



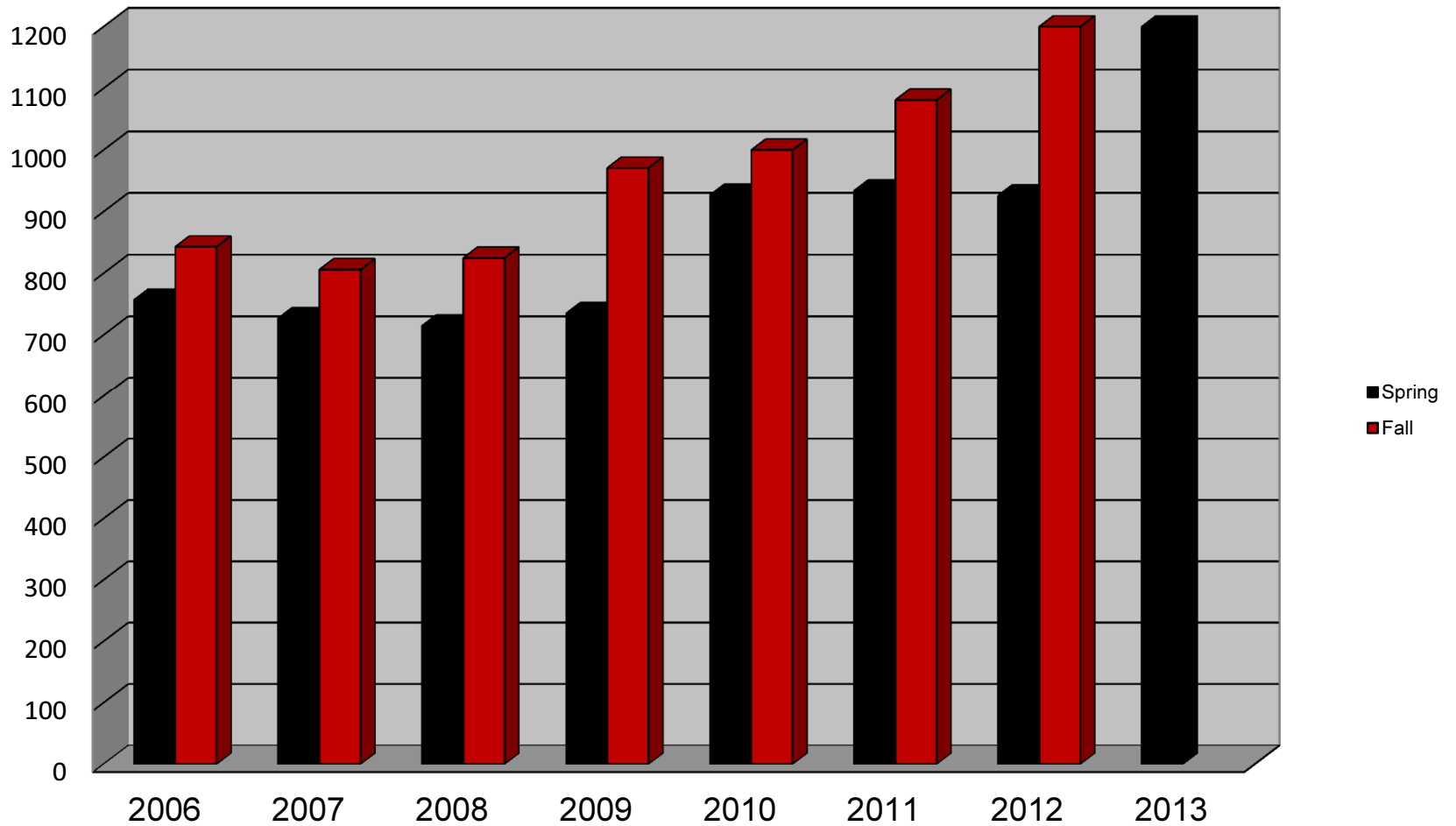
TEXAS TECH UNIVERSITY

Edward E. Whitacre Jr.
College of Engineering

Department of Mechanical Engineering

Dr. Jharna Chaudhuri
Professor and Chair
Department of Mechanical Engineering
Texas Tech University
Presentation to
ME Industrial Advisory Board
and ME Academy,
April 2013

