Emerging Technology Fund to help create the new Structural and Printed Emerging Technologies Center in UTEP's College of Engineering.

Industry partner Lockheed Martin Aeronautics will contribute \$3 million toward five-year operating costs of the new center, and The University of Texas System has pledged \$3 million in construction and equipment funds—for a total of \$9 million—to launch the state-of-the-art advanced printed electronics research



Electrical Engineering graduate students (left to right) Richard Olivas and Danny Muse perform research in the W.M. Keck Center for 3D Innovation.

facility.

The SPEC Center, as it will be called, will take advantage of and build upon the existing world-class rapid-prototyping or additive manufacturing equipment and research available now in the college's W.M. Keck Center for 3D Innovation.

Additive manufacturing and other technologies are already being used at the Keck Center to build a variety of 3-D devices. The new SPEC Center will combine these manufacturing technologies with printed electronics technologies to build entirely new functional products. The area

housing the Keck Center, now occupying 6,100 square feet on the first floor of the College of Engineering, will double in size to accommodate the SPEC Center's new laboratories and equipment. The computer-driven systems will allow the fabrication of complex three-dimensional mechanical and electronic devices, and even medical products formed of living tissue.

The SPEC Center will initially focus on printed electronics, but will have the capability to produce devices of nearly all types, sizes and materials, limited only by a researcher's imagination.

"UTEP, with our long and proud engineering legacy, is now ready to become the region's nexus for the next generation of manufacturing technologies," said University President Diana Natalicio. "The creation of the new SPEC Center will generate outstanding research opportunities for our faculty and students, leading to commercializable discov-

eries and creation of high-paying, high-skilled jobs for the Paso del Norte region."

The SPEC Center will be directed by Kenneth H. Church, a well-known expert in the printed electronics field who holds a Ph.D. in electrical engineering from Oklahoma State University. Church, who joined UTEP in January, has extensive experience in technology commercialization and is the founder of advanced-technology companies Sciperio Inc. and nScript Inc. Church is an inventor or co-inventor of a number of patented or patent-pending technologies, and his research interests include lasers, optics, tissue-engineered materials, antenna designs and other novel electronic devices.

The SPEC Center will be co-directed by Professor of Mechanical Engineering Ryan Wicker, Ph.D., the current director of the Keck Center.

"I am looking forward to working with Dr. Church to expand what we do into the new and exciting areas of printed electronics," Wicker said. "We are uniquely positioned to make a significant difference in this new frontier."



Undergraduate student Arturo Adame in the Keck Center.

## Outreach Program Offers Research Experience to High School Students



Top: Parkland High School students (left to right) Abraham Rivera, Lilian Martinez, and Danielle Hansen participate in UTEP's Nexus program. Bottom: 2010-2011 Nexus Interns



Students at Parkland High School are gaining engineering experience through Nexus, the high school internship program in UTEP's College of Engineering.

Nexus is a shadowing program coordinated with local area high schools to have their students participate in an internship in a UTEP engineering research laboratory or with local professionals. Since 2007, the program has allowed more than 55 high school students to interact with faculty and engineering students. Participants also are immersed in leadership training. Participating schools include Socorro High School, Bel Air High School, Harmony Public Schools, and Parkland High Schools.

This month, students from Parkland High School are interning at a local engineering firm, CEA Group, which is owned by UTEP civil engineering alumni Ruben Chavez and Ulises Estrada.

According to Gabby Gándara, director of ACES in UTEP's College of Engineering, the Nexus program is a great opportunity to introduce high school students to engineering fields.

"These internships provide students with an experience that can't be found in the classroom," he said. "We see this internship training and the projects students worked on to have a huge impact on how they perceive themselves going to college and starting a career."

## CS Summer Program Trains Students for Research Careers



Students from across the nation participated in the UTEP Summer Research Experience for Undergraduates (REU) Program in Applied Intelligent Systems.

The 10-week summer program, which was sponsored by a grant from the National Science Foundation, provided training for students interested in research careers. The program was directed by Dr. Olac Fuentes, associate professor of computer science, and included weekly seminars and myriad opportunities for hands-on research experience.

"The most valuable thing was actually implementing some of these algorithms," said Peter Kelley, a computer science student from SUNY-Geneseo. "I definitely learned a lot."

According to Diego Aguirre, a computer science student from UTEP, the program was "extraordinarily useful."

"We learned the dynamics of research. I now understand how things work. I think that was the most important thing I learned in this program" Aguirre said. "I hope UTEP keeps doing these kinds of programs because they are very helpful."



Participants in the UTEP Summer Research Experience for Undergraduates (REU) Program presented their project results on Aug. 6. Top Left: Diego Aguirre presents his project, titled "Tracking Multiple Near-identical Objects." Shown directly above is Peter Kelley, CS student from the State University of New York at Geneseo, presenting his project titled "RNA Secondary Structure Prediction using Heuristic Backtracking Search."



# Students, Alumni Celebrate TCM '10



UTEP Engineering students and alumni celebrated TCM on March 12, 2010. The celebration honoring Saint Patrick, the patron saint of engineering, is the oldest tradition in the College and University. Every year engineers pay homage to St. Pat during this celebration to remember the roots of the University...mining and engineering. This celebration gets students involved with various on-campus and community services activities. Engineering alumni and students are invited to join in the 2011 TCM celebration, which will be held on Friday, March 11.

## Engineering Student Named Top 10 Senior



Sylvia Natividad, a recent metallurgical and materials engineering graduate, was named one

of UTEP's Top Ten Seniors, an honor given annually to UTEP's best and brightest students by the UTEP Alumni Association.

