



TEXAS TECH UNIVERSITY

Department of Industrial Engineering™

Fall 2013

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

Message from the Chair

I want to welcome you to our first newsletter in some time; i.e., has been more than two years since the last issue. There have been many changes in the Department of Industrial Engineering. In this issue we will highlight some of the remarkable accomplishments of our students, faculty, staff and alumni.

Our department has served students and West Texas since 1934. We currently have 11 faculty members working with 143 undergraduate, 33 Masters, and 67 Ph.D. students. We support over 30% of our undergraduates and 75% of our on-campus Ph.D. students through scholarships, teaching opportunities, and research. The quality of our undergraduate education is strong. Our students, year after year, find internships and have salary offers that exceed the national average for industrial engineers — the result of a faculty that both actively engages and challenges our students. Our graduate programs are also well-regarded and experiencing rapid growth. This is particularly true for our graduate systems and engineering management programs, which are offered both on-campus and by distance.

I am often asked how alumni can become more involved with the program; here are four ways.

1. Help support scholarships for our students. While we support more than 30% of our undergraduate students with scholarships of at least \$1000, there are many more deserving students that scholarship dollars would help. Your company may have a matching program for contributions. If you have any questions about financial support for scholarships, please write or call me. I will be glad to answer your questions.
2. Interact with our students. If you have expertise/advice/cautionary tales, etc., you would like to share, contact me and we will find a way to get your story to our students.
3. Look for opportunities for your company to sponsor a capstone (senior) project for a student team. The capstone projects have proven successful for their sponsors but, equally important, the experience provides students with a peek into the kinds of real world problems they may face as a professional.
4. Support plant tours for our students. Provide a tour at your facility or provide financial support for one of our tours. These trips expose the students to various industries and professionals, broadening their experiences and their understanding of their profession.

The Whitacre College of Engineering is embarking on a multi-year campaign to raise approximately \$6.5 million to upgrade and modernize equipment in teaching laboratories. This is an interdepartmental initiative to enhance the learning experience for all undergraduate students. The Department of Industrial Engineering is soliciting assistance in upgrading the Advanced Manufacturing Laboratory and the Ergonomics Laboratory. A printable document that details the renovation plans for the college's labs, including those in our department, can be found at www.coe.ttu.edu/labs.

There are many other opportunities for you to share in the department's continuous improvement efforts. If you have ideas about how you would like to be involved with us, please contact me.

I would invite you to subscribe to our LinkedIn group named "Texas Tech University Industrial Engineering Alumni, Faculty, and Students" - join us at www.linkedin.com and start a discussion!! On a final note, if you have travel plans to Lubbock, we would love to have you drop by the office.



Zhang

Hong C. Zhang, Ph.D., P.E.

Interim Chair and Derr Endowed Professor | Hong-Chao.Zhang@ttu.edu



Nineteen Texas Tech industrial engineering students visited four plants in the Austin, Texas area including Dell, 3M, Freescale, and Applied Materials.

Students Get First-Hand View of Engineering Design and Manufacturing in Action

Last fall, 19 industrial engineering students traveled to Austin, Texas to visit four high-profile manufacturing plants. The focus of the visits was to explore first-hand the applications of industrial engineering in the management, design, and manufacturing of a variety of products.

The group visited Dell, Freescale Semiconductor, 3M, and Applied Materials facilities and was able to walk through the factory floors and observe the design of the workstations and layouts. At one facility, the group was allowed to touch some of the products and visit with the floor workers. Each company provided different perspectives on ways to maximize efficiency and operations.

At Dell, the focus was on cost reductions. The group learned that all of the computer parts were produced either overseas or by another company. They learned how controlling production eliminated inventory costs. In this scenario, computers were assembled as soon as the parts arrived and were shipped out as soon as the final product was completed.

At Freescale, students observed the technology that goes into the manufacturing of semiconductors. The group was not allowed to enter into the laboratories to ensure safety and quality, but they were able to walk down a hallway and observe the different stages and see most of the activities on the production floors.

3M, which manufactures a variety of products from paper clips to body parts for electronic appliances and computer circuit boards, offered the students an opportunity to see a wide variety of products in production.

Finally, at Applied Materials, the tour group witnessed the assembly and production of robots. These robots, which are big and complex machines at each workstation, often require the technicians to lie on the ground or walk around the robot, just to gain access to the part they were working on.

Overall, the experience allowed the students to connect their knowledge of industrial engineering fundamentals to industrial and manufacturing settings.

Student News

Pruitt Receives SMART Scholarship

Jenna Johnson has been awarded a scholarship from the Science, Mathematics And Research for Transformation (SMART) Scholarship for Service Program from the Department of Defense (DoD).



