



The Blueprint Newsletter

Message from the Chair

Dear friends, colleagues and alumni:

We are pleased to share some of the exciting news in the Department of Mechanical Engineering at Texas Tech University over the past year.

Our undergraduate student numbers have increased to 1270 students from 1081 last year, and currently we have 45 master's and 100 doctoral students.

The department has welcomed six new faculty members Drs. Fazle Hussain, Hanna Cho, Hanna Mousa, Beibei Ren, Jungkyu Kim and Carsten Westergaard. Dr. James Yang received the Chancellor's Council Distinguished Research Award and was named an Outstanding Faculty Mentor. Aimee Cloutier, a graduate student, has been selected to receive a 2013 NSF Graduate Research Fellowship Program (GRFP). In addition, both undergraduate and graduate students have received numerous awards as well as many recognitions.

The department continues to build a strong connection through the Academy and Industry Advisory Board (IAB) members. Through this connection, the department has the ability to provide scholarships to our students from the donations through the Academy, the IAB, and the engineering industry. What we have accomplished in our education and research programs has been made possible by the excellence and dedication of the ME faculty and staff members.

If you are in the Lubbock area, please do not hesitate to stop by and see the exciting things developing in the department.

Jharna Chaudhuri
Professor and Chair



Chaudhuri

New Faculty Member Dr. Fazle Hussain

Texas Tech is proud to welcome National Academy Member Dr. Fazle Hussain to the Department of Mechanical Engineering. His expertise is in vortex dynamics, turbulence, and measurement techniques, and is most known for his pioneering contributions via experiments, theory and numerical analysis to coherent structures in fluid turbulence.



Hussain

He has also researched in solar energy, holography, flow noise, flow control, cardiovascular dynamics, modeling cancer growth, nanomedicine and nanotechnology. He is now interested in fuel saving by drag reduction, wind turbine aerodynamics and aeroacoustics, offshore wind farms, cancer drug delivery, and microseismology.

Following his Ph.D. in mechanical engineering in 1969 at Stanford, he was post-doctoral researcher at Johns Hopkins University, before joining the University of Houston (UH) in 1971. At UH, he was promoted to full professor in 1976, a University Distinguished Professor in 1985, and Cullen Distinguished Professor in 1989, until he was awarded in 2010 the Cullen Distinguished University Chair.

He has been recognized by all the four topmost awards in fluid mechanics: the Fluid Dynamics Prize (1998) of the American Physical Society (APS), the Freeman Scholar Award (1984) and the Fluids Engineering Award (2000) of the American Society of Mechanical Engineers (ASME), and the Fluid Dynamics Award (2002) of the American Institute of Aeronautics & Astronautics (AIAA). He is the only person to receive these four fluids awards; only two others (Liepmann, Roshko) have received as many as two of these awards. He served as the chair of the Fluid Dynamics Division of APS and is a Fellow of APS, ASME and AIAA. The University Houston awarded him in 1999 the Sigma Xi Award, and in 2007 the Esther Farfel Award for combined excellence in teaching, research and service. He was the 2009 Moore Distinguished Scholar at Caltech, and is an Honorary Professor for life at the Peking University, the Satish Dhawan Visiting Professor at the Indian Institute of Science and the dean of engineering of The Methodist Hospital Research Institute in Houston.

He recently served as the chair of the Mechanical Engineering Section of the National Academy of Engineering and currently serving on the Committee to select the NAE President and also on the Draper Prize Committee. He has been active in The Academy of Medicine, Engineering & Science of Texas (TAMEST) from its founding, having served on its Board of Directors for 2009-12.

