

10-1-2007

# Engineering Vistas

College of Engineering

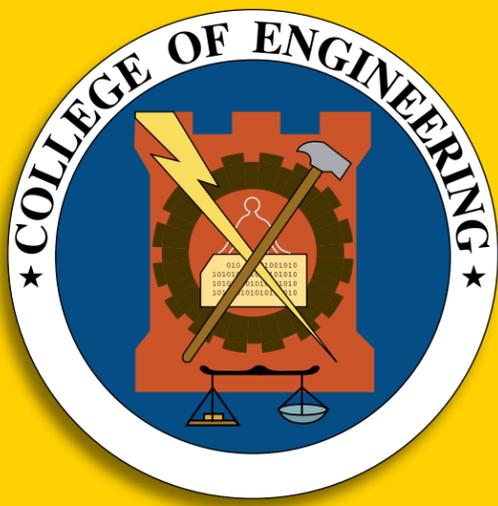
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# ENGINEERING Vistas



THE UNIVERSITY OF TEXAS AT EL PASO • COLLEGE OF ENGINEERING

Inaugural Issue, Fall 2007

## Welcome

We are pleased to introduce the inaugural issue of "Engineering Vistas," our newsletter for the College of Engineering at the University of Texas at El Paso.

"Engineering Vistas" will bring you a variety of news and features about the people, programs and facilities that make the college the pride of the university. You'll also read about the many accomplishments and recognition received by our faculty, staff, students, alumni and supporters.

We are fortunate to have a new dean, Dr. Richard Schoephoerster, former chair of the Department of Biomedical Engineering at Florida International University. I ask you to join me in welcoming him to UTEP. This newsletter features an article by Dean Schoephoerster on his goals for the college.

Our college continues to move forward in all aspects: academics, research, programs, personnel and facilities. It is important that we inform our alumni, sponsors, supporters, and partners of these advancements. Our goal is to engage and involve you in the college's activities and programs. To help do this, we welcome your input for future issues of the newsletter.

As Director of External Relations for the college, I welcome you to "Engineering Vistas," your view into the bright future of our students, communities and country.

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### INSIDE

**Interdisciplinary Engineering and Science Building** 2

**Hispanic Business magazine Three-peat** 3

**Gold Nugget Richard O. Martinez** 4

**Research News** 5-6  
• AHPC grant  
• Million-transistor chip  
• Wireless sensor networks

**Spring 2007 Facts at a Glance** 6

**Engineering Ambassadors** 7

[engineering.utep.edu](http://engineering.utep.edu)

## Dean's Message Looking to the Future

I am honored to be writing to you as the new dean of the College of Engineering at the University of Texas at El Paso. This College has long contributed to the economic vitality of the El Paso bi-national region, and has made a significant impact nationally through workforce and technology development. I look forward to working with the faculty, students, alumni, and friends of the College to continue to build upon this rich heritage.

I have found much to build upon here at UTEP. The rich legacy of engineering, beginning with the original mining and metallurgy programs, the very high quality faculty and students that the college currently attracts, and the diverse, bi-national nature of the region, coupled with very strong community support, all provide a very strong foundation on which to build.

There are a number of very important issues we will be working on in the coming academic year. Primary among them is the reaccreditation of all of our undergraduate programs. This includes a process of continuous improvement wherein we ensure that our graduates possess the skill set our constituents expect, and that our alumni are able to achieve our program objectives.

We are also embarking on a \$124 million building project to create new facilities for UTEP science and engineering programs. This new space will allow us to expand our programs and create opportunities for interdisciplinary science and engineering research and education initiatives.

I view my primary role as dean is to create an environment in which faculty and students can achieve their goals, and where our research and education programs are responsive to the needs of our constituents. My priorities for the coming year are focused on three areas: One, further expansion of our

research infrastructure, including the recruitment of high quality faculty and graduate students, and focused investment in key research initiatives; two, developing new relationships, and renewing old, with our alumni and friends of the college; and three, creating new educational programs that meet market demands.

As we develop a strategic plan for the college, we will be seeking input from all of our constituents. I look forward to meeting as many of you as possible in the coming year.



Richard T. Schoephoerster

**Richard T. Schoephoerster**  
Dean, College of Engineering





## New Interdisciplinary Engineering and Science Building in the Works

To continue providing the best engineering and science education in the region and to increase our research activities, UTEP has engaged in a \$124 million dollar project to build new research and teaching space and to remodel the existing space for engineering and science programs. The project is made possible through an investment from the Texas Legislature and the UT System Board of Regents.

After several months of consultation and meetings with the faculty, staff and administrators of the two colleges, a new 141,000-square-foot building was proposed. The new building will house the departments of chemistry and computer science, a new clean room facility, and laboratories for environmental and materials science and engineering. The classrooms and the labs in this new building will be equipped with state of the art equipment and will be designed to promote multidisciplinary teaching and research activities.

The proposed location for the new building is the corner of Hawthorne Street and Rim Road. A final design is being developed.

The proposed remodeling of existing buildings will create an engineering and science commons and add more space for electrical and computer engineering. The plan also calls for the renovation of space for civil, mechanical and industrial engineering and will combine engineering and science machine shops. The fluid and hydraulic teaching labs will also be updated. The final plans for remodeling are being worked out.