The first female in her family to receive a college degree, Sylvia earned many

scholarships and actively participated in many campus organizations and activities as an undergraduate student. She was named an Albert S. Holbert Endowed Scholar and has received engineering awards from the American Society of Civil Engineering, the Texas Society for Professional Engineers and the National Action Council for Minorities in Engineering. Her campus activities include serving as a board member of Women in Science and Engineering (WISE), treasurer of the UTEP Rotary, fundraising

co-chair for the Materials Advantage Society and president of the Alpha Sigma Mu materials engineering honor society. In the community, she has organized holiday events for La Posada, a domestic violence shelter; was a science fair judge at Cooley Elementary School; and was a fundraiser for the Humane Society of El Paso.

Sylvia graduated from UTEP with a bachelor's degree in metallurgical and materials engineering in May. She plans to work as a graduate research assistant at The

University of Arizona for the summer and then will return to UTEP as a master's student in metallurgical and materials engineering.

"My fondest memory of UTEP is my older brother's graduation day," Sylvia said. "I was so proud to see my brother, the first person in our family to graduate from college, receive his Bachelor of Science degree in computer science. This event inspired me to excel in my own career at this great University, which provides everyone an equal opportunity to succeed."

# UTEP, AT&T Partnership Leads to Research Opportunities



On April 6 corporate executives from AT&T traveled to UTEP to celebrate the opening of the new AT&T Network Operations Development Center in Downtown El Paso. The inaugural class of UTEP student associates was also introduced. AT&T interns (shown above with AT&T executives and UTEP President Dr. Diana Natalicio) include Jaime Parra, CS; Richard Arriaga, EE; Brenda Medina, mathematics graduate student; Cyrus Brooks, CS; Cesar Monsivais, EE; Ashwin Ganesh, CS graduate student; Kate Lopez, math and physics; Jessica Reyes, graduate student in engineering; Mario Diaz, EE; Ruben Hernandez, EE; and Tiffany Rossy, EE.

AT&T recently announced new initiatives that will facilitate research and professional work experience opportunities for UTEP students and faculty.

In April, AT&T announced the opening of the AT&T Network Operations Development Center in Downtown El Paso. The inaugural class of UTEP student associates was introduced at a breakfast on April 6.

The inaugural class includes 11 science and engineering students selected for a semester-long paid internship with AT&T. These freshman, sophomores, and juniors will work as part-time employees in the new Downtown location. They will utilize technical skills they learn in the classroom by working in a professional environment and networking with other AT&T employees around the country.

The students will gain experience with projects such as data mining and coding, integration systems and other projects that will allow them to solve programming issues that will arise on a daily basis.

AT&T's new long-term "integrated strategic relationship" with UTEP is the first of its kind for the multibillion-dollar communications giant. AT&T will work with the University and its students to cultivate a talent pool to replenish AT&T's workforce while also improving its demographic profile. UTEP

will become a prototype for what AT&T hopes to initiate at other universities around the country.

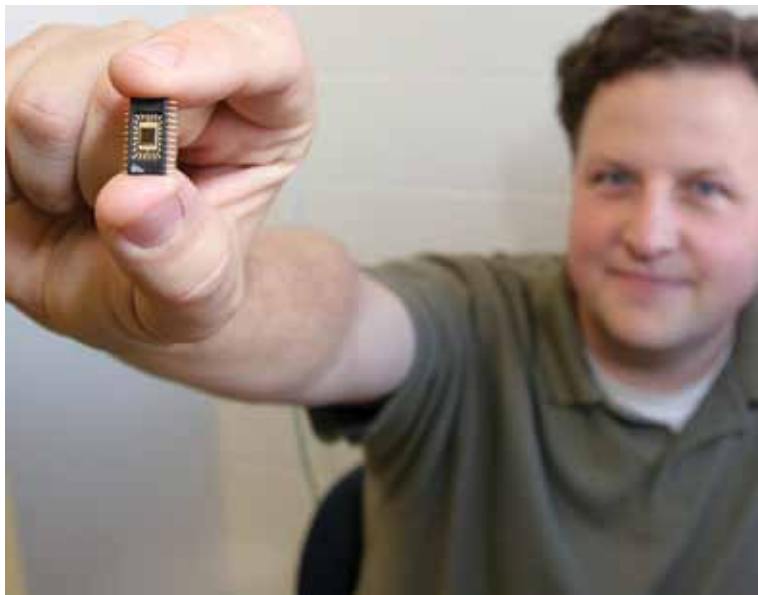
AT&T's long-term plan includes working with faculty, undergraduate and graduate students and its regional and corporate offices. UTEP and AT&T will collaborate to identify research projects that will benefit both entities and use student hires.

"The affiliation and strong relationship with a world-recognized leader will lead to great research opportunities for UTEP, its faculty and students," said Ricardo Pineda, Ph.D., director for UTEP's Research Institute for Manufacturing and Engineering Systems (RIMES) and chair of UTEP's industrial, manufacturing and systems engineering department. "These are the kind of relationships that will take UTEP to the next level and move us toward Tier One."

According to Pineda, RIMES is currently negotiating with AT&T to expand internship programs to include master's and doctoral students. RIMES is also coordinating the addition of Ph.D. and M.S. students in electrical and computer engineering, computer science, and industrial, manufacturing, and systems engineering in assignments at AT&T labs and research facilities in Texas, New Jersey, and California.



# Faculty Feature: Eric MacDonald



Above: Eric MacDonald holds UTEP's first million transistor chip.  
Bottom Right: MacDonald's research involves three-dimensional electronics with computer chips embedded in them.

