



ECE



Electrical and Computer Engineering

N E W S L E T T E R



Mehdi Shadaram Ph.D., P.E.
Schellenger Professor and Chairman

MESSAGE FROM THE CHAIRMAN

It is with great pleasure to announce that since the last two issues of our newsletter, we have strengthened and enhanced our communication with friends and alumni. I hope this third edition will improve this relationship further. We have received many letters of support and contributions from our readers since the inception of this newsletter. Our goal is to reach 100% of our friends and alumni. I would like to take

advantage of this opportunity and thank those recent graduates who responded to our alumni survey. The result was exceptionally encouraging. For example, it indicated that 98% of our recent graduates agree that the UTEP Engineering program provided a high quality curriculum and prepared them for their current positions. In response to a question related to our program outcome criterion, only a small percentage believed they did not meet the program criterion in areas such as social awareness, global issues, and contemporary issues. The department has already been taking actions for the last 3-4 years to address these issues.

This year, the department witnessed the retirement of three of its professors. Professor Michael Austin who has served the university in a wide variety of capacities has decided to retire after 37 years. Professor Samir Manoli also decided to start his retirement after 20 years of service to UTEP. Professor James Myers retired after 12 years of teaching the Senior Project Course. The Department will surely cherish their contributions as great teachers and scholars. The vigorous search for new faculty to fill the positions is already underway. This year we hired Professors David Zubia and Virgilio Gonzalez. Dr. Zubia will teach and conduct research in the areas of semiconductor devices and nanotechnology. Professor Gonzalez' field of expertise is in data communications and computer protocols.

Faculty members have been very successful in attracting external funds. This past year, we had record support and sponsorship from industries such as Texas Instruments, Lucent Technologies, and Agilent. The department's total external funding for research and educational purposes has reached \$5.6M with a yearly expenditure of about \$1.8M. This enabled us to financially support the highest number of graduate and undergraduate students last year. In conclusion, I invite all of you to visit our newly re-designed web pages (www.ece.utep.edu). Next time you are in town, please stop by and share your thoughts and experiences with us.



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ECE Department's Mission and Educational Objectives

MISSION STATEMENT

The Department of Electrical & Computer Engineering will:

- Dedicate itself to providing its students with the skills, knowledge and attitudes that will allow its graduates to succeed as engineers and leaders.
- Maintain a vital, state-of-the art research enterprise, which provides its students and faculty with opportunities to create, interpret, apply and disseminate knowledge.
- Prepare its graduates for life-long learning to meet intellectual, ethical and career challenges.
- Recognize and act upon the special mandate to make high quality engineering education available to the residents of El Paso and the surrounding region.

EDUCATIONAL OBJECTIVES

As individuals and as members of a team, our graduates will be able to:

- Demonstrate the ability to formulate, analyze, and solve electrical engineering problems.
- Demonstrate the ability to apply the design process to engineering problems.
- Communicate effectively with those inside and outside of electrical engineering.
- Exhibit social and professional responsibility in a global context.

ECE'S GROWTH & DEVELOPMENT



Dr. Austin

When I arrived on campus in September 1963, what is now the Department of Electrical and Computer Engineering did not exist. In fact, neither did The University of Texas at El Paso. The College of Engineering had two departments: Engineering, which contained unaccredited programs in civil, electrical and mechanical engineering, and Mining and Metallurgy. The institution that is now UTEP was called Texas

Western College and had about 5,000 students, roughly thirty percent of the current number. There were no graduate degree programs in the College of Engineering. Electrical engineering only had three faculty.

I was one of a group of new faculty hired as a result of "Mission 73", an effort by the community and the university to improve the quality of selected academic programs of which engineering was one.

Things improved rapidly. Electrical engineering became a separate department and received ABET accreditation. A masters program started in Fall 1966 and the first degree was awarded in May 1967.

Over the next few years several new faculty members were hired and enrollment increased. The graduate program prospered. Funded research projects, mostly with White Sands Missile Range, were developed. In 1976 we moved into our present location on the fourth floor of what was then the new Engineering Building.

Today we are a "full-service" operation with over 400 students and 17 faculty. We have changed our name to reflect the importance of computers in modern electrical engineering. We offer degrees at all levels, including bachelors, masters and Ph.D (since 1990). We have hired outstanding graduates from some of the best engineering programs in this country to our faculty. Faculty research projects are funded by a wide variety of public and private agencies. Our graduates are highly recruited by industry and other universities.

