TEXAS TECH UNIVERSITY
Department *of* Mechanical Engineering™

Fall 2014 Texas Tech University - Edward E. Whitacre Jr. College of Engineering

The Blueprint *Newsletter*

Message from the Chair


Chaudhuri

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 enrollment has increased to 1452 students from 1270 last year and we currently have 46 master's and 89 doctoral students.

The department welcomed a new faculty member this fall, Dr. Craig Snoeyink. Our faculty, staff and students have received numerous awards as well as many recognitions.

The department continues to build a strong connection with the Mechanical Engineering Academy and Industry Advisory Board (IAB) members. Through this connection the department has the ability to provide scholarships to our students from the donations the academy, IAB, and engineering industry.

What we have accomplished in our education and research programs has been made possible by the excellence and dedication of the mechanical engineering 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

New Faculty Member: Dr. Craig Snoeyink


Snoeyink

Dr. Craig Snoeyink joined the department in September 2014. He received a Doctor of Philosophy in mechanical engineering from Purdue University in 2012. His dissertation was titled "Interference Microscopy: Super-resolution Particle Tracking and Velocimetry."

Before joining the full-time faculty of the department, he worked as a postdoctoral research fellow at Texas Tech.

In his research, he is developing nano-scale optical metrology techniques and applying them towards fundamental biological and fluid mechanics questions. Within this context, he is examining dynamics of super-coiling DNA, enhanced fluidic slip of graphene lined surfaces, and self-assembled colloidal interfaces.

To conduct these studies he uses a Bessel Beam Microscope, which he developed, and which is capable of nanometer precision in locating fluorescent tags, in addition to high speed 3D super-resolution microscopy.

Department Hosts ASME District E SPDC, Wins Awards in Competition

In April 2014, Texas Tech hosted the ASME District E Student Professional Development Conference (SPDC). Texas Tech students and teams, under the supervision of mechanical engineering instructor Dr. Jeff Hanson and mechanical engineering professor Dr. Atila Ertas, won awards all three categories of student competition: poster, oral and design. Michael Crump won first place in Old Guard Design competition and will attend the ASME 2014 International Mechanical Engineering Congress & Exposition (IMECE) in November to compete at the international level.

Old Guard Technical Poster Competition:

2nd Place: Kristen Smith: "Design: Manufacturing Process of a Left Ventricular Testing Device"
3rd Place: Danielle McNeese: "Unmanned Aerial Vehicle for the ASME 2014 Student Design Competition"

Old Guard Oral Presentation Competition:

1st Place: Michael Crump: "Subsea Fluid Connector"
4th Place: Brandon King: "Student Engineering Design: Triumph & Failure in a Quest of Optimization"

Student Design Competition:

2nd Place: Team Gamma: Jesse Latimer, Danielle McNeese, Casey Chapman, Jake Hempel, Brett Anderson
4th Place: The Dream Team: Courtney Billingsley, Brandon King, Andrew Fillingim, Cody Collins, Sterling Sanders, Ana Echeverria

Mechanical Engineering Wins Departmental Excellence in Teaching Award

The Department of Mechanical Engineering has been named the winner of the Teaching Academy's Departmental Excellence in Teaching Award. This award is presented in recognition of a department or comparable academic unit that has made unique and significant contributions to the teaching mission of the university and has esprit de corps in its dedication to the education of students at the undergraduate, graduate, and/or professional level.

Given as merited, it carries a $25,000 prize, to be used for the enhancement of teaching in any way the department determines.

The general criterion for the award is the existence of a "teaching culture," which reflects commitment to students, makes teaching a high departmental priority, and facilitates teaching excellence throughout the department.

Student News

Basu and Bilbao Named ARCS Scholars

Basu

Bilbao

Avik Basu and Alejandro Bilbao, mechanical engineering doctoral students, have been selected as ARCS Scholars for the 2014-2015 year by the Lubbock Chapter of the Achievement Rewards for College Students. They will be honored at an event in October.

