MESSAGE FROM THE CHAIR

Greetings. It has been another exciting year in EE! Our fall 2010 undergraduate enrollment was up over fifteen percent from the previous year and our research activities increased to over $6M, up more than twenty percent over the same period. We added two new faculty members in power-related areas, have won major (individual faculty) awards, and now have a robust EE seminar series. Unfortunately, we also suddenly lost a well-regarded faculty member late last year.

Included in this edition are profiles of three of our very research active faculty members and of our two newest faculty members. Also included is a description of our new undergraduate curriculum. We are also pleased to indicate our most recent faculty and student awards and recognitions. We enjoy and benefit from our interaction between our alumni, friends, and students, so let us know if this is something you would be available to participate in, even if just a single event while you happen to be in the area. Other types of support are certainly available and appreciated as well, as described within. Feel free to contact us if there is something you would like to share in an upcoming newsletter.

Dr. Jonathan Bredow

FOCUS ON FACULTY

Dr. Zeynep Celik-Butler, Professor and Director of the Nanotechnology Research and Teaching Facility, received dual B.S. degrees in electrical engineering and physics from Bogazici University, Istanbul, Turkey in 1982. She received her M.S.E.E. and Ph.D. from the University of Rochester in 1984 and 1987 respectively. She was an IBM Pre-doctoral Fellow from 1983-1984 and an Eastman-Kodak Pre-doctoral fellow from 1985-1987. Dr. Celik-Butler joined UT Arlington in 2002 from Southern Methodist University, where she served as Assistant Dean of Graduate Studies and Research. Dr. Celik-Butler is a senior member of IEEE, member of Eta Kappa Nu, and the American Physical Society. Dr. Celik-Butler was also a distinguished lecturer for the IEEE-Electron Devices Society.

Her research interests include microelectromechanical systems, infrared detectors, noise in semiconductor and superconductor devices, and high Tc-superconductivity. She has four patents, four book chapters, and over 100 journal and conference publications. Dr. Celik-Butler’s research group is housed in the Nanotechnology Research and Teaching Facility, which recently received one million dollars in improvements made possible by University funds and a grant from the National Science Foundation. There are two distinctly different areas of research within the group.

The research activities of Microelectromechanical Systems (MEMS) group is focused on multifunctional, conformal sensor arrays with integrated bias, read-out and power capabilities, the so-called SMART SKIN, for aerospace, defense and medical applications. The second thrust area is noise and reliability of nanoelectronic devices. This research trust area is investigating the effect of extended drain region on noise and reliability of LDMOS structures.

Dr. Celik-Butler was also recently inducted into the Electrical Engineering Department Hall of Fame of Bogazici University in Istanbul, Turkey. She is an editor for the IEEE Transactions on Electron Devices.
Dr. J-C. Chiao has been honored by The Academy of Medicine, Engineering, and Science of Texas with an O'Donnell Award in Engineering. Each year, the Edith and Peter O'Donnell Awards recognize rising Texas researchers who are addressing the essential role that science and technology play in society and whose work meets the highest standards of exemplary professional performance, creativity, and resourcefulness. One award for each category of medicine, engineering, and science is given each year. Dr. Chiao was cited for his “pioneering achievements in RF MEMS and polymeric millimeterwave components enabling low-loss reconfigurable radar systems, and implantable telemetric micro-sensors and stimulators for clinical applications in medicine.” The award recipients in academia were nominated by university presidents and national academy members, and selected by a committee of Texas Nobel Laureates. During the award ceremony, Dr. Chiao’s achievement was shown in a tribute video, which can be viewed at the award website.

In Senator Kay Bailey Hutchison’s op-ed “Giving Texas a Scientific Advantage” published in the Dallas Morning News on January 7, 2011, Dr. Chiao was particularly mentioned as “the Academy’s O’Donnell Awards were presented to honor the next generation of pioneering innovators in Texas. Dr. J-C. Chiao, an electrical engineering professor and the University of Texas at Arlington and adjunct associate professor of internal medicine at UT Southwestern, received the engineering award for developing sensors to test treatments for illnesses that can lead to cancer. Chiao merged his expertise in electrical engineering and internal medicine resulting in this innovative device.”

In addition to the prostate cancer metastasis research work, Chiao’s works on gastroesophagus reflux sensors can determine the symptoms of GERD and efficacy of drugs in the esophagus, and his works on a batteryless strain sensor can detect bladder volume in vivo to manage incontinence. In collaboration with other researchers, Chiao has also developed wireless neurosensors and neurostimulators that are designed to detect and block pain signals for chronic pain management.

Dr. Frank Lewis joined the University of Texas at Arlington in October of 1990 as the Moncrief-O’Donnell Endowed Chair in Robotics. Dr. Lewis established the Advanced Controls and Sensors Group (ACS) of the Automation and Robotics Research Institute (ARRI) immediately on his arrival. The primary thrusts of ACS are research in controls design for robotic, aerospace, and autonomous systems, intelligent control, cooperative control of networked teams, sensor networks, and real-time control implementation.