I estimate that there have been about 2000 individuals who have received at least one degree from our program since its origin. We now have what is arguably the best department in the University. This is due to not only the efforts of our faculty and staff, but to all of you who have spent time here as students. You should feel a deep sense of pride in this accomplishment.

NEW FACULTY



Dr. David Zubia

Dr. David Zubia received his Ph. D. degree in Electrical Engineering from the University of New Mexico (UNM) in April 2000. His doctoral research focused on the heterogeneous epitaxial growth of semiconductor materials using nanostructured and compliant substrates. As Research Assistant Professor and Manager of the Crystal Growth Facility at the Center for High Technology Materials, his research theme was the

utilization of nanopatterned substrates for integration of compound semiconductors with silicon technology. Other areas of research were the development of radiation hard semiconductors and GaInNAs vertical-cavity surface-emitting lasers. Dr. Zubia's teaching interest at UNM was silicon VLSI technology.

Prior to joining UNM, Dr. Zubia was a Research Scientist at Golden Photon, Inc (GPI). At GPI, he researched degradation in CdS/CdTe solar cells caused by high-energy photons from the solar spectra. In addition, he developed prototype manufacturing equipment and new processes for depositing tin-oxide and CdS thin films.

Dr. Zubia received his M. S. and B. S. degrees from the University of Texas at El Paso (UTEP) in 1993 and 1989, respectively. The topic of his master's thesis was CdTe/CdS thin film solar cells. At UTEP, he developed a computer program that enabled analysis of critical growth parameters for CdTe/CdS solar cells. He was also involved with UTEP's Solar Pond as an undergraduate research assistant.

Currently at UTEP, Dr. Zubia's research interests are studying the nanoscale aspects of materials and developing nanotechnology to create novel semiconductor materials and devices. This includes scientific studies of nucleation and coalescence of semiconductor nanocrystals and strain relief in nanoporous substrates. Technological interests include the development of small-, direct-bandgap semiconductor alloys, lattice and thermodynamically matched to silicon VLSI. Other technological interests are the development of advanced materials utilized for energy cells and the

creation of novel nanodevices. Dr. Zubia's teaching goals are to develop a VLSI fabrication course with a laboratory in which students will fabricate microelectronic circuits in a cleanroom. In conjunction with this, he is interested in expanding UTEP's VLSI simulation capability to include 3-D simulation of devices and processing. He is also interested in coupling the VLSI technology course with the VLSI design course to develop an educational model in which to teach students the interaction dynamics of engineering teams.



Dr. Virgilio Gonzalez

Dr. Virgilio Gonzalez received his Ph.D. Degree in Computer Engineering from the University of Texas at El Paso in May 1999. He received his Masters Degree in Industrial Engineering from Tecnologico de Monterrey (ITESM) in December 1991, and his Bachelors Degree in Electrical Engineering from (ITESM) in December 1988.

His experience includes Technology Planning Manager at ALESTRA (AT&T Mexico). Dr. Gonzalez was responsible for the design of network architectures to implement carrier grade services such as Internet, Advanced Intelligent Telephony among others. He was previously the Telecommunications Director at Tecnologico de Monterrey Zona Sur in Mexico. He implemented communications infrastructure to support educational needs, both local and long distance learning. Dr. Gonzalez has taught Signal and Systems, Analog and Digital Communication Systems and Basic Programming languages. He developed a graduate course in application of telecommunication technologies for the master program in telecommunications from ITESM Monterrey.

At UTEP, Dr. Gonzalez will teach and carry out research in the areas of Communications, Computer Networking, and programming languages.

A hearty welcome to these gentlemen who bring their knowledge and capabilities to UTEP.