Dr. Jim Lawrence Remembered

James (Jim) Harold Lawrence Jr. passed away at home surrounded by family on September 25, 2013, after a brief illness. Born on February 9, 1932 in Beatrice, Nebraska, he later met Jane Matthews at Texas Technological College and married her in 1955. He earned a Ph.D. in mechanical engineering and began teaching at Texas Tech. A true educator, challenging his students, his heat transfer and thermodynamics students fondly remember him as a tough, but talented teacher. He served as chair of the Department of Mechanical Engineering and was employed at Texas Tech for more than 40 years. He was active in the American Society of Mechanical Engineers at the national and local level, where he mentored many students. An avid fly fisherman, spending summer vacations in southern Colorado on the Conejos River, Lawrence always held the annual record for first, biggest, and most fish. He passed along this passion to his family. Like all good fishermen, he was persistent, curious, patient, consistent and faithful. These were the guideposts for his life, whether at work or with family.



Lawrence



Student Organization News

Texas Tech Formula SAE Team Has Most Successful Year to Date



FSAE Team with 2013 Vehicle

This fall, the Texas Tech Formula SAE begins the construction of its fourth consecutive vehicle. In the spring of 2013, the team was able to improve 25 places at the SAE competition to finish in 68th place out of 104 competing teams. With improvements to weight, driver ergonomics and engine power, it represents most successful year to date.

This year, the team hopes for a top 50 finish with a primary goal of finishing the endurance event. The focus will be on improving reliability, while testing and verifying all designs, well in advance of the competition.

The team is sponsored by Terry Fuller, the Whitacre College of Engineering, Teinert Metals, McWhorter Tire, TES Performance, Richardson Collision, Texas Tool, and TexCraft.

ASME Student Chapter Attends IMECE, Hosts Industry Tours



ASME Members at the 2013 International Mechanical Engineering Congress and Exposition

The Texas Tech ASME Student Chapter attended the ASME International Mechanical Engineering Congress and Exposition (IMECE) in November 2012. The event is a premier global conference that focuses on today's technical challenges, research updates and breakthrough innovations that are shaping the future of engineering.

The chapter also hosted tours for Texas Tech mechanical engineering students at several companies' facilities, including Bell Helicopter and Xcel Energy.

Student News

Jared Gragg received the Helen DeVitt Jones Excellence in Graduate Teaching Award, which honors a Texas Tech graduate part-time instructor for excellence in teaching and exceptional scholarly activity.



Gragg

Gragg also received the Graduate Student of the Year Award, which recognizes one graduate student from each college for outstanding contributions to scholarship and the graduate community, academic achievements, and commitment to diversity.

Peter McDonough was accepted into the TEACH (Teaching Effectiveness And Career Enhancement) Program, which is modeled after the national Preparing Future Faculty movement. The TEACH program assists graduate students in further developing teaching skills and exploring faculty roles on a college or university campus.



McDonough

Richa Padhye received the Summer Dissertation/Thesis Research Award, which acknowledges exceptional students in the thesis or dissertation stage of their program who are in good standing, who have filed an official thesis or dissertation topic and research committee chairperson, and who plan to graduate within the coming year.



Padhye

Padhye also received the Study Abroad Competitive Scholarship. The scholarship is competitive and money is awarded to domestic students who will study abroad on Texas Tech approved programs, or international students seeking a degree at Texas Tech.

Aimee Cloutier, a graduate student under the supervision of Dr. James Yang, has been selected to receive a 2013 NSF Graduate Research Fellowship Program (GRFP). She was selected based on her outstanding abilities and accomplishments, as well as her potential to contribute to strengthening the vitality of the U.S. science and engineering enterprise.



Cloutier

Zhipeng Lei received the 2012 Chinese National Scholarship for Outstanding Self Supported Student Studying Abroad. A student in Dr. James Yang's lab, Lei was offered 2012 Chinese Government Scholarship for Outstanding Self-financed Students Studying Abroad. The scholarship includes \$6,000 and a free trip to the China Consulate in Houston for award ceremony. He is the first student to receive this scholarship at Texas Tech.



Lei

Senay Imam received the Harrington Graduate Scholarship Award for the 2012-2013 academic year. The scholarship, awarded from the Whitacre College of Engineering, was in part a support in continuing his graduate study and research in Texas Tech.