Eric MacDonald spent 12 years in industry before joining UTEP's Electrical and Computer Engineering Department. Last year he received tenure and a promotion to associate professor.

A computer chip designer, MacDonald previously worked for IBM, Motorola, and even started his own company before becoming a professor at UTEP. His startup was eventually acquired by a Silicon Valley firm – Magma Design Automation, Inc.

Much of MacDonald's current research is performed with Ryan Wicker, Ph.D. in the W. M. Keck Center for 3D Innovation

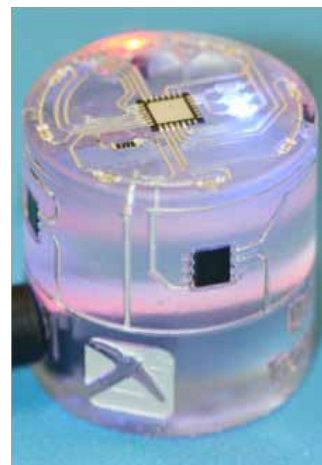
at UTEP. His work involves three-dimensional structural electronics with computer chips embedded in them. According to MacDonald, his work has potential military and biomedical applications.

MacDonald is also known for creating UTEP's first million-transistor chip. In addition, he recently designed a chip for a Navy flux gate magnetometer – one of the most sensitive magnetometers on Earth at room temperature. He has also secured a \$200,000 project with the Army's High Performance Computing (HPC) facilities to design computer chips using High Performance Computers with thousands of processors, instead of just one.

His work was recognized recently when he was awarded a prestigious DARPA award, together with Ameet Chavan, a recent Ph.D. graduate. As winners of the DARPA design contest, their low-voltage chip design is being fabricated in MIT's Lincoln Labs.

MacDonald lived in El Paso as a child - his father was stationed at Fort Bliss through most of the 1970s. He says it was the desire to learn Spanish that brought his family back to El Paso. The father of five children, MacDonald and his wife are expecting their sixth child in 2011.

His next step – MacDonald hopes to secure an award through the Fulbright Scholarship Program to travel to Santiago, Chile to learn Spanish and to explore additive manufacturing of ceramics with a Chilean collaborator at the Pontificia Universidad Catolica.



## UTEP Announces 2010 Distinguished Alumni



The University of Texas at El Paso and the UTEP Alumni Association have announced the winners of the 2010 Distinguished Alumni Award.

**Mike Loya**, a College of Engineering graduate, is one of three recipients that will be recognized during Homecoming Week (Oct. 4-9) activities, including the 2010 Distinguished Alumni Awards Dinner on Friday, Oct. 8, at the Don Haskins Center.

Mike Loya heads Vitol Inc., the muscular American arm of The Vitol Group, one of the world's largest energy trading

companies. Vitol, with its billions of dollars in assets, beats

the competition through the efficiency and diversity of product and partnerships that are hallmarks of its powerful global presence.

Competitiveness always has been a factor in Loya's success. His present project includes assembling a first-class electricity trading team.

Loya graduated from UTEP in 1977 with a bachelor's degree in mechanical engineering and went on to pursue a Master of Business Administration from Harvard Business School in 1979. He is the oldest of seven high-achieving siblings in a first-generation Mexican-American family.

Loya, the 2006 Gold Nugget from the College of Engineering, is involved in programs that give more students a chance at a good education. He serves on the board of trustees of Houston-based YES Prep Public Schools, an innovative multi-campus charter school initiative that places 100 percent of its graduates—95 percent of whom are Hispanic or African-American—in four-year colleges through its rigorous curriculum.

# 2010 Gold Nuggets Announced

Each year, UTEP recognizes exceptional graduates. These Gold Nuggets exemplify the quality of the University. The College of Engineering has named three Gold Nuggets this year - Juan M. Herrera, Ph.D., P.E.; Jose F. Cardenas, P.E.; and Tom Cardenas, P.E. Alumni and Gold Nuggets will be honored at the annual Homecoming Breakfast, which will take place on Saturday, Oct. 9, at the El Paso Natural Gas Conference Center. To register for the event, visit [engineering.utep.edu/homecoming](http://engineering.utep.edu/homecoming).



**Juan M. Herrera, Ph.D., P.E.** received his B.S. and M.S. degrees in mechanical and metallurgical engineering from The University of Texas at El Paso. He completed a Ph.D. at the University of Houston.

Herrera is the president of Herrera, Stafford and Associates, a consulting metallurgical and mechanical engineering firm in El Paso. The firm is highly sought in the US and internationally in the areas of failure analysis, forensic engineering, accident reconstruction, and mechanical design. In addition to HS-A, Herrera was founding partner and president of Met-Tech, a manufacturer and fabricator of industrial machinery and metal structures.

In addition to being a successful entrepreneur (Herrera has started three successful businesses), over a 40-year career, Herrera has been a design and manufacturing engineering, technical and plant manager, and president of Mid-South Industries.

Herrera educated generations of UTEP engineers as from 1977 – 2003 as a professor in the College of Engineering. Beginning as an assistant professor in 1977, he held virtually every position in the College of Engineering including department chair and assistant dean. He supervised the completion of 129 masters degree thesis, the highest degree awarded by his department during his tenure. Juan was a pioneer of the College's outreach programs to middle and high school students, teachers and parents. He continues his association with the University as emeritus professor in the College of Engineering.