The university has hired a team of architectural and engineering companies, led by Carter & Burgess, Inc., to do the master planning, programming, and design of the new complex. Construction is scheduled to start in 2008.

## Congratulations Danny!

### First Miner in Space

On June 8, 2007, the space shuttle Atlantis thundered off the launch pad, and UTEP alumnus John "Danny" Olivas achieved his childhood dream of traveling to space.

A 1989 mechanical engineering graduate, Olivas space walked with partner Jim Reilly to install a new segment of the International Space Station that will provide electrical power for invaluable scientific research on future European and Japanese modules.

Hundreds of Olivas fans gathered at UTEP's Miner Mission Control in Union East to watch the launch and mission activities.

Olivas thanked UTEP and all the people of El Paso for their support, saying, "What we do is a result of not one person, but tens of thousands of people who dare to dream big."

#### Mission STS-117 Fast Facts:

- Olivas performed two spacewalks with Reilly, for a total of 14 hours and 13 minutes outside of the docked Atlantis and the ISS.
- The new solar wings installed during the spacewalks have a span of 240 feet. The solar arrays are capable of powering 30 homes of about 2,800-square-feet each.
- The work on the ISS was completed in an orbit more than 200 miles above the earth, as the docked shuttle Atlantis and station flew at about 17,500 miles per hour.
- Anchored to the shuttle's 50-foot robot arm, Olivas repaired a torn four-inch-by-six-inch section of a thermal blanket on the exterior of the shuttle.
- Olivas used two rows of six staples to fasten the torn blanket to an adjacent blanket. Then he used 21 pins to attach the blanket to adjacent heat-resistant tiles.
- Olivas' stapler came from Atlantis' medical kit. The pins used to secure the blanket to the tiles came from a repair kit developed after the 2003 Columbia tragedy.
- A big fan of his mother Carmen's *carnitas*, Olivas enjoyed about 14 Mexican entrees with his meals during the 13-day mission, according to the NASA menu.

For more information about Olivas and his mission, visit [www.utep.edu/dannyolivas](http://www.utep.edu/dannyolivas)

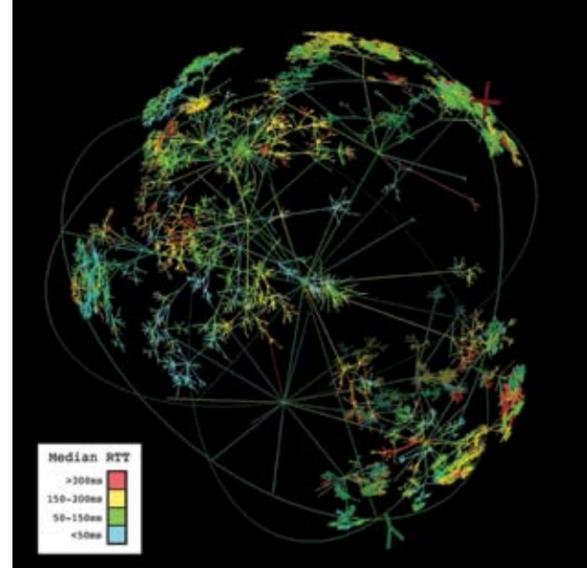


## Cyber-ShARE

Technology to help connect researchers, educators worldwide

UTEP has been awarded a \$5 million grant from the National Science Foundation to create the Cyber-ShARE Center of Excellence, a campus facility that will help researchers and educators around the world share information and significantly advance their studies.

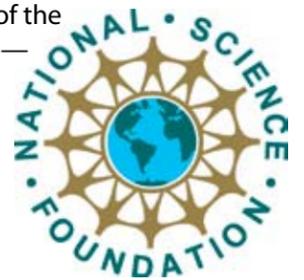
Cyber-ShARE will bring together experts in computer science, mathematics, and earth and environmental science to develop software applications, services, and other digital tools for gathering and computing data over the Internet.



This is a computer-generated visualization of data analysis over the Internet.

Courtesy of the Cooperative Association for Internet Data Analysis, [www.caida.org](http://www.caida.org).

The center will be an important part of a major National Science Foundation initiative to improve the performance of the nation's cyberinfrastructure—the immense amounts of useful data and high-performance computing power that can be shared by researchers over the Internet.



"Traditionally, research is done at large institutions throughout the world and it's difficult to share the information others are working on," said Ann Q. Gates, Ph.D., chair of the Department of Computer Science. "But the whole promise of cyberinfrastructure is that it breaks down those boundaries and allows scientists and educators to do state-of-the-art research."

Cyber-ShARE is short for "sharing resources through cyberinfrastructure to advance research and education." The award comes from the NSF's Centers for Research Excellence in Science and Technology program, which focuses on building the research competitiveness of minority-serving colleges and universities.

The center will offer educational opportunities for at least 60 college students in Web-based science research and to at least 300 high school and middle school students and teachers via outreach programs.