Imam



Duc Pham received a travel award from the United States Association for Computational Mechanics. He made a presentation at the 12th U.S. National Congress on Computational Mechanics in Raleigh, North Carolina.



Pham

Haopeng Zhang, a doctoral student, had a paper titled "Convergence Analysis and Parallel Computing Implementation for the Multiaent Coordination Optimization with Applications" accepted by the 2013 IEEE International Conference on Automation Science and Engineering in Madison, WI and received the NSF student travel support award for the conference.



Zhang

Can Liu was awarded a CH Foundation Doctoral Fellowship to pursue a doctoral degree in mechanical engineering, an honor give to outstanding prospective students of Texas Tech University.



Liu

Alex Rivera and Godlove Wanki were named recipients of the President's Excellence in Diversity and Equity Student Awards for 2013. The awards recognize Texas Tech faculty, staff, and students in their efforts to make Texas Tech a welcoming campus through their commitment to service, mutual respect, academic and intellectual freedom, and diversity.



Rivera



Wanki

Michael Moore received the 2013 ASME IPTI Scholarship, awarded to students in ASME who are well accomplished and have interest in the petroleum industry.



Moore

Moore was also awarded the ASME Electric Power Scholarship. The award is given to students who have great scholastic ability and potential contribution to the mechanical engineering profession who have interest in power engineering.

Sean Miller received the McAuley Distinguished Engineering Student Award. He was selected based on his outstanding academic achievements, honors, and activities.



Miller

David Dukich is the recipient of the 2013 Outstanding Undergraduate Researcher Award. He was awarded because of his hard work and dedication as an undergraduate researcher.



Dukich

Faculty News

Yang Receives Chancellor's Council Award, Named Outstanding Faculty Mentor

Dr. James Yang, an assistant professor, has been named a recipient of the Chancellor's Council Distinguished Research Award, recognizing outstanding research, scholarship, and creative activity.



Yang

He has also been named a recipient of this year's Outstanding Faculty Mentor Award from the Center for Undergraduate Research. Aimee Cloutier, a mechanical engineering undergraduate student, nominated Yang because of his unmatched dedication to promoting undergraduate research at Texas Tech and his work to foster the research culture that is needed for students to succeed. According to Cloutier, "he gives his mentees the push that is needed to succeed in everything they encounter and supports his students in their aspirations and career goals."

Hanson Named Student Section Advisor of the Year

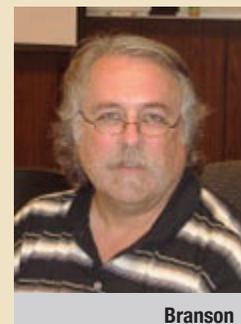
Dr. Jeff Hanson, an instructor, was named a recipient of the Student Section Advisor of the Year at the Great International, Southwest, & Rocky Mountain District E ASME Student Professional Development Conference (SPDC) in April 2013. The district includes schools and universities in Arizona, Arkansas, Colorado, Louisiana, New Mexico, Oklahoma, Texas, Utah, Wyoming, and Mexico. The award recognizes the leadership and service qualities of an advisor.



Hanson

Branson Receives ASHRAE Fellow Award

David Branson, an instructor in the Department of Mechanical Engineering, has been named an American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) fellow. He was recognized for contributions that have had substantial impact on the advancement of the arts and/or sciences of HVAC&R and on the industry.



Branson

ASHRAE, founded in 1894, is a building technology society with more than 54,000 members worldwide. The society and its members focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability within the industry. Through research, standards writing, publishing, and continuing education, ASHRAE shapes tomorrow's built environment today.