Johnson

The SMART Program was to support undergraduate and graduate students pursuing degrees in Science, Technology, Engineering and Mathematics (STEM) disciplines. The program aims to increase the number of civilian scientists and engineers working at DoD laboratories. The DoD offers this scholarship for service to individuals who demonstrate outstanding ability and special aptitude for a career in scientific and engineering research and product development, express interest in career opportunities at DoD laboratories and, are pursuing a degree in, or closely related to targeted disciplines.

Participants in the SMART Scholarship for Service Program receive a scholarship that pays for full tuition and education related fees, a cash award paid at a rate of \$25,000 - \$41,000, paid summer internships, health insurance reimbursement, book allowance, mentoring, and employment placement after graduation.

Six-Sigma Green Belt Workshop Offered for Students

A Six-Sigma Green Belt for Process Improvement Workshop was offered to Department of Industrial Engineering students in April 2012.



Six Sigma

Sixty industrial engineering students took part in the training, which provides instruction on special skills in six-sigma. The department provided the workshop at no cost to the students.

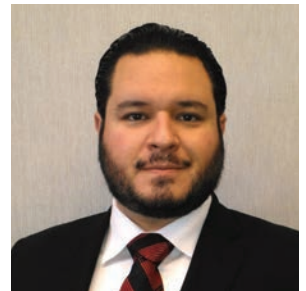
Six-Sigma is a business management strategy used to analyze and solve quality problems using a set of quality management methods (including statistical methods).

Six-Sigma seeks to improve process outputs by identifying and removing the causes of defects and minimizing variability in manufacturing and business processes.

The department hopes to offer this workshop and similar courses in the future to complement the students' professional development.

Amodio-Calvo Receives Excellence in Graduate Teaching Award

Javier Amodio-Calvo, a doctoral student, received the Helen DeVitt Jones Excellence in Graduate Teaching Award through the Texas Tech University Graduate School.



Amodio-Calvo

He received the award at the Graduate Student Awards Ceremony and luncheon in April 2012 held at the Merket Alumni Center on the Texas Tech campus.

This award supports excellence in teaching awards administered by the Graduate School for Graduate Part-time Instructors (GPTI). The award is given annually during the statewide graduate student appreciation week.

Amodio-Calvo was recognized for outstanding scholarly activity and excellence in teaching.

Alumni News

Demarest Named One of "100 Women Making a Difference"

The American Society of Safety Engineers (ASSE) honored Michelle Demarest of Orlando, Fla., a 2000 graduate with a Bachelor of Science in industrial engineering, for her lifelong dedication to protecting people, property, and the environment.



Demarest

The ASSE Women in Safety Engineering Common Interest Group has honored 100 women from around the world for making a difference in safety, health, and the environment.

With more than 20 years of experience in the safety, health, and environmental (SH&E) field, Demarest is currently a senior safety manager for Walt Disney World. Her responsibilities include supporting rides and attractions, and through this role, she has become an active member of the ASTM F24 committee, where she assists in writing standards that apply to amusement park rides and devices.

Prior to her current role with Walt Disney World, Demarest worked as a safety professional at the Naval Warfare Weapons Division at White Sands Missile Range, as an occupational safety and health specialist at Texas Tech University, and occupational safety specialist for Frito-Lay, Inc. and as a safety, health and security manager for Miller Brewing Company. Her wide range of experience in a variety of industries has led her to become a well rounded safety professional.



Faculty News

Wang Receives NSF CAREER Award

Dr. Shiren Edward Wang, an associate professor of industrial engineering, received an NSF CAREER Award from the National Science Foundation.

Wang's award recognizes his career development plan entitled, "Exploring Novel Organic Thermoelectric Composites with Hierarchical Architecture and High Figure of Merit." His research focuses on nanostructured organic thermoelectric composites.

Wang's \$400,000 award recognizes his career development plan that focuses on organic thermoelectric composites. Recovering heat from a material or device through thermoelectric conversion involves the conversion of thermal energy to electrical energy or electrical energy to thermal energy. The heat generated from the sun's rays on the roof of an electric vehicle can be used to charge that same car's battery. In computers, the heat from the processor could be recycled to recharge the battery as the computer is in operation.

Wang is working to find new organic materials that could revolutionize the thermoelectric conversion industry.



Wang

Zhang Named CIRP Fellow

Dr. Hong-Chao Zhang, professor of industrial engineering, has been elected as a fellow of The International Academy for Production Engineering, also known as the College International pour la Recherche en Productique, or CIRP.



Zhang

CIRP is the world leading organization in production engineering research and is at the forefront of design, optimization, control and management of processes, machines and systems. The academy has restricted membership based on demonstrated excellence in research and has some 600 academic and industrial members from 50 industrialized countries.