Cyber-ShARE will initially be housed in UTEP's Computer Science department. It will have a strong virtual presence through the Web and NSF-funded science networks. The interdisciplinary team of UTEP faculty behind Cyber-ShARE will include Gates, Vladik Kreinovich, Paulo Pinheiro da Silva, Aaron Velasco, Craig Tweedie, Leticia Velazquez, Miguel Arguez and Brian Giza.

For more information, visit [www.cs.utep.edu](http://www.cs.utep.edu)

# Keck Center Develops Nerve-Regeneration Technology

The National Science Foundation has awarded researchers at UTEP and the University of Utah a \$270,000 grant for a three-year project to develop implantable medical devices designed to help regenerate injured nerves. As part of the project, the researchers will collaborate with the William Beaumont Army Medical Center in El Paso to test the devices.

The majority of the research will take place in UTEP's W.M. Keck Center for 3D Innovation, which will use its rapid-prototyping technology to fabricate the devices, known as nerve guidance conduits.



Hydrogel conduits offer potential for repairing damaged nerves.

Photo by J.R. Hernandez.

The implantable conduits provide a structure for cells to grow between damaged endings of peripheral nerves (nerves that are not part of the brain and spinal cord system). The conduits will be fabricated from materials known as hydrogels, which are harmlessly absorbed by the body after the tissue has healed.

Keck Center Director Ryan Wicker said the collaboration with WBAMC supports development of a product that could someday improve the lives of soldiers who suffer nerve damage from combat injuries.

"We are eager to begin this collaboration with William Beaumont, and are thankful for the National Science Foundation's support of this emerging medical technology that holds great promise for treating soldiers and others who need treatment for peripheral nerve damage," Wicker said.

Principal investigators for the project are Wicker, professor of mechanical engineering at UTEP; Brenda Mann, research assistant professor for the Department of Bioengineering at the University of Utah; and Captain John Horton, M.D., general surgery resident at William Beaumont.

Wicker said the hydrogel conduits represent a potentially significant improvement over current treatment for damaged nerves, which typically requires a surgeon to harvest from the patient a healthy nerve and suture it between two nerve stumps.

The researchers expect the conduits to improve upon existing nerve repair techniques. By taking advantage of a rapid-prototyping technology known as stereolithography, the conduits can be fabricated with multiple cavities that mimic the natural structure of the nerve. The rapid-prototyping system creates three-dimensional structures layer by layer using a laser beam to convert liquid into a solid. This fabrication approach and the use of certain hydrogels could create conduits that promote faster nerve growth over longer gaps, Wicker said.

The Keck Center was established in 2001 as part of a \$1 million grant from the W.M. Keck Foundation. The world-class center at the College of Engineering is home to more than \$4 million in research equipment, including 17 rapid-prototyping machines and facilities for advanced manufacturing, cardiovascular hemodynamics, and tissue engineering.

For more information, visit <http://research.utep.edu/wmkeck>

## Three-peat!

The University of Texas at El Paso is the nation's No. 1 one graduate engineering school for Hispanics for the third consecutive year, according to Hispanic Business magazine.

The magazine's September 2007 issue ranks the top 10 graduate schools for Hispanics in a variety of disciplines under its Diversity Report.

"We are thrilled to be ranked at the top for a third year," UTEP President Diana Natalicio said. "It reflects our commitment to providing access to high-quality educational and research opportunities for all students."

Hispanic Business looked at a variety of factors for its rankings, including the percentage of Hispanic graduate students enrolled and the percentage of engineering degrees awarded to Hispanics in 2006. Nearly 24 percent of UTEP's 282 graduate engineering students are Hispanic; and we awarded 138 postgraduate degrees in engineering last year — nearly 30 percent of them to Hispanic students.

The magazine also considered a university's efforts to help students transition to graduate school and to support them throughout their graduate career.

"We work very hard to provide opportunities for our students to be active and engaged in research and technology development at UTEP," said Richard Schoepfoerster, dean of the College of Engineering. "We want to be sure they receive the experiences they need to be successful here and in their future careers."

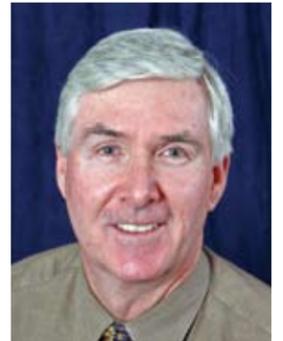
UTEP's College of Engineering consistently ranks as one of the top five schools in the continental U.S. in awarding bachelor's degrees to Hispanics, and has been named a "Model Institution for Excellence" by the National Science Foundation.



## A Letter from Steve W. Stafford

Having the opportunity to serve as the interim dean of the College of Engineering was a very rewarding experience for me. I am very appreciative of everyone who contributed to the effort of making this a better place for our students, our staff and faculty. There are so many of you who I had the chance to get to know through my "temp" job who I will always call colleagues and friends. Thanks to everyone who made this my best year yet at UTEP!

In this first installment of "Engineering Vistas," I think it is relevant to focus on two things from the 2006-07 school year: one, the introduction of Dr. Richard Schoepfoerster, the new Dean of



Engineering, and two, a brief summary of some of the noteworthy activities and accomplishments garnered by the College.