The ACS Group consists of Dr. Lewis, 8 Ph.D. students, masters, undergraduate students, and often international visiting research faculty. Dr. Lewis has graduated 38 Ph.D. students, most of which have won international and local awards for their work. Several have written books and received US patents. Three are National Science Foundation Career Awardees and one is a Department of Homeland Security Career Awardee.

Dr. Draguna Vrabie (a 2009 graduate and former research professor at ARRI) now works at United Technologies Research Center in Hartford, CT. Dr. Vrabie received the Best Paper Award at the International Joint Conference on Neural Networks, Barcelona for her paper, “Adaptive Dynamic Programming Algorithm for Finding Online the Equilibrium Solution of the Two-Player Zero-Sum Differential Game.”

DEPARTMENT HIGHLIGHTS

The EE Undergraduate Curriculum Committee (Drs. Donald Butler, Sungyong Jung, Dan Popa, Howard Russell, and Kai-Shing Yeung), has met frequently since
Fall 2009 to discuss the objectives and timeline of enacting major changes to the undergraduate curriculum, in accordance to UT Arlington’s march toward Tier 1, and in conjunction to other changes taking place in the College of Engineering as a whole. The committee considered feedback from students and alumni, from the Electrical Engineering Board of Advisors, and was guided by the department leadership throughout this process.

While there are many positive aspects of the current curriculum, the committee also noted deficiencies, such as the limited impact of introductory courses in the curriculum, the delay in introducing system level and digital electronic concepts, and the relative weak connection with our graduate curriculum.

As a result, the UGCC felt it imperative to propose significant curriculum changes to accomplish multiple objectives such as improving the quality of our graduates, bringing our curriculum in line with those at Tier 1 institutions, and bridging the gap between graduate and undergraduate education.

The revisions aim to address course content updates due to advances in modern EE education, applied skills through hands-on project/lab experience, graduate quality and retention rates, diverse interests and specializations of students and industry sponsors, and ranking improvement. The revised EE curriculum strengthens the freshmen engineering courses and improves student preparation for the professional program, specifies curricula for five core courses with four credit hours, updates second tier courses (core electives), and reduces the number of credit hours from 129 to 125.

The UGCC proposed to enact curriculum changes in three phases: Phase I (immediate changes), Phase II (short-term changes) and Phase III (long-term changes). Phase I changes, starting in fall 2010, included course self-assessment, student skills evaluation at various stages, and course description and syllabus improvements. Phase II changes, starting in fall 2011, will include a focus on five core curriculum courses and the introduction of specialization areas. Phase III changes, starting after fall 2011, will include revisiting courses offered as service to the EE department.

The updated five core courses are EE 2403 (Electronics I), 2415 (Circuit Analysis I), 2441 (Digital Logic and Microprocessors I), 3407 (Electromagnetics), and 3417 (Continuous Signals and Systems). The updated five required EE courses are EE 1205 (Introduction to EE), 2347 (Mathematical Foundations of EE), 3318 (Discrete Signals and Systems), 3446 (Circuit Analysis II), and 3330 (Probability and Random Signals).

For more information on the undergraduate curriculum changes, please contact the Undergraduate Curriculum Committee Chair, Dr. Dan Popa at popa@uta.edu or 817-272-3342.

There are several new faces around the Department. Assistant Professor Dr. Ali Davoudi directs the educational and research activities of the Renewable Energy Systems and Vehicular Technology laboratory. He received his Ph.D. from the University of Illinois, Urbana, where he was also a post-doctoral researcher. His research interests are modeling, simulation, and control of grid-interconnected renewable energy sources, finite-inertia power systems, energy harvesting, and energy source diversification. In the past five years, Dr. Davoudi has worked with the Grainger Center for Electric Machinery and Electromechanics, SolarBridge Technologies, Texas Instruments, and Philips Electronics.

Assistant Professor Dr. David Wetz joined UT Arlington from the Institute for Advance Technology at the University of Texas at Austin where he worked on the electromagnetic acceleration of projectiles (rail guns). He is currently affiliated with the Energy Systems Research Center at UT Arlington. His research areas of expertise include pulsed power, high voltage engineering, dielectric breakdown, electromagnetic launch, and power electronics. Dr. Wetz serves as Co-PI of a US Department of Energy funded project titled “The Development of a Smart MicroGrid Testbed” with Dr. Wei-Jen Lee.
There are also two new members of our department staff. Janice Moore joined the advising office in November (replacing Christina Jones-Barnes). Janice worked previously in the Department of Chemistry. Alumna Pauline Mason began with the administrative office in January. Cindy Smith retired in August after 33 years with UT Arlington.

The second edition of “Radio Frequency Circuit Design” by Dr. Alan Davis has now been published. This 2011 edition contains several techniques of design of RF filters and impedance matching circuits, small signal and power amplifiers, oscillators, RF mixers, and phase lock loops. Information on noise and stability are needed for Low noise amplifier design, while efficiency and power handling capability and are needed for power amplifiers. These are the major subjects covered in the text, which is being used in our EE 5348 class.