Many of the world's leading companies and research institutes as well as many other small and medium size enterprises are already affiliated to CIRP as corporate members.

CIRP has approximately 170 fellows and honorary fellows who are internationally recognized scientists elected to be CIRP members for life. Candidates for fellow membership must be proposed by four fellows (honorary and emeritus as well) from at least three different countries.

Distance SEM Degree

Master's and Doctoral Degrees Available by Distance

Engineering and engineering management will play a critical role in the future of our economy and a successful global society. Texas Tech is proud to present the first and only doctoral-level Systems and Engineering Management (SEM) program offered on-campus or via distance education in Texas.

The purpose of Texas Tech's master's and doctoral degrees in SEM is to provide graduate degree programs that are both accessible and meet the educational needs of engineering management professionals around the world. The growth of our SEM M.S. degree, which is offered on-campus and through distance education, and the on-campus Ph.D. program, coupled with the demand of industry for technical management professionals, provided the driving force for the development of a distance Ph.D. program.

The programs, still in their infancy, have already graduated 106 M.S., 18 Ph.D., and 4 distance Ph.D. students. We currently have 31 M.S., 30 Ph.D., and 17 distance Ph.D. students from around the world enrolled in the program. Contact Dr. Simon Hsiang at 806.742.3543 for additional information.

Urban and Group Receive Best Paper Award

Dr. Susan Urban, professor of industrial engineering, and her group received the best paper award at The 5th International Symposium on Rules: Research Based and Industry Focused (RuleML-2011) that was held in November 2011 in Fort Lauderdale, Fla.



Urban

The title of the paper was "Supporting Data Consistency in Concurrent Process Execution with Assurance Points and Invariant Rules." The group included Urban, Andrew Courter, Le Gao and Mary Shuman.

RuleML-2011 is a research-based, industry-focused symposium: its main goal is to build a bridge between academia and industry in the field of rules and semantic technology, and so to stimulate the cooperation and interoperability between business and research, by bringing together rule system providers, participants in rule standardization efforts, open source communities, practitioners, and researchers.



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Department News

Texas Tech Hosts National ASEM Conference

Texas Tech hosted the 2011 International Annual Conference of the American Society for Engineering Management in October 2011. More than 150 attendees from four continents came to Lubbock to present research, seek professional development, pursue certification as Professional Engineering Managers, and network with colleagues.

Texas Tech industrial engineering personnel were heavily involved in the conference management, with assistance from the University of Arkansas and Missouri S&T. Dr. Dave Wyrick served as General Chair and is ASEM President for 2011-12; Dr. Jennifer Farris and Mr. Gana Natarajan were Technical Program Chairs, and Dr. Mario Beruvides served as Chair of Publications and oversaw the Best Student Paper Award.

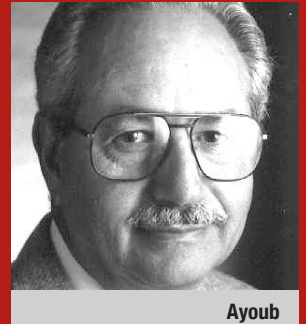
Keynote speakers included Dr. John Schroeder, director of Texas Tech's Wind Science and Engineering Research Center; Dr. Allen Carrigo, Director of Operations and Support for the Northwest Texas Small Business Development Centers Network; and Dr. Simon Philbin, Associate Director of Enterprise Projects at Imperial College London.



Dr. Beruvides discusses research findings at ASEM.

Ayoub Receives Distinguished Service Award

Dr. M.M. Ayoub, former P.W. Horn Professor and professor of industrial engineering, received the Human Factors and Ergonomics Society (HFES) Arnold M. Small President's Distinguished Service Award for lifetime contributions to the profession.



Ayoub

The award was presented at the 56th Annual Meeting of HFES in October 2012 in Boston, Mass.

HFES is the world's largest nonprofit individual-member, multidisciplinary scientific association for human factors/ergonomics professionals. HFES members include psychologists and other scientists, designers, and engineers, all of whom have a common interest in designing systems and equipment to be safe and effective for the people who operate and maintain them.

Ayoub has served as a consultant to both OSHA and NIOSH. He was both the organizer and the first director of the ergonomics division of the Institute of Industrial Engineers (IIE) and its first director. He also served as president of the International Society for Occupational Ergonomics and Safety. Additionally, he is a fellow of HFES, a fellow of the Ergonomics Society, the American Society of Engineering Education. Ayoub also served on the Human Factors Committee for the National Academy of Sciences, and was a member of the NIOSH Board of Scientific Counselors.

Keeping in Touch

The Texas Tech Department of Industrial Engineering would like to know what is happening in your professional life. Visit the following website to update your information or let us know about your accomplishments: www.coe.ttu.edu/info