This will undoubtedly leave some things out, but I trust all of us will hold special memories for a long time to come. I will always think back to our first Pre-Commencement (Order of the Engineer) Ceremonies at the newly renovated Plaza Theatre and how awesome that was for our graduates, their families and me. Our staff and faculty do such a great job with this celebration! Now, let's get on with this newsletter!!!!

## In Appreciation of Dr. Stafford

Over the course of his distinguished 31-year career at UTEP, Steve W. Stafford, professor of metallurgical and materials engineering, has served the university in numerous administrative roles, including assistant vice president for academic affairs, department chairman and associate dean. Last September, he added interim dean to his long list of contributions to the university and the college.

Over his interim term, Stafford led the college's preparation for ABET re-accreditation, the promotion of industrial engineering to department status, some key faculty hires in mechanical and industrial engineering, and opened lines of communication within the college through regular meetings with faculty and staff and a weekly college E-letter.

Some of his other efforts, including planning for the new construction and renovation of the Engineering-Science Complex and curriculum reform in light of the 120-hour maximum baccalaureate statute, will be continuing projects for the college.

When asked to reflect on his 10 months in the dean's office, Stafford remarked, "I agreed to serve because I had no doubt about the commitment our faculty and staff have to our students. With this kind of commitment, I was confident in our ability to continue to move the college forward."

It's not surprising for Stafford to include colleagues and students in reflection of his service—collegiality and student focus have been Stafford's hallmarks since his arrival in 1976.

All of the college—faculty, staff, and students—thank Stafford for his efforts. We can't wait to see what he does next.



## Concrete Canoe Competition

A group of engineering students placed second overall in the 2007 American Society of Civil Engineers Texas-Mexico Conference Concrete Canoe Competition in Tyler, Texas this summer.

A team of 15 Miners led by captain Antonio Martinez and faculty adviser Charles Turner traveled to the contest. Facing 12 universities from across the region, the UTEP team took second place in the technical paper presentation and finished product categories. The canoes were required to follow strict guidelines of concrete composition and design characteristics such as dimensions and finish.

The teams then put their concrete designs to the test in the water of Lake Tyler. In the women's distance race, the Miners earned a second-place finish.

The Miners' second overall placing is UTEP's best finish ever in the Texas-Mexico Conference. Individual UTEP students winning honors included Colleen Martindale, who won the student paper contest, and Gabriel Trejo, who earned the Freese and Nichols Outstanding Civil Engineering Student award.

## TV Stars

David Zubia, assistant professor of electrical and computer engineering, and his students were interviewed for an episode of the "State of Tomorrow" series about Texas higher-education institutions, which aired this year on PBS.

The Nanomaterials Integration Laboratory and Electronic Devices Laboratories were featured, and Zubia and his students were interviewed while they worked in the cleanroom. Zubia discussed the impact that the NanoMIL lab could have on advancing a high tech economy in the region. For more information, visit [www.stateoftomorrow.com](http://www.stateoftomorrow.com).

# Awards and Honors

## 2007 Gold Nugget: Richard O. Martinez

Each year at Homecoming, UTEP and the Alumni Association recognize as "Gold Nuggets" exceptional graduates from each college and school who have given back to their communities and alma mater. This year, the association has selected Richard O. Martinez, class of 1979, as a recipient of a Gold Nugget Award for the College of Engineering.

Born and raised in El Paso, Texas, Martinez is an outstanding example of countless talented and successful engineers our college has produced over the years. A first-generation college graduate, Martinez' resume as a Miner alumnus spills over with achievements.

After graduating from Jefferson High School in 1973, Martinez decided he wanted to spend his college years close to home and try his hand at Miner basketball. He made the junior varsity squad as a walk-on from '73-'75, and he had the opportunity to play for graduate assistant coach Nevil "The Shadow" Shed, one of the members of the legendary Texas Western College 1966 NCAA championship team.

After earning his mechanical engineering degree from UTEP in 1979, Martinez launched his career in New Orleans, La. with Martin Marietta Aerospace as a thermal analyst for the space shuttle's external tanks.

He returned to El Paso in 1981 for an opportunity with the federal government. It was a career path that ultimately led him to his current position as deputy director for the Future Forces Division of the Materiel Test Directorate at White Sands Missile Range.

Throughout his working life, Martinez has taken the time to remember and support the organizations that helped him succeed at UTEP.

In 1977, he was one of the founding members of the student chapter of the Society of Mexican American Engineers and Scientists. Eager to see more students follow his footsteps in engineering, Martinez served as national president of MAES from 1996-2000.

Martinez makes community service a priority. He is a vice-chair of the El Paso Water Utilities' Public Service Board, and currently serves or has served on numerous boards and commissions in many organizations, including the El Paso Hispanic Chamber of Commerce and the El Paso Hispanic Leadership Institute.

He remains focused on student success at UTEP, by serving on the Alumni Board and college advisory boards. He can be counted on each year for his support and attendance at our college's annual Texas College of Mines Days celebration and initiation into the Order of the Engineer.

"In the course of a career you have good days and bad days, high points and low points, trials and tribulations, then you have

an award like the Gold Nugget bestowed on you, and it makes the roller coaster ride all worthwhile," Martinez said. "I am honored, humbled—especially to be included in the group of previous awardees—and blessed.