**Jose F. Cardenas, P.E.** received his B.S. in civil engineering from The University of Texas at El Paso. Cardenas is the president of Moreno Cardenas, Inc., a consulting civil engineering firm in El Paso. Cardenas has served on the board of directors of the Texas Council of Engineering Companies at the state level, and on the local level, on the board of directors of the El Paso Chapter of the American Society of Civil Engineers, and is a past president of the El Paso Chapter of the Texas Society of Professional Engineers. Cardenas was also a founding member of the Alumni Academy of Civil Engineers at UTEP. He is the current chairman of the College of Engineering Advisory Board at UTEP, and on the board of directors of UTEP's Alumni Association. He is also serving on the executive committee of the Borderland Mobility Coalition of El Paso. He is a licensed engineer in Texas, New Mexico, Arizona, and Oklahoma. Cardenas has been active in community service, having served as an officer on several community organizations. He and his wife, Rebecca, reside in El Paso and have two children - Marisa and Jose Jr.

Cardenas has more than 33 years of experience in civil engineering, with 30 of those years as a practicing consulting engineer. As a founding partner of MCI, his primary practice has been to serve public sector clients in the planning, design and construction of projects mainly in the water and wastewater engineering fields. Joe has served as project manager for numerous multimillion-dollar water and wastewater projects funded by the EPA, the Texas Water Development Board, and local municipalities.



**Tom Cardenas, P.E.** ECM International was founded in January 1983 by Tomas Cardenas, P.E. His vision to help public and private sector corporations establish high quality, cost efficient, and highly functional operations has lead to ECM International's position as a leader in multinational consulting.

Behind this outstanding leadership is a team of 40 bilingual, bicultural professional, technical and administrative personnel who have extensive experience in their respective fields. ECM has completed more than 70 million square feet of constructed facilities, representing more than \$6 billion dollars, in the United States, throughout Mexico, Central America, Canada, and England.

ECM International is a registered engineering company in the State of Texas with professionals in the disciplines of civil, mechanical, and electrical engineering. In addition, ECM staff includes LEED-accredited professionals and a Registered Accessibility Specialist. Project managers and inspectors are certified by the Association of Construction Inspectors (ACI) in the fields of Certified Construction Project Managers (CCPM), and Certified Construction Consultants (CCC).

Cardenas has been active in the community and at UTEP. UTEP activities include serving on advisory boards for the Stanlee and Gerald Rubin Center for the Visual Arts and the new program in construction management.



## Message From Alumni Chapter President Keith Fong



Keith Fong, president of the Engineering Alumni Chapter of the UTEP Alumni Association, with his wife, Maria.

The College of Engineering is something special at UTEP. As Dean Richard Schoephoerster often notes, most things at UTEP start in Engineering, including the school itself. One of the latest "firsts" was the formation last year of the College of Engineering Alumni Chapter of the UTEP Alumni Association.

Many alumni have expressed a desire to give back to UTEP and to help the current generation of students. However, in the past there has been no real infrastruc-

ture. To participate, you had to make a big commitment to finding where and how to help.

With the formation of the Engineering Alumni chapter, that is changing. The chapter's vision is to be the nexus of organized alumni participation in the College of Engineering. We made great strides last year and the coming year will be even better.

Some of the successes we will build upon include a bigger Homecoming Breakfast; more engagement with students, especially for TCM; expanding our presence at Pre-Commencement; and more social events to build a stronger alumni network.

We're going to be creating some new things, too: A mentoring program is just getting kicked off, awards and recognitions to celebrate student and alumni success are getting organized, and an alumni speakers bureau is under development – alumni will be able to sign up to speak to students and organizations.

The future is bright for the Engineering Alumni chapter. If you're not a member of the UTEP Alumni Association, it's time to join and help make the Engineering Alumni Chapter a powerful force for student opportunity and professional networks.

## Natalicio Gives Presentation to Engineering Alumni



Dr. Diana Natalicio met with members of the Engineering Alumni Chapter on July 9 to share her vision of becoming a national research university. The presentation can be viewed on the College website at [engineering.utep.edu](http://engineering.utep.edu).

## Alumni & Gold Nugget Breakfast



**El Paso Natural Gas Conference Center**

**Saturday, October 9**

**9:00 a.m.**

**8:00 a.m. coffee**

**Cost: \$20 per person**

*RSVP to [rsvpengengineering@utep.edu](mailto:rsvpengengineering@utep.edu) or visit us online at [engineering.utep.edu/homecoming](http://engineering.utep.edu/homecoming)*

## 2010-2011 Events Calendar

### Career EXPO

September 23-24, 2010  
UTEP

### UTEP Homecoming

October 3-9, 2010

### Graduate & Professional Career EXPO

Tuesday, October 5, 2010  
UTEP

### Civil Engineering Homecoming Luncheon

Friday, October 8, 2010  
11:30 am  
UTEP, EPNG

### Alumni & Gold Nugget Homecoming Breakfast

Saturday, October 9, 2010  
9:00 am  
UTEP, EPNG  
[engineering.utep.edu/homecoming](http://engineering.utep.edu/homecoming)

### Government & Public Service Fair

November 16, 2010  
UTEP

### Fall Pre-Commencement/ Order of the Engineer

Saturday, December 11, 2010  
UTEP, Magoffin  
[engineering.utep.edu/plaza/pre-commencement](http://engineering.utep.edu/plaza/pre-commencement)

### Engineering & Science Job Fair EXPO

Friday, February 2, 2011  
UTEP

### TCM

March 11, 2011  
[engineering.utep.edu/plaza/tcm](http://engineering.utep.edu/plaza/tcm)

### Spring Pre-Commencement/ Order of the Engineer

May 14, 2011

*The above dates are tentative  
and are subject to change.  
For more information, visit the  
website at [engineering.utep.edu](http://engineering.utep.edu).*

## Profiles in Giving: AACEs Always High

The Department of Civil Engineering has an ace up its sleeve when it comes to building departmental resources in challenging economic times – actually it has 42 of them.