ORDER OF ENGINEERING DECEMBER 2000

From left to right

Front Row

Micaela Nevarez, Miroslava Barua,
Dr. Darrell Schroder, Elizabeth Navarrete,
Angelica Pineda, Joel Eberto Trejo

Back Row

Carlos Flores, Richard Zamudin, Adrian Puga,
Ruel B. Newberry, Jose A. Fresquez, Rafael
Maynez, Omar Cordero, Gilberto Valverde,
Pablo Antonio Trejo

ORDER OF ENGINEERING MAY 2001

From left to right

Front Row

Dr. Starks, Gabriela Garcia, Dr. Nava, Veronica
Loy, Vanessa D. Melendez, Rebecca
Suemnicht, Angie Rodriguez, James Tarpley

Back Row

Rex Velasquez, Juan Pablo Gonzales, Rafael
Gonzales, Gustavo Martinez, Steven Parker,
Victor Mena



FACULTY NEWS

Professor Bill Diong and two other UTEP faculty members were recently awarded a grant in the amount of \$300,000 by the Ballistic Missile Defense Organization (BMDO) to perform research to enhance the performance of fuel cells. Fuel cells generate electrical power by converting the chemical energy of a fuel continuously into electrical energy by way of an electrochemical reaction. This takes place without combustion and little or no emissions since fuel cells typically utilize hydrogen as the fuel and oxygen (usually from air) as the oxidant in the electrochemical reaction and the reaction results only in electricity, by-product water, and by-product heat.

Dr. Gregory Lush recently participated in a seminar on statistical Design of Experiments (DOE) on the

corporate site Raytheon Missile Systems in Tucson, Arizona. Design of Experiments offers a systematic approach to experimentation that is backed by sophisticated statistical theory. Its use significantly reduces the time needed to determine the best combination of factors for a process or system, and also reduces the uncertainty in the results. DOE is an integral part of Design for Manufacture.

The topics covered at this seminar will allow Dr. Lush to utilize it in his research on thin film electronic devices and integrate the concepts into the senior laboratory course. UTEP faculty and corporate partners encourage our students to learn more about DOE, as it will become increasingly popular in the future.

A GIFT FROM LUCENT TECHNOLOGIES

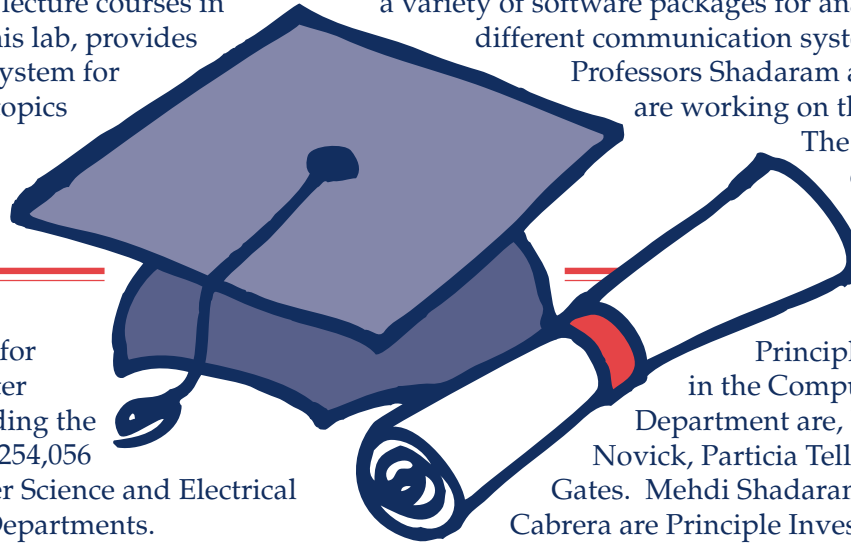
In Spring 2001, Lucent Technologies donated \$100k to the ECE Department to establish a comprehensive laboratory for modeling and simulating communication systems. The lecture courses in our curriculum, along with this lab, provides a totally integrated delivery system for teaching a wide spectrum of topics ranging from transmission/reception concepts and applications, to performance

analysis of optical fiber links and networks. The laboratory will be implemented by constructing a PC-based computer network, allowing students to access a variety of software packages for analysis of different communication systems. Currently, Professors Shadaram and Gonzalez are working on the lab manual. The course will be offered in Spring 2003.

NSF SUPPORT

A grant, Graduate Education for Minority Students in Computer Science & Engineering Extending the Pipeline in the amount of \$1,254,056 was received by the Computer Science and Electrical and Computer Engineering Departments.

The main purpose and goal of the grant is to increase the number of graduate and doctoral Hispanic students in the areas of computer science and computer engineering.



Principle Investigators in the Computer Science Department are, David G. Novick, Patricia Teller, and Ann Gates. Mehdi Shadaram and Sergio Cabrera are Principle Investigators from the Department of Electrical and Computer Engineering.

We anticipate this program to be an integral part of these departments and UTEP.