I've been very fortunate and have been the recipient of several awards, but when the institution that was the foundation for whatever success you've accomplished recognizes you, that to me is the ultimate in flattery and recognition."

Martinez is married to the former Gloria Salcido. Like their parents, the Martinez' children are beginning to make their mark in El Paso. Their son Richard Oscar is a senior mechanical engineering major at UTEP, and daughter Michelle Ann is a freshman at El Paso Community College.



Richard O. Martinez

### Richard O. Martinez

Year Graduated: 1979, B.S., Mechanical Engineering

Current Title: Deputy Director, Materiel Test Directorate, Future Force Division, WSMR

Honors: 2004 Civilian Meritorious Award by the National Association of Hispanic Federal Employees; 2001 McDonald's Hispanos Triunfadores Award; 1999 Federal Hispanic Heritage Month Excellence Award, presented by the Secretary of Energy; 1999 Hispanic Engineer National Achievement Award Conference Community Service Award.

## Diversity Award

ABET, Inc., the national accrediting organization for university science and technology programs, has selected UTEP's College of Engineering for the 2006 ABET President's Award for Diversity.

The award is one of three given this year to organizations or individuals that have demonstrated extraordinary success in achieving diversity in technology fields. The award was presented at the ABET Annual Meeting in Tampa, Fla.

The college was recognized for its commitment to providing educational access to a largely non-traditional student population and for its engineering and science outreach efforts toward El Paso and Ciudad Juárez's pre-college students, parents, and teachers.

## Engineering Leads Nation

The Hispanic Outlook in Higher Education's 2007 ranking of the Top 100 Schools for Hispanics places UTEP at No. 1 in the country in degrees awarded to Hispanic students in engineering.

The rankings also place UTEP at No. 5 in the nation for bachelor's degrees awarded and No.

6 in master's degrees conferred on Hispanic students. For doctoral degrees, UTEP was again ranked among the Top 100, placing at No. 58. Last year, UTEP placed 100th in this category. Among the top institutions with Carnegie classifications, based on Hispanic student enrollment, UTEP ranks fifth this year (last year, UTEP placed third).

The magazine also ranks the nation's Top 10 institutions for bachelor's degrees awarded by academic program. In these categories, UTEP equaled or improved its ranking over last year in every category.

## Piper Foundation Honors Stafford

Steve W. Stafford, professor of metallurgical and materials engineering, is a 2006 recipient of the Piper Award for Outstanding Teaching.

Since 1958, the Minnie Stevens Piper Foundation has recognized professors at Texas colleges and universities for superior teaching.

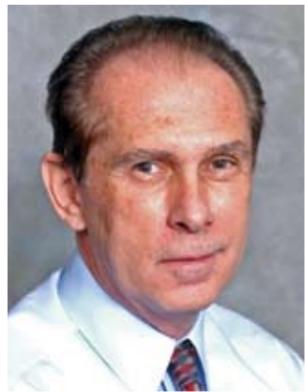
Stafford joined the UTEP faculty in 1976. He holds a bachelor's in metallurgical engineering from UTEP and a doctorate in materials science and engineering from Rice University.

"During my tenure as a student across the state, I have had classes with three Piper Professors: Clyde Nichols, Franz Brotzen and Ron Sass," Stafford said. "They were also very special to me, and each had their own gifted style and unique dynamic state in the classroom. I owe them all very much for I learned their most important gift: the joy of learning! Thanks to them all."

## Murr Recognized for Lifetime Achievement

Larry Murr, professor of metallurgical and materials engineering, has been honored by two metallurgical societies for his contributions to the field.

The International Metallographic Society has named him the 2008 Henry Clifton Sorby Award winner. The Sorby Award is the organization's most prestigious award, presented annually in recognition of lifetime achievement.



Larry Murr

Murr was also honored with the 2007 Educator Award from the Minerals, Metals & Materials Society for his enthusiastic and creative dedication

to education of undergraduate and graduate students through teaching, research, and book writing.

The TMS Educator Award, established in 1986, recognizes an individual who has made outstanding contributions to education in metallurgical engineering and/or materials science and engineering.

"I am honored to be recognized as an educator on the national/international scale. It is an affirmation of the decades of effort and concern I have devoted not only to my students, but to contributing to materials/metallurgy education issues worldwide for more than 40 years," Murr said.

## Research

### Dumpster Diving

Civil engineering students Adrian Cortez, Michael M. Birkelbach and Donald Baca, under the supervision of Professor Chuck Turner, are working with Piñata Publishing's Don Baumgardt and the El Paso Hotel Motel Association (EPHMA) on a project to evaluate the potential for recycling motel waste in El Paso.

The students are collecting data through "dumpster dives" at five major hotels to assess recycling potential. The purpose of the project, funded by the EPHMA and Baumgardt, is to determine if recycling can be profitable for association members and to foster a sustainable-environment ethic.

### Armed for High Performance

The U.S. Army Research Laboratory has awarded a contract valued at \$215 million to a consortium of research groups and universities, including the University of Texas at El Paso, to manage the Army's High Performance Computing Research Center.