Undergraduate Enrollment History in Mechanical Engineering at TTU

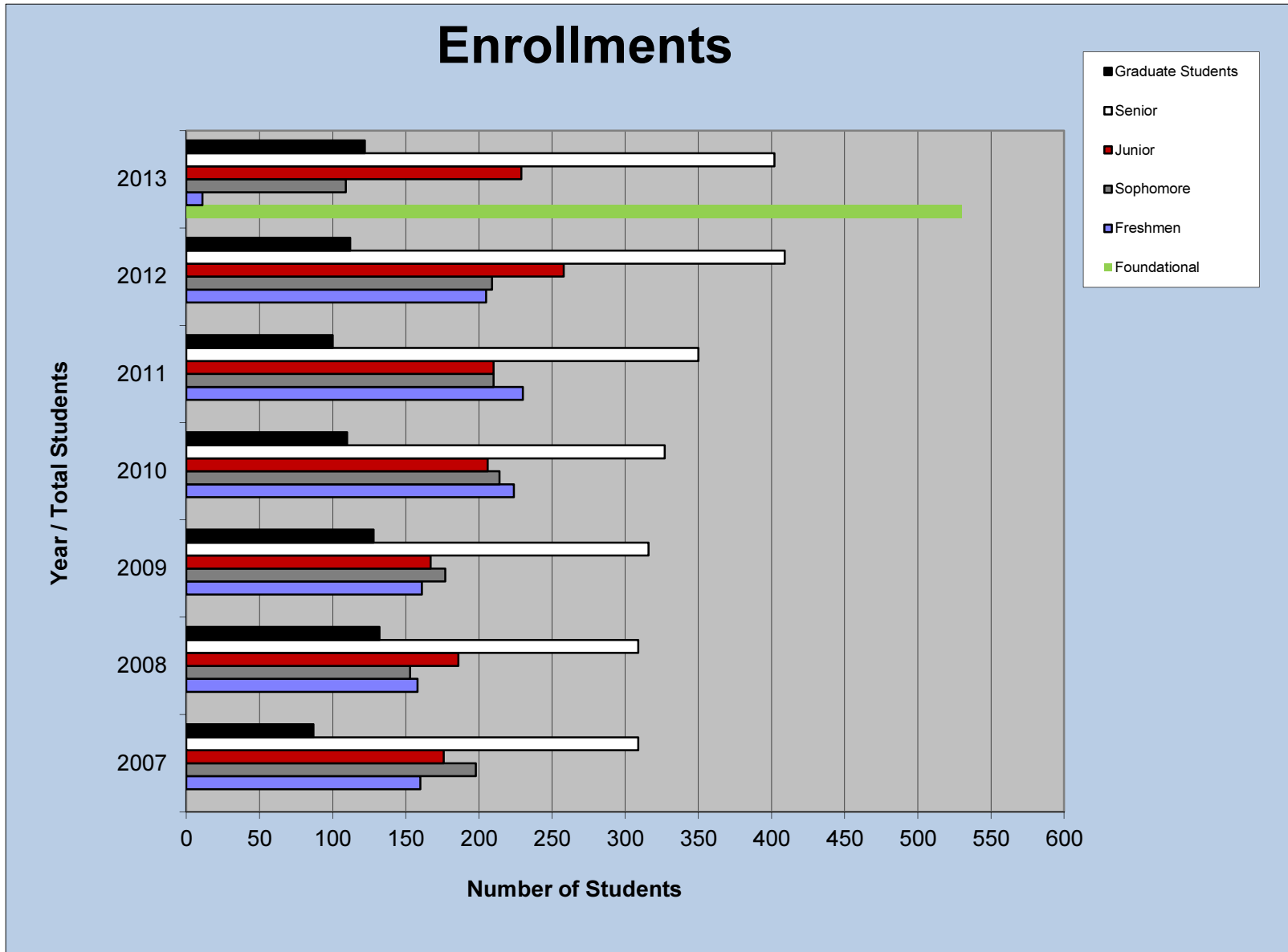




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College Admission Requirements Elevated