The Alumni Academy of Civil Engineers (AACE) has been supporting the department's efforts to improve its offerings, provide student support and improve facilities since 2000. Each year since inception, AACE has added new members and provided annual support to Civil Engineering for everything from equipment to supporting the ASCE Student Chapter entries in the Concrete Canoe and Steel Bridge competitions.

When the department added a doctoral program in 2004, the members recognized it as the only department in the College of Engineering without an endowed professorship. Stepping up to the challenge, members chipped in additional support each year beginning in 2007 to create the Alumni Academy of Civil Engineers Professorship in Civil Engineering. The Professorship is now endowed at \$100,000 and, as the AACE organization had planned, is the first endowed professorship for the department.

According to Bernardino Olague, P.E. and president of AACE, "We wanted to show what



2010 ASCE Concrete Canoe Competition

a group of loyal and committed alumni working together can do to help the department that helped us. We're simply paying forward so that future students will continue to receive the quality education we enjoyed."

In support of the University's aspirations to becoming a national research university, the organization is now embarking on an effort to upgrade the professorship to a distinguished professorship in support of Civil Engineering's growing research enterprise. If the past can be used to predict the future, Civil Engineering is confident they have the "AACEs high" hand.

For more information visit the Department of Civil Engineering website at [ce.utep.edu](http://ce.utep.edu).

## Transforming Engineering Education

For decades, prestigious and authoritative bodies in the U.S. such as the National Academy of Engineering, the National Science Board, the American Society of Engineering Education, and a multitude of leading technical corporations have spoken unanimously and repeatedly about the need to "reinvent engineering education." Despite the hue and outcry, these called for changes have largely been at the margins or piecemeal.

With the support of Bob and Diane Malone, Halliburton Foundation, and Freeport McMoran Copper & Gold Foundation, the College of Engineering is embarking on a radically new approach to engineering education to meet industry and societal needs of the 21st century. The new program, Leadership Engineering, will educate "renaissance engineers" with a "liberal-technical" approach. A new curriculum that captures the interest and imagination of talented, young leaders who want to

"turn ideas into reality" and "make a world of difference" is under development.

As conceived, the design-centric Leadership Engineering Program will emulate in some respects the preparation of medical doctors. Leadership Engineering is the first step in the transformation of engineering education to new approaches that by 2020 will achieve the combined recommendations of the Engineer of 2020 and Engineering for a Changing World – a broad-based, liberal engineering degree program followed by an ABET-accredited, graduate professional engineering degree program in a specific discipline.

Just as the College is "changing the face of engineering" from a demographic stand point, UTEP Engineering is taking a bold step to transform engineering education.

For more information about UTEP's Leadership Engineering Program, visit the College of Engineering at [engineering.utep.edu](http://engineering.utep.edu).



## Murr Gets Award in China



What started as a summer trip to China to accept an award for a lifetime of research turned into an invitation for The University of Texas at El Paso's Lawrence Murr to become a visiting professor at one of the top engineering schools in that country.

Murr, Ph.D., chairman of UTEP's Department of Metallurgical and Materials Engineering,

accepted the request to be part of the Chinese Academy of Sciences (CAS) Senior International Scientists program. It involves collaborations with his Chinese counterparts at the Institute of Metal Research (IMR) and an additional visit to China next summer.

He said he hoped that the opportunities to work together would grow because they are good for UTEP's students and faculty.

As for his honor, Murr, who was accompanied by his wife of more than 50 years, Patricia, received the prestigious Lee Hsun (pronounced Shun) Research Award on May 23 in front of about 100 professors and doctoral students at the IMR in Shenyang, a large hub city in northeast China. The prize recognizes individuals for past accomplishments in the research field of materials science and technology.

The topics of his lectures, which were given in English without translators, ranged from the highly technical to his way of writing a technical paper, which he suggested should be developed like a movie script, including the use of storyboards.

## Stella Quiñones Among Nine Faculty Members Honored by Regents



Stella Quiñones, Ph.D., assistant professor of electrical and computer engineering, was among nine faculty members from The University of Texas at El Paso to receive the highest form of recognition from The University of Texas System Board of Regents.

The honorees were presented with the Board of Regents' Outstanding Teaching Awards during a special dinner in Austin Aug. 11. They were selected for their performance, innovative teaching techniques and commitment to teaching at the undergraduate level. Quiñones was named one of three tenure-track winners.

"We are lucky to have a faculty member that has enriched our students' education by coupling her expertise in materials and electronic devices with a true talent for teaching," said Electrical and Computer Engineering Department Chair Patricia Nava, Ph.D. "Dr. Quiñones is known for her ability to continuously improve course materials and teaching style. This, in addition to her research accomplishments and service record, make her truly deserving, and the department is delighted that Dr. Quiñones has been recognized with this award."

The awards program was established by the Board of Regents in August 2008 as the latest in a series of UT System initiatives aimed at fostering innovative approaches to teaching, research and commercialization endeavors at all 15 UT System institutions.

## At the Forefront: The Centennial Campaign for UTEP 1914-2014

In 2014, UTEP will celebrate 100 years of achievements and innovation. We will mark this major milestone by successfully completing the most ambitious fundraising campaign in our history.

At the Forefront: The Centennial Campaign for UTEP is a \$200 million comprehensive campaign that will impact the entire University and transform every aspect of the community it serves, as well as elevate the lives of UTEP's neighbors in Texas and New Mexico and enrich its relationships with its international partners.