MODEL INSTITUTIONS FOR EXCELLENCE (MIE) NEWS

The University of Texas at El Paso hosted the Model Institutions for Excellence (MIE) 6th Annual National Conference on April 4-8, 2001. Preparations for the conference began in Summer of 2000. Over 150 students and faculty representing six minority-serving institutions, as well as the National Science Foundation, were in attendance.

Dr. Flores, Principal Investigator of the MIE Initiative at UTEP, commented that over 90 students presented their undergraduate research work at the conference's poster symposium. The keynote speaker at the conference plenary session was Dr. Nat Pitts of the National Science Foundation. Other conference highlights included tours to White Sands National Monument and a Juarez Maquiladora. Closing ceremonies were held at the El Paso Museum of Arts.

ECE SUPPORTERS

Texas Instruments Foundation

Monetary gift to enhance Digital Signal Processing/Communication Curriculum

Lucent Technologies

Monetary gift to build a computer based lab for Communication Systems Simulation

Raytheon

Scholarship funding

El Paso Electric

Funding for a team of engineering students who are representing UTEP in a U.S. Department of Energy competition to build a prototype, low cost power inverter.

Chevron

Cash gift to be utilized as needed

ECE STUDENTS' ACCOMPLISHMENTS!

Congratulations to Aldo Lucero for receiving a fellowship from the Texas Space Grant Consortium. The ECE Department would like to acknowledge Aldo's hard work and triumph in this difficult deed!

Five UTEP students were awarded the Graduate Engineering Minority Fellowship (GEM), three of whom are EE Students. The ECE Department proudly recognizes Rex Velasquez, Ivan Garcia and Adriana Marquez for being named as recipients. We also offer a hearty welcome to all three as they have decided to pursue their Graduate Studies at UTEP. We look forward to their accomplishments in their goals.

The above fellowships are very competitive, making these accomplishments very difficult to achieve. CONGRATULATIONS!!

Other great EE achievers are Jovan Saenz and Rafael Gonzalez. On May 16, 2001 they were presented with Research Experience for Undergraduates (REU) Certificates for their participation in the program.

REU is funded by the Model Institutions for Excellence initiative, which is directed by Dr. Flores. Jovan and Rafael have also been accepted to the Graduate School at UTEP.

The ECE Department proudly acknowledges these students' efforts.



Hispanic Engineer National Achievement Awards Conference (HENAAC), 2001



President Diana Natalicio & Prof. Mike Acosta

For the third time, UTEP was selected to be the academic host for the HENAAC in El Paso, Texas on October 11-13, 2001. The conference brought the campus and the city of El Paso over 1,500 engineers, scientists, business executives and engineering students from across the

country for a three-day technical conference and awards recognition. UTEP's College of Engineering served as the academic host for the annual event. A special feature of the conference was the Pre-College Program, which provided 800 El Paso area middle and high school students with a keen awareness of technical career options and the required academic preparation for these challenging and rewarding fields. High profile executives, college professors, students, and other motivating role models addressed the students on Friday, October 12, on the UTEP campus.

U.S. Congressman, Silvestre Reyes presented Mike Acosta a HENAAC award for Community Service. This award recognizes a person's effectiveness in working with community organizations that promote engineering, science, or math within the Hispanic community. A large amount of time and energy is invested in these efforts. This award acknowledges Prof. Acosta's potential as a role model for others with regard to the number of changes he has tried to make.

ANNUAL ADVISORY BOARD MEETING

The fourth annual ECE Advisory Board meeting was held on April 27, 2001. The Board members consist of professionals from industries that recruit most of our graduates and educators from academia. Their role is to provide feedback on curriculum, mission and educational objectives of the

department, and quality of students. The Board is also responsible for providing ideas on appropriate partnership with the industry. The department particularly appreciates their assistance in preparation for the upcoming ABET visit. The current Advisory Board members are:

Mr. John Armendariz
DCD, Ft. Bliss, TX

Mr. Alfonso Martinez
White Sands Missile Range

Mr. Andy Perez
Agilent

Mr. Edward George (Pete) Frazho
Raytheon Missile Systems

Dr. Ralph Martinez
The University of Arizona

Mr. Antonio Rico
ESEI

Dr. Al Griffin, Jr.
Texas Instruments

Mr. Manuel Moreno
The Boeing Company

Mr. Scott M. Smith
IBM

Dr. Stuart Long
University of Houston

Dr. Melissa Murphy
Sandia National Laboratory

Mr. Ignacio R. Troncoso
Black and Veach International

Dr. Michael Maragoudakis
Nortel, Richardson, TX

Mr. Alfred Paiz
Jet Propulsion Laboratory

CREATION OF UNIVERSITY COLLEGE AT UTEP

UTEP has created a major new organizational division that is dedicated to integrating and expanding our student academic support efforts. This new unit, which is called the University College, became effective on June 1, 2001. Maggie Smith was named as Dean.