- Effective January 2013, the criterion for admission to the Whitacre College of Engineering Foundational Curriculum requires that a first time freshman or transfer student with fewer than 12 hours of transfer credit must be accepted to the university with assured admission status. The criteria used to determine assured admission status are SAT/ACT scores and class rank.
- For transfer students with 12 or more hours of transfer credit to receive direct admission to the college, these students must have 24 or more hours of transferable coursework and have a minimum cumulative GPA of 3.0 that includes the work at all previous institutions.
- External transfer students are initially accepted into the lower-division Whitacre College of Engineering Foundational Curriculum of their degree program and must complete a minimum of 12 hours of Texas Tech coursework before application to the upper division.
- Eligibility for admission to the upper division is based exclusively on the cumulative GPA earned at Texas



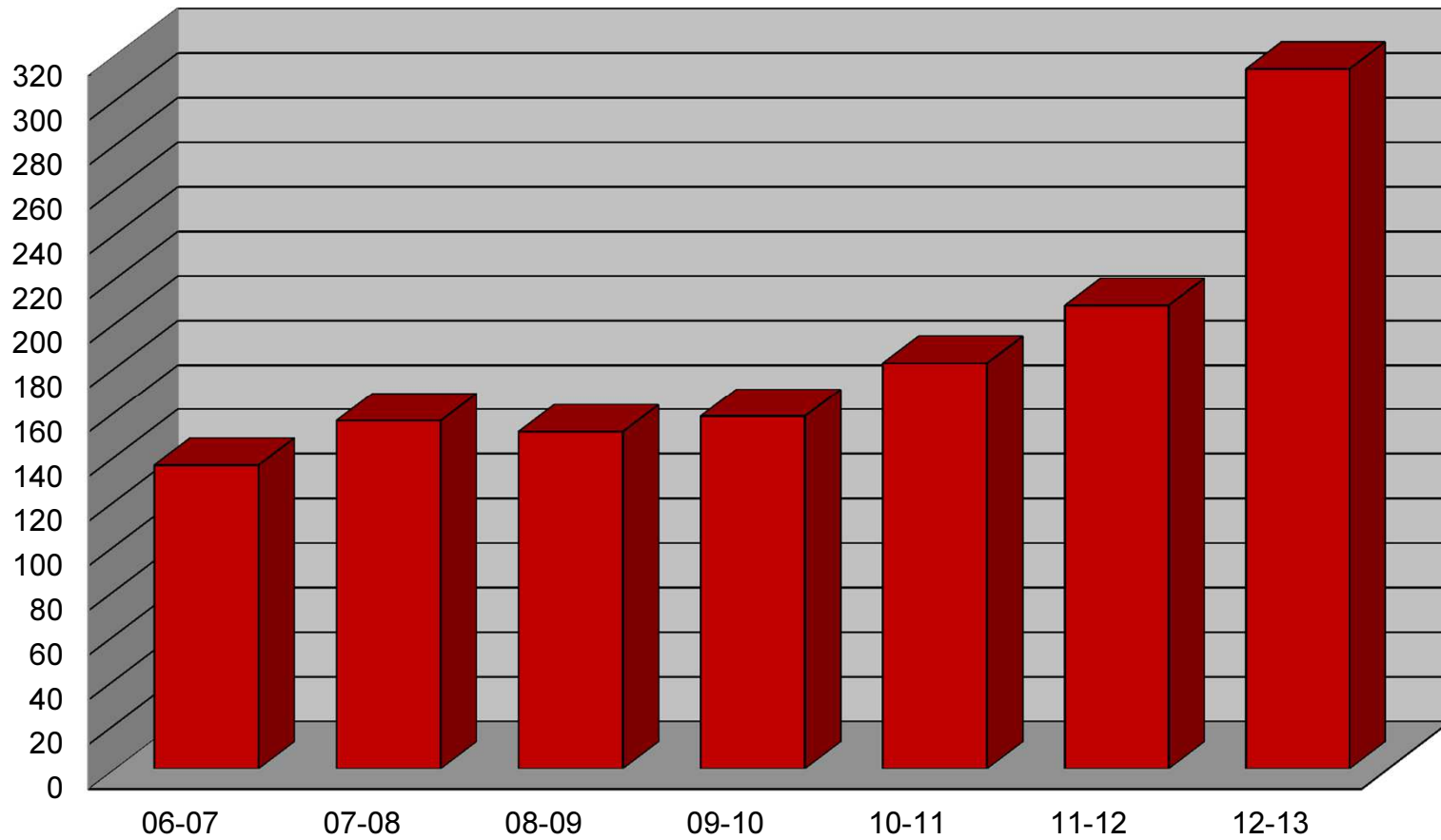
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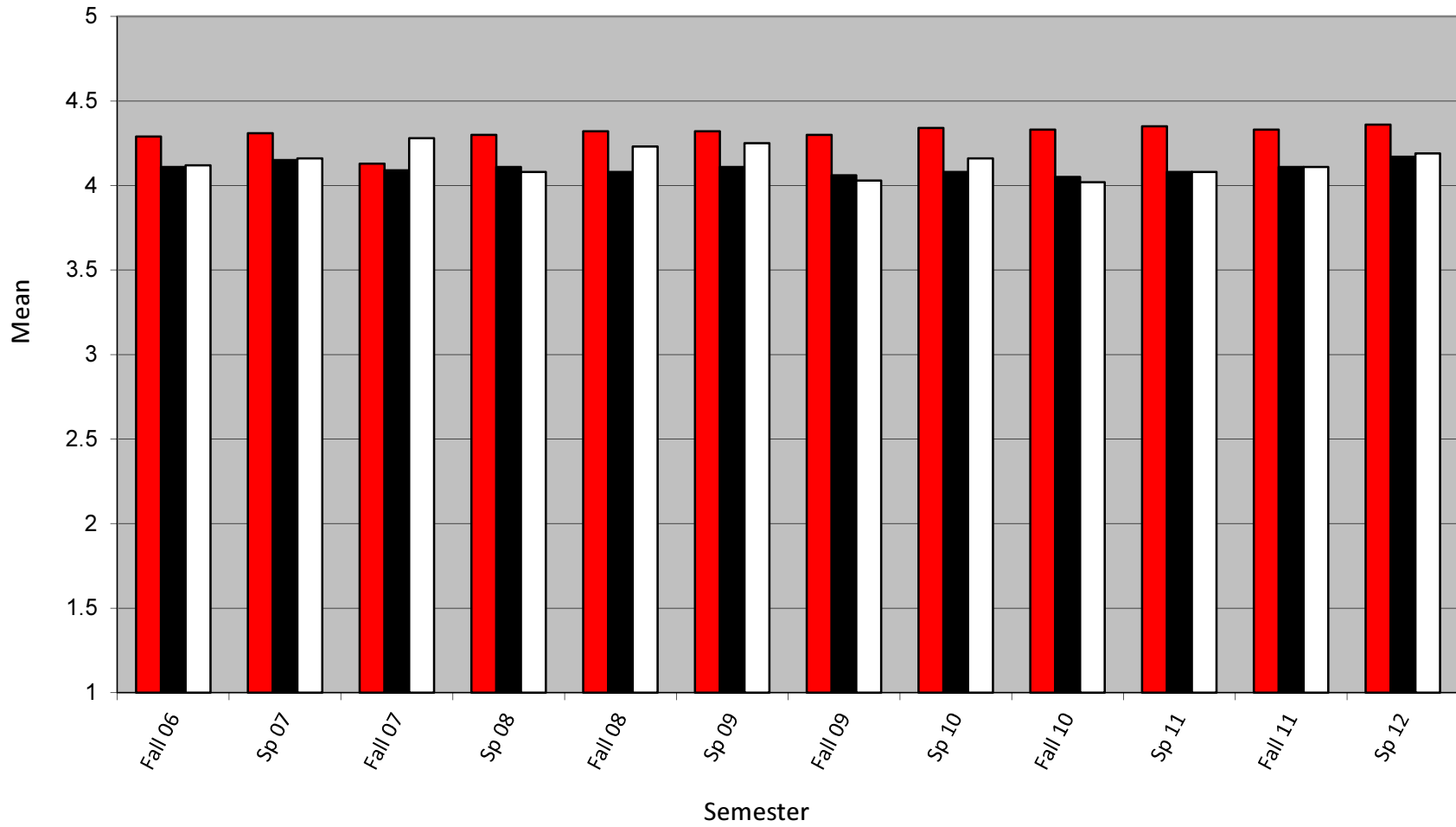
Bachelor's Degrees Awarded in Mechanical Engineering at TTU