The Lubbock Chapter of ARCS was founded in 1972. To be eligible for an ARCS scholar award, a student must be a United States citizen; at least at the junior level and majoring in mathematics, engineering, science or medicine; and maintain a 3.5 or above grade-point average.

Gragg Receives Second Place in Outstanding Dissertation Award Competition

Gragg

Dr. Jared Gragg, who recently completed his dissertation in the Department of Mechanical Engineering, received second place in the Texas Tech Graduate School's Outstanding Dissertation Award Competition.

His dissertation title was "Investigating the onset of slip in gait by employing probabilistic theory and optimization-based motion prediction." Gragg was nominated by Dr. James Yang, an assistant professor of mechanical engineering.

Haputhanthri Wins Best Poster Award at ASME ICES/Fuel Cell and First Place in Graduate Student Research Poster Competition

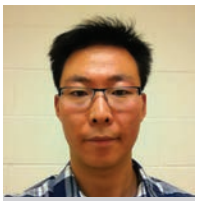
Haputhanthri

Shehan Haputhanthri, a doctoral student, won the Best Graduate Student Poster Award at the ASME 8th International Conference on Energy Sustainability and 12th Fuel Cell Science, Engineering and Technology Conference held in Boston, Massachusetts in July 2014.

His poster was titled "Ammonia as an Alternate Transport Fuel: Emulsifiers for Gasoline Ammonia Fuel Blends and Real Time Engine Performance."

He also won first place in Engineering Category 2 at the 2014 Graduate Student Research Poster Competition, hosted by the Texas Tech Graduate School.

Liu Wins SIAM Student Travel Award



Liu

Zhenyi Liu, a graduate student, was named a recipient of a Society for Industrial and Applied Mathematics (SIAM) Student Travel Award to attend the SIAM Workshop on Network Science (NS14) in July 2014 in Chicago, Illinois.

SIAM Student Travel Awards are given to help students gain the experience and exposure that comes from attending and presenting at SIAM conferences with peers and researchers.

Maharjan Awarded AT&T Chancellor's Graduate Fellowship

Maharjan

Pawan Maharjan, a graduate student, has been awarded an AT&T Chancellor's Graduate Fellowship to pursue a Master of Science in mechanical engineering, an honor given to outstanding prospective students of Texas Tech.

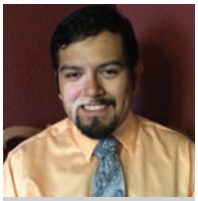
Marathe Receives Helen DeVitt Jones Excellence in Graduate Teaching Award

Marathe

Archis Marathe, a doctoral student and a Graduate Part-Time Instructor (GPTI) in the department, has been named a recipient of a Helen DeVitt Jones Excellence in Graduate Teaching Award.

This award supports excellence in teaching awards administered by the Texas Tech Graduate School. The award recognizes outstanding scholarly activity and excellence in teaching and is awarded annually during the state-wide graduate student appreciation week.

Vargas wins Outstanding Student Presenter Award

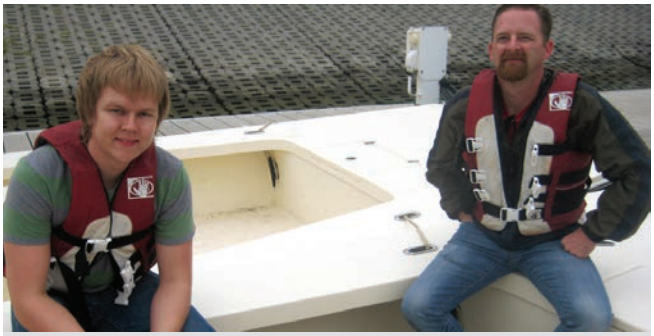


Vargas

Evan Vargas, a research assistant, won the Outstanding Student Presenter Award at the 2014 Spring Technical Meeting of the Central States Section of The Combustion Institute.

His presentation at the conference was titled "Effects of Particle Size on Microwave Heating of Aluminum Powder Compacts."