UTEP is raising funds to support its colleges, departments and divisions with a central focus on building endowments for scholarships and fellowships, and establishing distinguished professorships and chairs. The campaign is also providing leadership support for innovative programs within our colleges and divisions.

Please consider participating in this transformational campaign. For more information, check the centennial campaign website at [www.campaignforutep.org](http://www.campaignforutep.org) or contact Manny Pacillas, assistant dean – advancement, at [manny@utep.edu](mailto:manny@utep.edu).

# College Welcomes New Faculty and Staff

The College of Engineering at The University of Texas at El Paso is pleased to announce that the following new faculty and staff members have joined the College.



**Christopher D. Kiekintveld, Ph.D.**, has been named assistant professor in the Department of Computer Science.

Dr. Kiekintveld's research interests include artificial intelligence, multi-agent systems, game theory, security, risk analysis, mechanism design, electronic commerce, markets, supply chain management, optimization, and uncertainty.

He received a Ph.D. and master's degree in computer science and engineering

from the University of Michigan, as well as a bachelor's degree in electrical engineering and computer science.



**Nam-Soo Kim, Ph.D.**, joins the Department of Metallurgical and Materials Engineering as associate professor.

Dr. Kim was formerly director of the KEN Research Center at Seokyeong University in Seoul, Korea, and assistant professor in the Department of Biochemical Engineering.

Dr. Kim received his B.S. and M.S. degrees from Korea University, Seoul and his Ph.D. in materials science and engineering

is from South Dakota School of Mines and Technology, Rapid City, S.D. His research interests include direct writing and printing technology in nano-technology and recycling.



**Norman Love, Ph.D.**, has been named research assistant professor in the Department of Mechanical Engineering.

Dr. Love earned his B.S. and M.S. degrees in mechanical engineering from UTEP. He received a Ph.D. in mechanical engineering from the University of Oklahoma. His research is conducted in UTEP's Center for Space Exploration and Technology Research (cSETR).



**Michael McGarry, Ph.D.**, has been named assistant professor of electrical and computer engineering.

Formerly assistant professor with the Electrical and Computer Engineering Department at the University of Akron in Ohio, Dr. McGarry's research is in the field of computer networks. His research interests include the optimization of medium access control (MAC) protocols; bandwidth forecasting; benchmarking

fairness; and quality of service (QoS) techniques. He is a recent recipient of the 2009 IEEE Communications Society Best Tutorial Paper Award.

Dr. McGarry received his B.S. in computer engineering from Polytechnic University and his M.S. and Ph.D. degrees in electrical engineering from Arizona State University.



**Alejandrina Morton** joins the College of Engineering as administrative assistant to the dean.

Before coming to UTEP, she worked in the Office of Advancement at Loretto Academy. A UTEP graduate, she holds a bachelor's degree in business administration.



**Nathaniel Robinson, P.E.**, has been named associate director of the Center for Space Exploration Technology and Research (cSETR) at UTEP.

Before coming to UTEP, Robinson spent 2 years as a design engineer at Motorola, 6 years at Department of Defense firms as design engineer and engineering manager, and 2 years as project lead engineer for a NASA contractor.



**Raymond C. Rumpf, Ph.D.**, has joined the electrical and computer engineering department as associate professor.

Before joining the faculty at UTEP, Dr. Rumpf was chief technology officer and vice president for Prime Research, a company that develops sensors, communications, and engineered materials for extreme applications.

His research interests are printed electronics and 3-D structures; metamaterials and advanced electromagnetic structures; and sensors and microsystems. He received B.S. and M.S. degrees in electrical engineering from Florida Institute of Technology and a Ph.D. in optics is from the University of Central Florida.



**W. Shane Walker, Ph.D.**, has been named assistant professor in the Department of Civil Engineering.

Dr. Walker received a B.S. degree in civil engineering from Texas Tech University. He received his M.S. and Ph.D. degrees through the Environmental and Water Resources Engineering program at the University of Texas at Austin. He also has experience with several civil and environmental consulting firms.

Dr. Walker is joining the Center for Inland Desalination Systems research group. His research interests include treatment of inland desalination concentrates, as well as the development of improved drinking water and sanitation systems for impoverished and developing countries.

**See FACULTY AND STAFF, Page 15**



# Engineering Graduate Programs

## Q&A with Dr. Carlos Ferregut, Associate Dean, Graduate Studies



**Engineering Vistas:** *What are the current graduate offerings?*

**Dr. Ferregut:** The college currently offers seven doctoral programs and twelve master of engineering programs. Of the seven doctoral programs, four are discipline specific: Civil Engineering, Computer Engineering, Computer Science and Electrical and Computer Engineering, and three are multidisciplinary: Computational Science and Engineering, and Materials Science and Engineering. The master's programs we offer are: Civil Engineering, Computer Engineering, Computer Science, Electrical Engineer-

ing, Engineering (with tracks in Biomedical Engineering, Software Engineering and Engineering Education), Environmental Engineering, Industrial Engineering, Information Technology, Manufacturing Engineering, Metallurgical & Materials Engineering, Mechanical Engineering and Systems Engineering. Furthermore, we are continuously looking for the opportunities to increase our graduate programs offerings.

**EV:** *What certificate programs do we currently offer?*

**Dr. Ferregut:** We offer four certificate programs: Construction Management, Cyber Security, International Manufacturing and Systems Engineering

**EV:** *How will the new laboratories affect research opportunities?*

**Dr. Ferregut:** The new laboratories will be very flexible and will be equipped to provide the best infrastructure to the faculty so they can set up experiments more efficiently. Most of them will house state-of-the-art technology and equipment that will increase our capabilities to conduct

more sophisticated research. The labs will increase the chances of engineering faculty to get their research proposals funded. The more funded research we get, the more opportunities we will be able to provide to graduate students to participate in a research group.