The consortium includes High Performance Technologies, Inc. (HPTi), NASA Ames Research Center, Stanford University, the University of

### Luminary Award

Maria Cardwell, a metallurgical and materials engineering alumnus, received the Luminary Award from the Hispanic Engineers National Achievement Awards.

A panel of judges sponsored by the Hispanic Engineer National Achievement Awards Conference, better known as HENAAC, selected Cardwell, a manufacturing engineer for Boeing Commercial Airplanes, for this national recognition. She was up against strong competition from nominees throughout the industry.

### ECE Grad Student Wins National Award

Mario Caire, an electrical and computer engineering graduate student mentored by Professor David Williams, was part of a UTEP team that won a National Award for Excellence in Policy Analysis and Research.

Caire worked with Institute for Policy and Economic Development researchers Carlos Olmedo and Mathew McElroy to create an economic analysis tool for industry clusters. Caire developed the user interface and cluster database.

The award was presented in Denver at the Council for Community and Economic Research national conference in June.

### National Scholar of the Week

Elizabeth Cercado, a mechanical engineering student, was selected as a Hispanic Engineer National Achievement Awards Conference Scholar of the Week for June 18-24. This weekly feature on the HENAAC Web site pays tribute to outstanding Hispanic students majoring in science, technology, engineering, and mathematics throughout the nation.

Texas at El Paso, New Mexico State University and Morgan State University.

HPTi, a private firm based in Reston, Va., will be the consortium's lead in management of the program and technical support, including the acquisition and installation of high-performance computing equipment. Stanford University will lead the consortium's research activities.

The program will focus on several research areas, including lightweight combat systems survivability, computational nanotechnologies and biosciences, battlefield network and information sciences, advanced algorithmic development, and other high-performance computing technologies.

UTEP will benefit with increased student research and new high-performance computing systems, said UTEP Professor of Computer Science Patricia Teller, who helped lead the university through the competitive application process for the award. UTEP will receive a computing cluster worth \$250,000 and will have an AHPCRC lab, equipped with computers, for research and educational purposes.

The program also will support summer programs and research collaborations.

## Senior Receives Top 10 Honor

Each spring, the UTEP Alumni Association honors the university's Top Ten Seniors, students who have achieved academic success and shown a commitment to the community. Pratish Parbhoo, a metallurgical and materials engineering major, made the list this year. Mechanical engineering major Claudia Arias was honored with the association's new "Diamond in the Rough" award, which recognizes a student with great potential for success.



### Pratish Parbhoo

Age: 23

**Degree:** Metallurgical and materials engineering

**Next:** Veterinary medicine school at Texas A&M

**Notable:** Eagle Scout; intern for lion conservation program in South Africa this summer

**High School:** Hanks

"I feel I will succeed in whatever I put my heart into, and I owe much of that to the experiences I gained while attending UTEP"



### Claudia Arias

Age: 26

**Degree:** Mechanical engineering

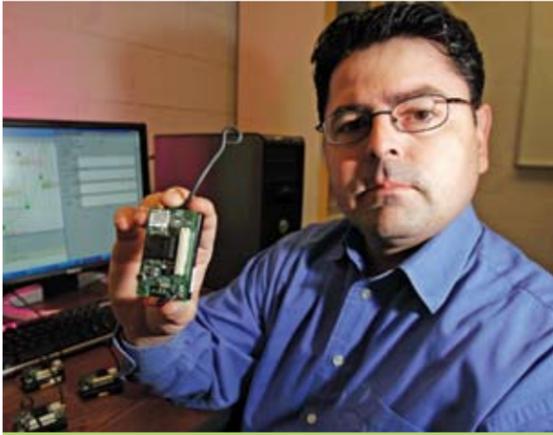
**Next:** Working toward a master's in engineering at UTEP

**Notable:** University Banner Bearer at December 2006 commencement

**High School:** Preparatoria El Chamizal, Ju-rez

"Extracurricular activities at UTEP helped me earn outside opportunities. I participated in several conferences, research projects and internships."





Gerardo Rosiles

## Wireless Sensors

Professors Gerardo Rosiles, Sergio D. Cabrera, and Virgilio Gonzalez have been awarded a four-year \$852,823 grant from the Department of Defense for a project titled "Launching a Sensor Network Research and Student Development Program."

The project will investigate signal representation and reconstruction problems encountered in Wireless Sensor Network systems used to locate and describe targets within the boundary of a network.

"Sensor networks are used to locate potentially dangerous targets and identify what they are. We hope to develop a system of sensors randomly scattered over a field with the ability to communicate wirelessly in order to perform collaborative signal processing analysis," said Rosiles.