ME Students Among First Responders to Galveston Bay Oil Spill



James Lassmann and Larry Brock sampling in Galveston Bay

On March 22, a cargo ship collided with a barge carrying approximately 4,000 barrels of bunker fuel oil in Galveston Bay, Texas. An estimated 168,000 gallons spilled into the Houston Ship Channel, prompting officials to shut it down for cleanup.

Within days scientists from two research consortia funded by the Gulf of Mexico Research Initiative (GoMRI) were on site alongside government and industry workers, collecting baseline information to assess impacts. These two groups were the Deep Sea to Coast Connectivity in the Eastern Gulf of Mexico Consortium (Deep-C) and the Dispersion Research on Oil: Physics and Plankton Studies (DROPPS) consortium.

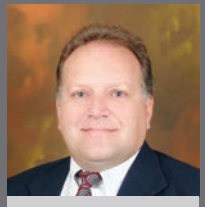
Scientists with DROPPS are interested in oil as it moves through the water column and the effects of different agents on its travel path. They also look at the weathering process, but their primary focus is effects on planktonic populations and how they in turn impact the oil.

Larry Brock and James Lassmann, Texas Tech mechanical engineering students, worked with members of the DROPPS team, sampled in the bay, and used a 3D holography unit. The underwater holography system is used to profile this oil and biological agents in the water column.

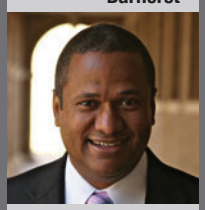
Barhorst, Castillo and Chaudhuri Named ASME Fellows

Dr. Alan Barhorst, a professor of mechanical engineering, Dr. Luciano Castillo, Don Kay and Clay Cash Foundation Engineering Chair in Wind Energy and professor of mechanical engineering, and Dr. Jharna Chaudhuri, mechanical engineering department chair and professor of mechanical engineering have been elected as fellows of the American Society of Mechanical Engineers (ASME).

There are more than 124,000 ASME members and less than three percent of the total membership of the organization have been elevated to the level of fellow.



Barhorst



Castillo

Faculty News

Hanson Named Chair Elect of ASME Board on Student Programs

Hanson

Dr. Jeff Hanson, an instructor, has been named chair elect of the American Society of Mechanical Engineers (ASME) Board on Student Programs.

The Board on Student Programs is responsible for providing innovative programs focused on preparing students for their professional careers through professional development, mentoring, networking, and continuing education by leveraging the ASME co-curricular teaching/learning organizations at the university and college campuses worldwide. The chair provides guidance and leadership to ASME student sections on the university and college campuses to enhance the quality, content and relevance of their activities in preparation for their professional career.

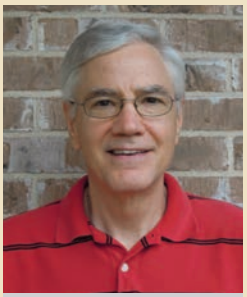
Pantoya Featured on Discovery Channel Canada's Daily Planet

Pantoya

Dr. Michelle Pantoya, J. W. Wright Regents Chair in Mechanical Engineering and professor of mechanical engineering, was recently featured on the Discovery Channel Canada's program, Daily Planet.

Pantoya, along with representatives from the Lubbock County Sheriff's Department, demonstrate how her research into nanoparticles has led to advances in combustion and explosions that could lead to safer ammunition, the elimination of biological threats, and many other applications. Watch the video at Discovery Channel Canada's website.

Gray's Artwork Featured on Texas Country Reporter



Gray

George Gray, an instructor, was recently featured on Texas Country Reporter, a weekly syndicated television program that airs on broadcast television across Texas.

His creative outlet and hobby is welded sculptures made from old mechanical machine components, which he calls "Up-cycled Steel Transformations." He takes these scrap components and reassembles them into totally different configurations representing abstract visions and forms. His artwork is available for viewing on his website at ironmongerartworks.com and the video interview is available on Texas Country Reporter's YouTube channel.