**EV:** *What effect will recent grants/awards have on our graduate programs?*

**Dr. Ferregut:** Recent grants and awards will allow us to increase the number of current research assistantships or scholarships to graduate students. This, in turn, would allow us to recruit more students so they can further their education at UTEP. In many cases, getting a research assistantship helps students make the decision to continue pursuing a higher education degree. Therefore, recent research grants allow us to grow our graduate programs.

**EV:** *What is the application process like? Can students apply online?*

**Dr. Ferregut:** The application process to our graduate degree programs is fairly

simple. It is based on a portfolio which consists of the following items:

- Official transcripts from all institutions previously attended
- Diploma/degree certificate
- Official TOEFL scores (If an international student)
- Official GRE scores
- Statement of purpose
- Letters of recommendation (2 or 3, depending on the program)
- Application fee: Domestic students \$45/International Students \$80

Once all of these materials are received by UTEP's Graduate School, they are sent to the admissions committee for evaluation and final admissions recommendation. Although the process is fairly simple and straightforward, students must keep in mind that a decision usually takes from two to three weeks, so they must plan in advance when applying for any given semester.

Prospective students complete the application process online at [engineering.utep.edu/graduate.htm](http://engineering.utep.edu/graduate.htm).

## Ben Flores Named Acting Dean of Graduate School



Benjamin C. Flores, Ph.D., has been named acting dean of the Graduate School. Flores is a professor of electrical and computer engineering and associate dean of the Graduate School.

Flores, who has received numerous prestigious awards throughout his career, was recognized earlier this year by President Barak Obama with the Presidential Award for Excellence in Science,

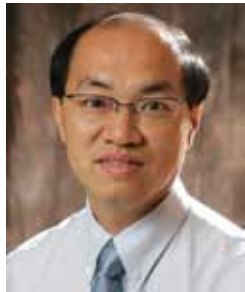
Mathematics and Engineering Mentorship. He was among 22 mentors and more than 80 educators nationwide awarded for their efforts to mentor minorities who are studying science and engineering. He leads several University and statewide programs that promote increasing minorities in the workplace with the hope that the next generation of scientists and engineers will better reflect the nation's

diversity.

Flores is an expert in retention strategies for nontraditional undergraduate and graduate students in the science, technology, engineering and math (STEM) disciplines. Previously he was the project director of the Model Institutions for Excellence Initiative, which had a funding portfolio of more than \$23 million. Currently, he is director of three NSF-funded programs.

# Engineering Faculty Promotions

The following faculty members have received tenure and/or promotion:



**Kelvin Cheu, P.h.D.**, associate professor of civil engineering, has been awarded tenure.

Director of the Border Intermodal Gateway (BIG) laboratory, Cheu's research interests and expertise include traffic operations, Intelligent Transportation Systems (ITS), public and intermodal transportation, transportation logistics and transportation security. He has extensive experience in the applications

of traffic simulation models, artificial intelligence techniques, GPS and GIS in transportation. Since joining UTEP in August 2006, he has established a transportation program in the Department of Civil Engineering with a strong focus on border transportation.

He has served as the principal investigator of several research projects funded by Federal Highway Administration (FHWA), Texas Department of Transportation (TxDOT), and El Paso Metropolitan Planning Organization (El Paso MPO). He is very active in the Transportation Research Board (TRB) of The National Academies, having served on three technical committees. He served as a friend of two other committees. Cheu is also serving as a member of the editorial advisory board in two international peer-reviewed journals. Five UTEP students supervised by him have won the Bronze Award in the Mondialogo Engineering Award contest, organized by UNESCO and Daimler in 2009. Many undergraduate and graduate students supervised by him have made presentations at national and international conferences.



**Ahsan Choudhuri, Ph.D.**, associate professor and chair of the Department Mechanical Engineering, has been awarded tenure.

Choudhuri was named chair of of the mechanical engineering department in May 2010. He also serves as director of the Center for Space Exploration Technology and Research (cSETR), a NASA University Research Center, which is performing frontier research in aerospace

and energy engineering while training underrepresented minorities in science, technology, engineering and mathematics (STEM) fields.

He was been with UTEP since 2001. His primary research interests are in aerospace systems and energy engineering.

Choudhuri received his postgraduate degrees in 1997 and 2000 from the School of Aerospace and Mechanical Engineering at the University of Oklahoma and his bachelor's in mechanical engineering at Khulna University of Engineering Technology in Bangladesh in 1993.



**Eric Freudenthal, Ph.D.**, has been promoted to associate professor of computer science. He has also been awarded tenure.

Freudenthal joined UTEP in fall 2004. His work has centered on the design and development of hardware and software systems that provide high performance over a range of operating conditions. His dissertation work evaluated and improved the interaction of algorithmic

and architectural mechanisms for coordinating large shared memory systems. He is currently investigating abstractions and mechanisms useful for constructing robust, secure and self-organizing distributed systems. In addition, he is working on various topics in engineering and computer science education research.



**Stella Quiñones, Ph.D.**, has received tenure and a promotion to associate professor of electrical and computer Engineering.