The new book “Fast Fourier Transform- Algorithms and Applications” by Dr. K.R. Rao, Dr. D.N. Kim and Dr. J.J. Hwang presents an introduction to the principles of FFT, frequency domain filtering, and applications to video and audio signal processing. This book provides thorough and detailed explanation of important up-to-date FFTs. It also has adopted modern approaches like MATLAB examples and projects for better understanding of diverse FFTs.

Commencement ceremonies in December included 3 Ph.D. students, 71 M.S.E.E. students, and 24 B.S.E.E. students. Congratulations to the newest electrical engineering alumni!

The Department participated in the annual College of Engineering celebration of National Engineers Week this February. Several department members were honored at the 2011 Engineering Awards Banquet. Students Justry Weir and Justin Blassingame received the John M. Goodwin Endowed Scholarship. Sheng yun Lin received the Professor Paul M. Cunningham Endowed Scholarship. The Bernard and Ann Svihel Memorial Scholarships were awarded to Niraj Parajuli and Lorenia Venegas. Issac Weintraub received the Jack Fitzet Endowed Scholarship. Nathan Clark received the Alfred R. and Janet H. Potvin Outstanding Electrical Engineering Student Award. The Ernest Heyer Memorial Awards were presented to Senior James Curzan, Junior Raza Khan, and Sophomore Yanyan Hu. Dr. J-C. Chiao received the Lockheed Martin Aeronautics Company Excellence in Engineering Teaching Award. The Fay Van Dam Outstanding Staff Award was presented to Electrical Engineering’s Administrative Services Officer Terri Earle. The award is presented to a member of the support staff whose everyday performance and dedication to the college demonstrates a constant desire to go above what is normally required and accepted. Congratulations to all honorees!

The Department has hosted several speakers as a part of our seminar series. Dr. Lawrence Larson (University of California, San Diego) gave a talk titled, “High Power Efficiency and Linearity Power Amplifiers for Wireless Communications” on January 27. Southern Methodist University’s Dr. Gary Evans spoke about “Grating-Stabilized Edge- and Surface-Emitting Semiconductor Lasers” on February 11 in a joint seminar with the IEEE Laser and Electro- Optics Society Fort Worth Chapter. Dr. Prasad Gogineni (University of Kansas) spoke on “Radar Sounding and Imaging of Ice-Sheet Margins and Fast-flowing Glaciers” on February 24. On February 25, EE and the IEEE Antenna and Propagation Fort Worth Chapter hosted Dr. Vladimir Okhmatovski from the University of Manitoba. His lecture was titled “Barnes-Hut algorithm: From Stellar Dynamics to Computational Electromagnetics.” Texas A&M’s Dr. Arum Han spoke on March 3. His talk was
“From Cell Biology to Bioenergy Solutions: Role of Microfluidics and Lab-on-a-Chip Systems.”

On March 9, Dr. Elsa Garmine, the Dartmouth College Sydney E. Junkins 1887 Professor of Engineering Sciences, spoke, as a part of the College of Engineering’s 2010-2011 Distinguished Speaker Series. This talk entitled, “Fifty Years of Lasers” outlined some of the history, introduced its basic concepts, and described a few of the many advances this technology has enabled in our daily lives, and in advancing science.

IN MEMORIAM

Senior Lecturer Nikolai Stelmakh died suddenly at his home on December 8 of a heart attack. He was 49 years old.

Dr. Stelmakh was an avid alpine skier who won numerous masters’ competitions in the slalom and giant slalom. He was also a soccer enthusiast who played in UT Arlington’s faculty-student soccer league for the Arlington United team. Dr. Stelmakh is survived by his wife, daughter, and mother.

The Department of Electrical Engineering has established the Nikolai Stelmakh Memorial Outstanding Student Research award fund in his honor. The Department plans to utilize the Maverick Match program, which leverages UT Arlington’s natural gas royalty funds to support student scholarships. The program matches, dollar for dollar, all endowment commitments of $25,000 or more. We have currently reached over 60% of our goal. Please contact Ellis Pope (at 817-272-0775 or epope@uta.edu) to learn more or to donate.

ENJOY OUR CAMPUS

There is so much going on at UT Arlington, and YOU ARE ALWAYS WELCOME! Check out campus events including athletics, gallery openings, conferences, lectures, theatrical performances, concerts, and much more at UT Arlington’s Online Calendar.

SHOW YOUR SUPPORT

Show your support of EE programs and activities and the College of Engineering at UT Arlington. Your gift could help a student who might otherwise be unable to attend, create a professorship or provide valuable equipment for research and teaching. Contact Ellis Pope, the College of Engineering Development Director, at 817-272-0775 or epope@uta.edu.

KEEP IN TOUCH

It is important to us to remain in touch with you. Please provide us with your change of address or updated business information so that we may update our records accordingly. Have you been recently promoted, started a business, gotten married, or had a baby? We would love to hear from you! Please continue to visit our website (www.uta.edu/ee) and interact with us via e-mail at EEalumni@uta.edu.