(Degrees awarded for 12-13 are estimated)



Summary of Student Evaluations
(Instructor Effectiveness Rating on Scale 1 - 5)

■ TTU
■ COE
□ ME



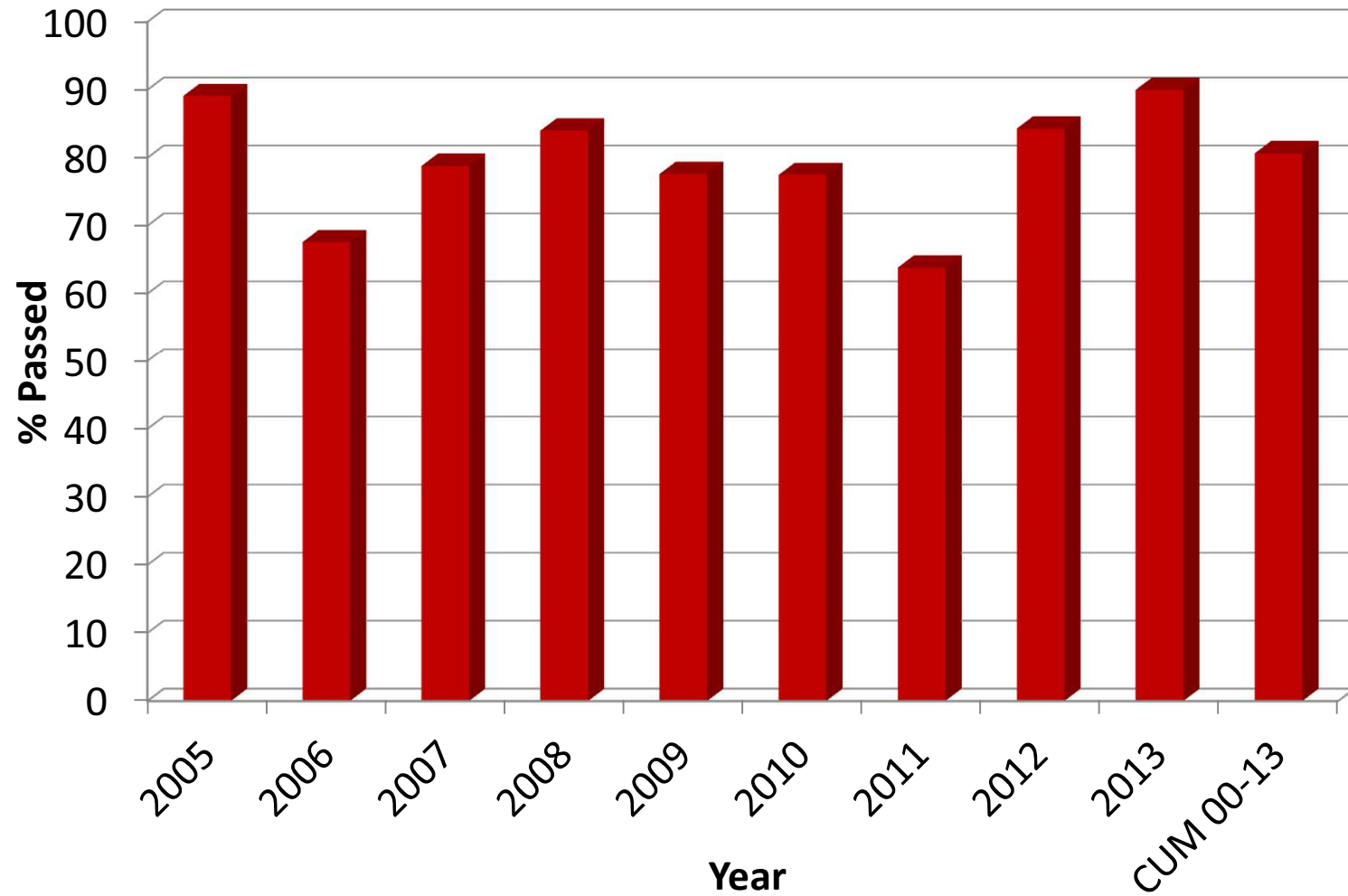


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TTU