TEXAS TECH UNIVERSITY

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New Faculty

Dr. Jungkyu Kim



Dr. Jungkyu (Jay) Kim joined the department in January 2013 as an assistant professor. He received a Ph.D. in biomedical engineering from the University of Utah in 2009. During the doctoral program, he conducted research in carbon nanotube based lab-on-a-chip development for water safety, development of biochips for personalized medicine, and integrated microfluidic systems. He has authored or coauthored more than 50 peer-reviewed journal and conference publications, one book chapter, and 8 patents issued or pending in the area of microfluidics, biosensors, and cell/tissue engineering. He has been a recipient of numerous awards, including the best paper award from the Korea Orthopedic Research Society (KORS), the National Research Foundation (NRF) fellowship, and others. At Texas Tech, Kim's lab focuses on developing a portable chemical analyzer, organ-on-a-chip, digital microfluidics and point-of-care diagnostic devices by using micro/nanofabrication techniques.

Dr. Beibei Ren



Dr. Beibei (Helen) Ren joined the department in February 2013 as an assistant professor. She received her Ph.D. degree in the electrical and computer engineering from the National University of Singapore (NUS) in 2010. Before coming to Texas Tech, she was a postdoctoral scholar in the Department of Mechanical & Aerospace Engineering at the University of California, San Diego (UCSD), from 2010 to 2013, and was a research fellow at the Center for Offshore Research and Engineering, NUS, from 2009 to 2010. Her research interests include adaptive control, neural networks, distributed parameter systems, extremum seeking and their applications to helicopter systems, marine systems, hard disk drives and laser systems for semiconductor manufacturing. At Texas Tech, Ren's research lab focuses on dynamic systems and control in wind energy, smart grid integration, MEMS, and oil/gas industry.

Dr. Hanna Moussa



Dr. Hanna Moussa joined Texas Tech in Fall of 2012. He earned a B.S. in radiological health physics and a M.S. in radiological sciences and protection from the University of Massachusetts, Lowell in 1990 and 1991 respectively. He received a Ph.D. in nuclear engineering with a concentration on radiological engineering and health physics in 2000 from the University of Tennessee (UT) at Knoxville. Moussa served as an assistant director, then director of the Radiological Safety Department (RSD) at UT from 1997 to 2004. He also worked as a senior health physicist at The Walter Reed Army Medical Center in Washington, D.C. through a contract with Battelle Memorial Institute from 2008 to 2010. Moussa has published more than 30 peer-reviewed articles and conference papers in highly ranked health physics and radiation protection journals.

Dr. Hanna Cho



Dr. Hanna Cho received B.S. and M.S. degrees in mechanical engineering from Yonsei University and earned a Ph.D. in mechanical science and engineering at the University of Illinois at Urbana-Champaign (UIUC) in 2012. Her doctoral research, conducted under the direction of Dr.s. Min-Feng Yu and Alexander F. Vakakis, mainly focused on studying nonlinear dynamics in micro- and nanomechanical systems and resulted in seven journal publications, including two in preparation, in top journals and two pending patents. Cho started her postdoctoral research in Dr. William P. King's group at UIUC, and her research interests include the multi-physical dynamics that arise in scanning probe microscopy systems and micro- and nanomechanical structures.

Dr. Carsten Westergaard



Dr. Carsten H. Westergaard earned a Ph.D. from the Danish Technical University with a thesis on optical computing and laser based turbulent flow measurements. During his student years he was at University of Illinois, CERN in Switzerland and Baker Oil Tools in Houston. He has been holding a variety of management roles, including technology, sales and marketing, working for LM Wind Power, Dantec Dynamics, Force Technology and Vestas Wind Systems in Denmark and the US. During his industrial career he has published more than 80 publications and patents. He has held numerous advisory board positions and chaired international reviews of large multi-year government research programs in several countries. He is president of NextraTEC Inc. working with innovative companies, mostly startups, in the renewable energy space developing new exiting new technologies and market approaches.

Keeping in Touch

The Texas Tech Department of Mechanical 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

If you are interested in being a member of the ME Academy, please contact our chair, Dr. Jharna Chaudhuri at jharna.chaudhuri@ttu.edu