The Entering Student program is at the heart of the University College, but the mission of this new administrative unit is much broader. It seeks to address not only the academic needs of new UTEP

students, but also to foster students' ongoing academic development, supporting their retention and transition to the college of their major. In addition to the Entering Student Program, the University College will include University Studies (University Seminar), Academic Advising, the Tutoring and Learning Center, and all departments within Enrollment Services.

PH. D. Graduates from December 2000 to July 2001

Gonzalez, Graciela Bernal

"An S.Q.L. Extension for Specification of Multimedia Displays: It's Syntax, Architecture, and Semantics based on a Non-Markovian Action Language." Currently employed at Ingles Individual- Townhall, Texas

Revilla, Arturo

"Predicting Probe Impedance Change in Eddy Current Nondestructive Testing Using Finite Elements." Currently employed at WSMR-Whitesands, New Mexico.

Ramirez, Raul Antonio Trejo

"Interval computation methods and probabilistic methods for planning." Currently employed at Monterrey Technical School-Mexico City, Mexico

Brito, Alejandro

"Iterative Adaptive Extrapolation Applied to SAR Image Formation and Sinusoidal Recovery." Currently employed at XEROX-San Jose, California

Good bye and Good Luck to

Dr. Samir Manoli and Professor James Myers



ALUMNI NEWS

Acosta, Mike (UTEP BSEE) received an award from the Hispanic Engineer National Achievement Award Conference (HENAAC) held at the Abraham Chavez Theatre in El Paso in October 2001.

Aguirre, Juan (UTEP BSEE 1994; UTEP MSEE 1997) is currently a design engineer at Pollak for the automotive market. He is currently pursuing his Ph.D. in Electrical Engineering at NMSU.

Alvarado, Luis (UTEP BSEE 1980; UTEP MSEE 1990) is Chief Engineer for the Drone Formation Control System at White Sands Missile Range dealing in Automatic Remote Control for a wide variety of aerial targets such as the QF-4 (Phantom II) MWM-107D and BQM34A.

Barrett, Edward (UTEP BSEE 1971; MS & Ph.D) Director, Ship Introduction for Military Sealift Command – U.S. Navy – Civil Service. Involved in the design and construction of more than 120 ships.

Berumen, Humberto (UTEP BSEE 1952) retired from Ft. Bliss DFAE (Director of Engineering) after 38 years of service.

Bullock, Paul (UTEP BSEE) Manager – Network Architecture, Qtera/Nortel.

Fresquez, Luis R. (UTEP BSEE 1963; MS 1972) Retired U.S. Marine Corps; Chief Information Officer with American Automobile Association.

Ingle, Ernest (UTEP BSEE 1974) Manager – OSP Planning – Southwestern Bell Telephone. Involved with the DSL deployment project in El Paso.

Martinez, Juan (UTEP BSEE) award nominee at Raytheon in Arizona.

Page, Ron (UTEP BSEE 1973) Network/Computer Consultant – Self-employed. Working on Texas Certificate in Vocational Electronics at Texas A & M, and pursuing his Masters Degree.

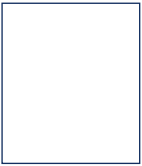
Puga, Michael (UTEP BSEE 1999) Engineer - Naval Surface Warfare Department.

Rotkiewicz, Frank (UTEP BSEE 1974) Regional Tech Support Group – Power Specialist for Bell South working in AC/DC in their Central Office Building. Responsibilities include systems in Alabama and Mississippi.

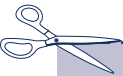
Shulmann, David (UTEP BSEE 1956) Retired from White Sands Missile Range as an engineer/analyst on tracked vehicles, missile system radars; and flight tests on remote controlled aircraft.

Wylie, Jim (UTEP BSEE 1978) Interoperability Team Lead with the U.S. Army Program Executive Office, Air and Missile Defense.





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