## College of Engineering Spring 2007 Facts at a Glance

### Enrollment

- Undergraduate: 1,932
- Graduate: 355

### Ethnicity

- White, non-Hispanic: 6 percent
- Hispanic: 61 percent
- African American: 1 percent
- Asian American: 1 percent
- Other International: 29 percent

### Gender

- Male: 79 percent
- Female: 21 percent

Source: UTEP Center for Institutional Evaluation, Research, and Planning

For more information about the College and its programs, visit [engineering.utep.edu](http://engineering.utep.edu)

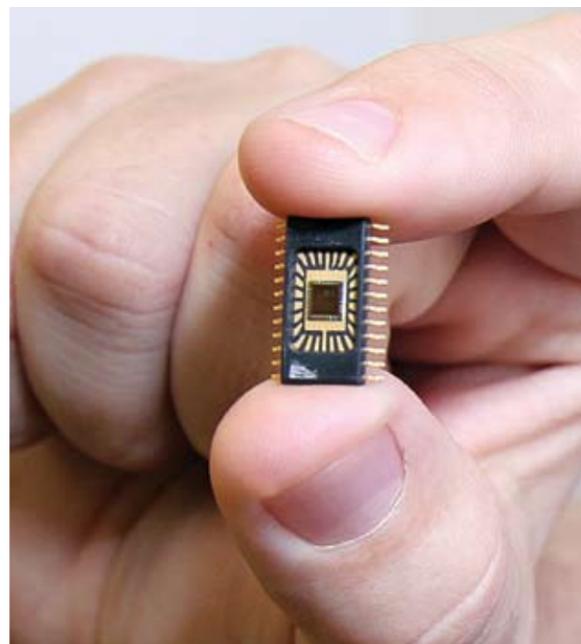
## College Welcomes Fulbright Scholar

Professor J. Humberto Garcia of Instituto Tecnológico y de Estudios Superiores de Monterrey, Campus Ciudad Juárez, Ciudad Juárez, Mexico, is a Fulbright Visiting Scholar in the Civil Engineering Department for six months starting this fall. Garcia works with Professor Wen-Whai Li to evaluate the impact of traffic-related air pollution on asthmatic children, funded by a grant sponsored by the Pan American Health Organization. He also works with Wen-Whai Li to characterize indoor-outdoor particulate matter pollution for assessing the effects of childhood asthma, a U.S.NIEHS-sponsored project.

Professor Garcia is one of a few scientists from all over the world selected by the U.S. Department of State to conduct collaborative research in a U.S. university. His visit is sponsored by the Fulbright Visiting Scholar Program of the State Department.

## Silicon Success

Assistant Professor of Electrical and Computer Engineering Eric MacDonald, in collaboration with local engineering company XL-Synergy, LLC, has created a one-million-transistor chip the size of a pencil eraser. The chip mathematically detects problems in the power of household appliances to improve safety and prevent fault-induced fires. XL-Synergy provided the computationally intensive algorithm, and the team at UTEP—which included a professor and 6 graduate students—designed and implemented the chip to perform the algorithm in real time.



UTEP's million-transistor chip.

The chip provided a platform for the team at UTEP to investigate new design techniques to improve the energy efficiency of computer chips. The project allowed the graduate students to get a taste of real industrial-strength chip design—similar to what they will experience at companies like Intel or IBM.

"The design of this chip demonstrates the high caliber of our engineering program and what UTEP is capable of," said Ernie Martinez, a graduate student who took a lead role the team's development of the chip.

The chip was fabricated in Taiwan using 0.25 micron CMOS technology and contained over a million transistors—each of which is 200 times thinner than a human hair. UTEP is currently planning a clean room facility on campus that will be capable of similar fabrication.

## Grant Supports Hispanic Serving Institutions

Computer Science Professor Ann Gates is PI for the \$2 million National Science Foundation Computer and Information Science and Engineering Broadening Participation grant that has formed the Computing Alliance for Hispanic-Serving Institutions, a consortium of universities that are committed to increasing the number of Hispanics who earn baccalaureate and advanced degrees in computing.

By fostering a community that shares resources, establishes research and curricular collaborations, and disseminates best practices, CA-HSI is developing future Hispanic leaders while addressing the under-representation of Hispanics in computing. CA-HSI includes some of the leading producers of Hispanic science and engineering graduates, and is working with industry, private-sector partners, and faculty from research institutions that share its goals and support diversity initiatives.

## Teller Chairs Supercomputing Conference



Computer Science Professor Pat Teller was elected the General Conference Chair of SC08, which will be held in Austin, Texas in November 2008. SC08 is the premier international conference on high performance computing, networking, storage, and analysis. Conference attendees will see tomorrow's technology being used to solve world-class challenges today. Organized by the effort of hundreds of volunteers, this conference has a budget of over \$5 million and takes approximately three years to plan.

## Affinity Research Group

Faculty Ann Gates, Steve Roach and Elsa Villa are being funded by a National Science Foundation Course, Curriculum and Laboratory Improvement grant to disseminate the Affinity Research Group model, a comprehensive model for the creation and maintenance of dynamic, productive and inclusive research groups.

The ARG model is comprised of a set of fundamental principles and effective practices for involving undergraduates in research groups. Application of the model entails the deliberate design of research groups whose members share a common purpose—or affinity—for a subject. It emphasizes the conscious development of students' disciplinary knowledge, research abilities, team skills, and their sense of professional identity.

## Starks Joins Space Consortium

Electrical and Computer Engineering Professor Scott Starks was elected to the Board of Directors of the Texas Space Grant Consortium.

The consortium is a group of Texas universities, industrial organizations, non-profit organizations, and government agencies that work to ensure that the benefits of space research and technology are available to all Texans.