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Box 41021 | Lubbock, Texas 79409-1021

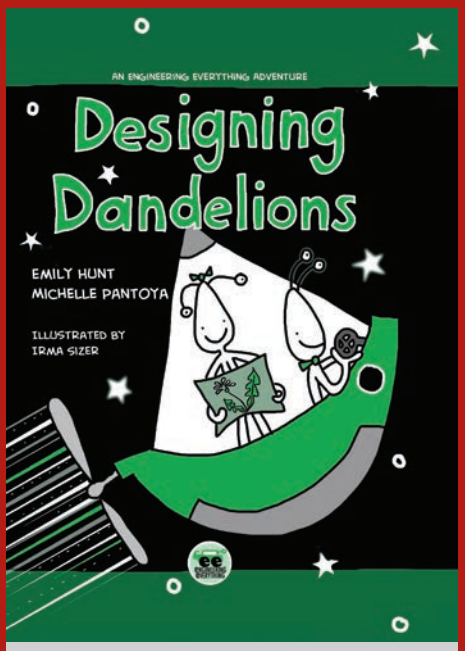
Department News

Pantoya and Hunt Write Third and Fourth Children's Books

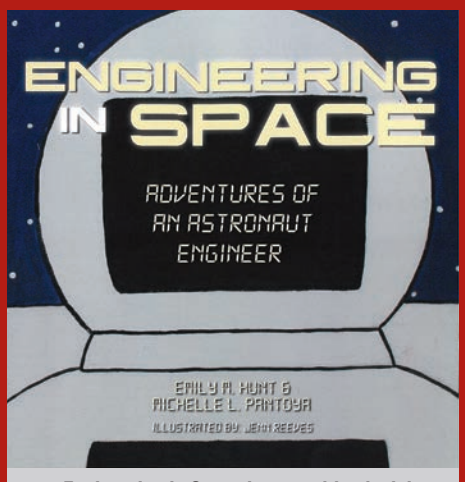
Dr. Michelle Pantoya, a professor and the J. W. Wright Regents Chair in Mechanical Engineering at Texas Tech, and her co-author Dr. Emily Hunt, an engineering professor at West Texas A&M University and Texas Tech alumna, have written two more children's books that aim to introduce the exciting world of engineering. With eight children between them, they are passionate about and committed to inspiring younger generations of engineers.

Looking to introduce basic problem-solving skills by using engineering concepts and vocabulary, the pair worked with early childhood literacy experts and science museums to develop their third book, "Designing Dandelions: An Engineering Everything Adventure." The book aims to teach children the relationship between science and engineering, explains the design process, and introduces science, technology, engineering, and math (STEM) concepts and vocabulary.

When Bells and Mitch, two young space aliens from the planet Exergy, crash-land on Earth, they must apply the engineering design process to get themselves back home. Captivated by the beautiful yellow dandelions near their crash site, Bells and Mitch investigate the dandelions' life cycle. Observing how the flowers disperse their seeds, they construct a mechanical replica to launch their ship back into space.



Designing Dandelions is Pantoya's third book; it aims to introduce children to STEM concepts.



Engineering in Space is an exciting look into space through the eyes of an engineer.

Showing how nature itself can instruct us in engineering, Hunt and Pantoya take young readers on a journey of discovery and problem solving. "I'm very excited to bring engineering to young children and start to inspire the future generations that will impact our world," Pantoya said.

"Designing Dandelions" is the third book published by the author pair and their previous titles, "Engineering Elephants" and "Pride by Design," also have engineering themes.

Their fourth children's book, "Engineering in Space: Adventures of an Astronaut Engineer" is an exciting look into space through the eyes of an engineer. From lift-off to touch-down, engineering principles are integrated with a first-hand account of the beauty of space. The fascinating story uses rhyming and rhythm to creatively engage the reader on a journey through space.

For more information about "Designing Dandelions," visit www.ttupress.org.

For more information about "Engineering in Space," visit bookstore.authorhouse.com

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**