Quiñones has been a faculty member at UTEP for the past 13 years. She joined UTEP as a lecturer in metallurgical and materials engineering in 1997, and in 2004 she was hired as an assistant professor in the electrical and computer engineering department at UTEP. In

2007 she was appointed the Forest O. and Henrietta Lewis Professor in Electrical Engineering and in August of this year she was one of nine UTEP professors to receive a UT Regents' Outstanding Teaching Award. Her current research areas include planar and nano-scale selective CdTe deposition on CdTe(111), Si(100), Si(211) and SOI substrates using a conventional and state-of-the-art, close-spaced sublimation (CSS) technique for applications related to solar cells and infrared detectors. Her educational activities include an NSF funded Course Curriculum Laboratory Improvement grant to develop an applied quantum mechanics course for electrical engineers and collaborations with Purdue University on an NSF Network for Computational Nanotechnology to developing educational materials associated with the simulation of semiconductor devices using the NanoHUB.org website.



**Evgeny Shafirovich, Ph.D.**, has been appointed to assistant professor, a tenure-track position.

Shafirovich joined the Department of Mechanical Engineering in 2008. Before joining the faculty at UTEP, he was a research scientist at Purdue University's School of Chemical Engineering.

His research interests include combustion of metals, energetic materials, chemical hydrogen storage, chemical

oxygen generators, coal combustion/gasification, and solar thermochemical cycles for splitting water and CO<sub>2</sub>. He is a co-investigator at UTEP's Center for Space Exploration Technologies Research, where he focuses on the in-space production of propellants and materials.



**Ricardo von Borries, Ph.D.**, has received tenure and has been promoted to associate professor of electrical and computer engineering.

His research interests include digital signal processing with emphasis on wavelet transforms, timefrequency analysis, compressive sensing, tomographic imaging, overcomplete signal expansions, and parameter estimation.

The main application of the research is tomographic imaging and source localization in medicine and radar. Other interests include digital and analog hardware architecture and design to create dedicated instrumentation that complements the infrastructure needed for his research.

He has been on the faculty of the UTEP Department of Electrical and Computer Engineering since 2004.



**Nigel Ward, Ph.D.**, has been promoted to full professor of computer science.

Ward's research areas lie in the intersection of spoken language and human-computer interaction. Focus areas include improving the usability of today's spoken dialog systems and the study of fundamental issues in dialog modeling using a variety of methods: statistical, linguistic, systems-building, and experimental.

Current topics include the subtle prosodic signals that enable inference of a dialog partner's needs, intentions, and feelings at the sub-second level, and the use of these for more accurate speech recognition, for swifter and smoother turn-taking, and for more responsive, habitable dialog systems.

Ward joined UTEP in 2002 and is co-director of the Interactive Systems Group. His research has been primarily supported by the National Science Foundation and the Defense Advanced Research Projects Agency. He has served on NSF panels on language processing and on learning technologies, and as an organizer of the Special Session on the Prosody of Turn-Taking and Dialog Acts at Interspeech 2006 and the USC-UTEP Workshop on Predictive Models of Human Communication Dynamics in 2010.

## Faculty and Staff

Continued from Page 12



**L. Roy Xu, Ph.D.**, has been named associate professor of the Department of Mechanical Engineering.

Prior to joining UTEP, Dr. Xu was assistant professor of civil engineering and materials science at Vanderbilt University. His research background is in aerospace structures, solid mechanics, and advanced materials.

Dr. Xu received his Ph.D. in aeronautics and materials science from the California Institute of Technology. His research work has led to 34 journal papers and he received a Young Investigator Award from the U.S. Office of Naval Research. He currently serves as the vice chair of the Fracture and Failure Mechanics Committee of ASME.

## New Engineering Programs Offered in 2010-2011

The College of Engineering opened the 2010-11 academic year with two new programs. The Department of Mechanical Engineering has begun offering coursework for the new Energy Science and Engineering (ENSE) doctoral track within the interdisciplinary Ph.D. program in environmental science and engineering. The new program includes research topics such as fossil fuel power generation efficiency improvement, carbon capture and storage, high capacity renewable power generation and aerospace propulsion.

The College has also introduced a Graduate Certificate in Cyber Security. The program is designed to familiarize students with issues in national security law, intelligence and security needs, problems of security risk confronted by private and governmental organizations, and how governments and other organizations communicate with each other and work jointly on security matters. The 15-credit-hour coursework will emphasize inter-jurisdictional and inter-governmental aspects of security issues concerning infrastructure, travel and transport, and immigration.

## Ann Gates Wins Prestigious Borg Institute Social Impact Award



Ann Quiroz Gates, Ph.D., has been named the winner of the 2010 Anita Borg Social Impact Award. The award honors an individual or team that has caused technology to have a positive impact on the lives of women and society or has caused women to have a significant impact on the design and use of technology.

Gates is the associate vice president of research in the Office of Research and Sponsored Projects at UTEP and a professor of computer science. She is the founder of the Computing Alliance for Hispanic-Serving Institutions (CAHSI) at UTEP, a program that strives to increase the number of Hispanics who pursue and complete baccalaureate and advanced degrees in computing areas, as well as create a unified voice in an effort to consolidate the strengths, resources and concerns of other participating CAHSI institutions.

Gates' leadership is making a significant social impact by increasing the number of Latinos and Latinas graduating from college and seeking graduate studies in science, technology, engineering and math (STEM) fields.

"I am honored and truly humbled to have received the Anita Borg Social Impact Award," Gates said. "There are many people who deserve to be recognized alongside of me—people who have shared the vision of empowering others to excel."

Gates will be honored at an awards ceremony on Sept. 30 during the 10th Grace Hopper Celebration of Women in Computing (GHC) in Atlanta, Georgia.

The Anita Borg Institute provides resources and programs to help industry, academia and government recruit, retain and develop women leaders in high-tech fields, resulting in higher levels of technological innovation. Its programs serve high-tech women by creating a community and providing tools to help them develop their careers.



# ENGINEERING **vistas**

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