For more information, visit [www.tsgc.utexas.edu](http://www.tsgc.utexas.edu).

## Cultivating Authentic Discourse

The National Science Foundation has awarded \$500,000 to the college for a three-year project designed to help more engineering students graduate in shorter time with the skills and knowledge to make them even more competitive with graduates from other major universities.

Cultivating Authentic Discourse for the 2020 Engineer is a collaborative project with a focus on literacy, discourse, and metacognition; it is a joint effort between the Colleges of Engineering and Education with Mechanical Engineering Professor Louis Everett and Industrial Engineering Associate Professor Arun Pennathur.

## In the News

### UTEP Lands Major Conference

Electrical and Computer Engineering Associate Professor Homer Nazeran, Health Science Professor Michael Goldman and Dean of Engineering Richard Schoepfoerster won the bid to host the National Science Foundation-sponsored 24th Southern Biomedical Engineering Annual Conference at UTEP in 2008.

### Stamp of Approval

The Texas Higher Education Coordinating Board approved the UTEP request to separate the Department of Mechanical and Industrial Engineering into the Departments of Industrial Engineering and Mechanical Engineering.

### IE on an iPod

Arun Pennathur, associate professor of industrial engineering, is podcasting his lectures in Systems Engineering and Advanced Ergonomics.



Students registered in the classes can download the lectures onto a portable media player or computer or watch them online.

"Students, especially graduate students from local manufacturing industry who travel a lot, appreciate the convenience of having their class lectures available as a video podcast," Pennathur said.

Having the lectures available at any time and any place helps students' exam preparation, he said. Pennathur creates his podcasts by combining audio of his lectures with PowerPoint slideshows presented in class.

Dr. Pennathur has plans to make podcasts available before his lectures so class time can be used in active learning and focused discussions about the material.

### Engineering Ambassadors Students Engage Community

For decades, the college has looked for ways to reach out to the El Paso/Juarez community. Our faculty and staff have conducted many summer institutes, high school-to-college bridge programs, and women-in-engineering programs.

As the university grew, so did our involvement to the point where faculty took on more supporting roles behind staff members responsible for these types of activities. In the early 1990s, programs to support our students grew substantially, as did our corporate

## Success Without Boundaries

UTEP has received a three-year, \$570,000 grant from the Department of Education for a project titled "Transformation of Engineering Education Student Success – Exito Sin Limites" (Success Without Boundaries).

It is one of only 29 awards to 25 colleges and universities totaling \$3.9 million to help strengthen science and engineering education and to better prepare minority students for careers in science and technology.

sponsorship. A major financial resource for the college university arrived in 1995 when UTEP was designated a Model Institute of Excellence by the National Science Foundation.

Today, our outreach programs are directed out of the Engineering Student Affairs Office. A component of the Dean's Office, Engineering Student Affairs has a strong foundation thanks to a new Engineering Student Ambassadors program.

A group of about a dozen students, the ambassadors are undergraduates responsible for developing relationships with high school math and science teachers with a goal of recruiting more students into engineering. Each ambassador typically focuses on the high school they attended along with two or three other schools in the region.

Karla Enriquez, a recent electrical engineering graduate and past ambassador, was assigned to her alma mater, Colegio de Bachilleres No. 6 in Ciudad Juárez.

"Working as an ambassador allowed me to help other students be informed of the many opportunities at UTEP and the benefits of choosing a career in engineering," said Enriquez.

The ambassadors get valuable support from faculty who open their research labs to tours and internships by local students. For example, Mechanical Engineering Professor Ryan Wicker pushes community outreach by placing several high school students as interns in his W.M. Keck Center for 3-D Innovation.

Thanks to the efforts of our students and faculty, the ambassador program is proving to be a great success.



## New Faculty



Connie Gomez (Ph.D. ME, Drexel University, 2007) was hired as a tenure-track assistant professor of mechanical engineering. Gomez's research focuses on multi-scale modeling and design for tissue engineered scaffolds.



Jose Espiritu Nolasco (Ph.D. ISyE, Rutgers University, 2007) was hired as a tenure-track assistant professor of industrial engineering. Nolasco's research interests include reliability modeling of electricity transmission and distribution systems and data mining and pattern recognition.



Noe Vargas Hernandez (Ph.D. ME, Arizona State University, 2006) was hired as a tenure-track assistant professor of mechanical engineering. Hernandez's research interests include engineering design and cognitive psychology, and design education.



Heidi Taboada (Ph.D. ISyE, Rutgers University, 2007) was hired as a tenure-track assistant professor of industrial engineering. Her research interests include evolutionary computation and metaheuristics, reliability modeling and optimization and data mining.

# March Madness

Engineering and geology students whitewashed the "M" on the mountain, kissed the Blarney Stone and enjoyed other fun activities during TCM Day in March.

The tradition in honor of the university's mining and metallurgy heritage dates back as far as 1920 and harks back to the time when UTEP was known as the Texas College of Mines. Students painted themselves and parts of the campus green in honor of St. Patrick, the patron saint of engineers.



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**We encourage your  
comments and suggestions.  
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