Mechanical Engineering FE Exam Pass Rate





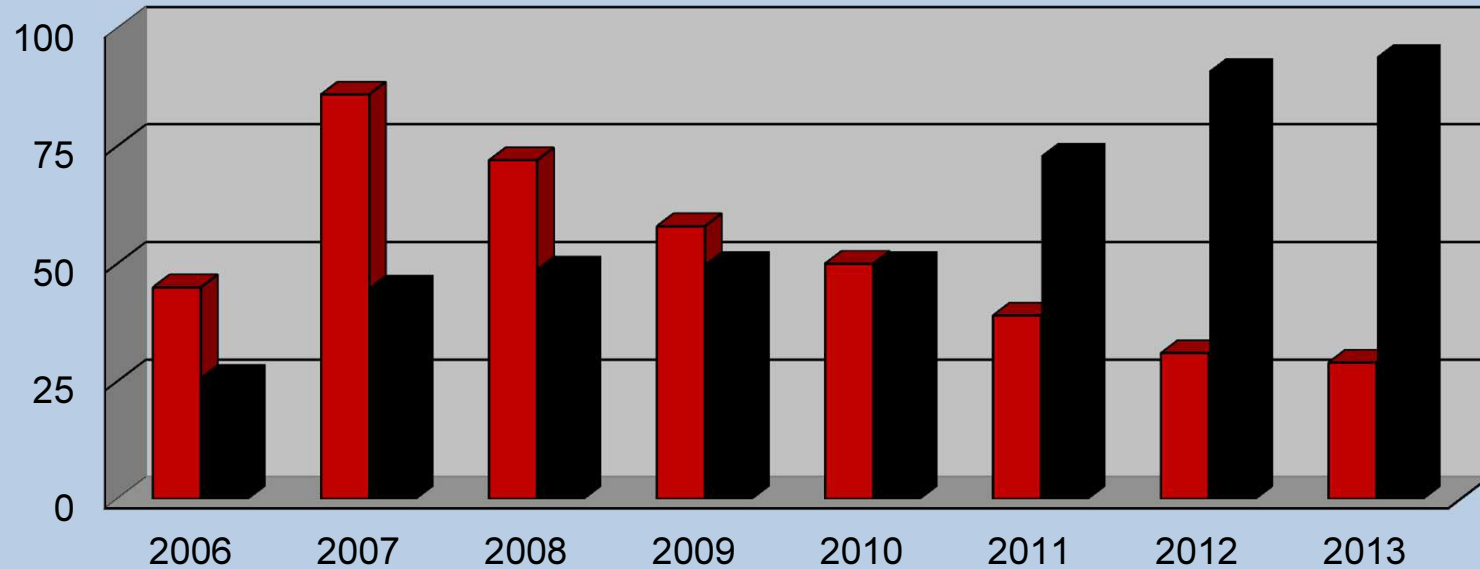
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Graduate Enrollment History in Mechanical Engineering at TTU

■ Master's
■ PHD's



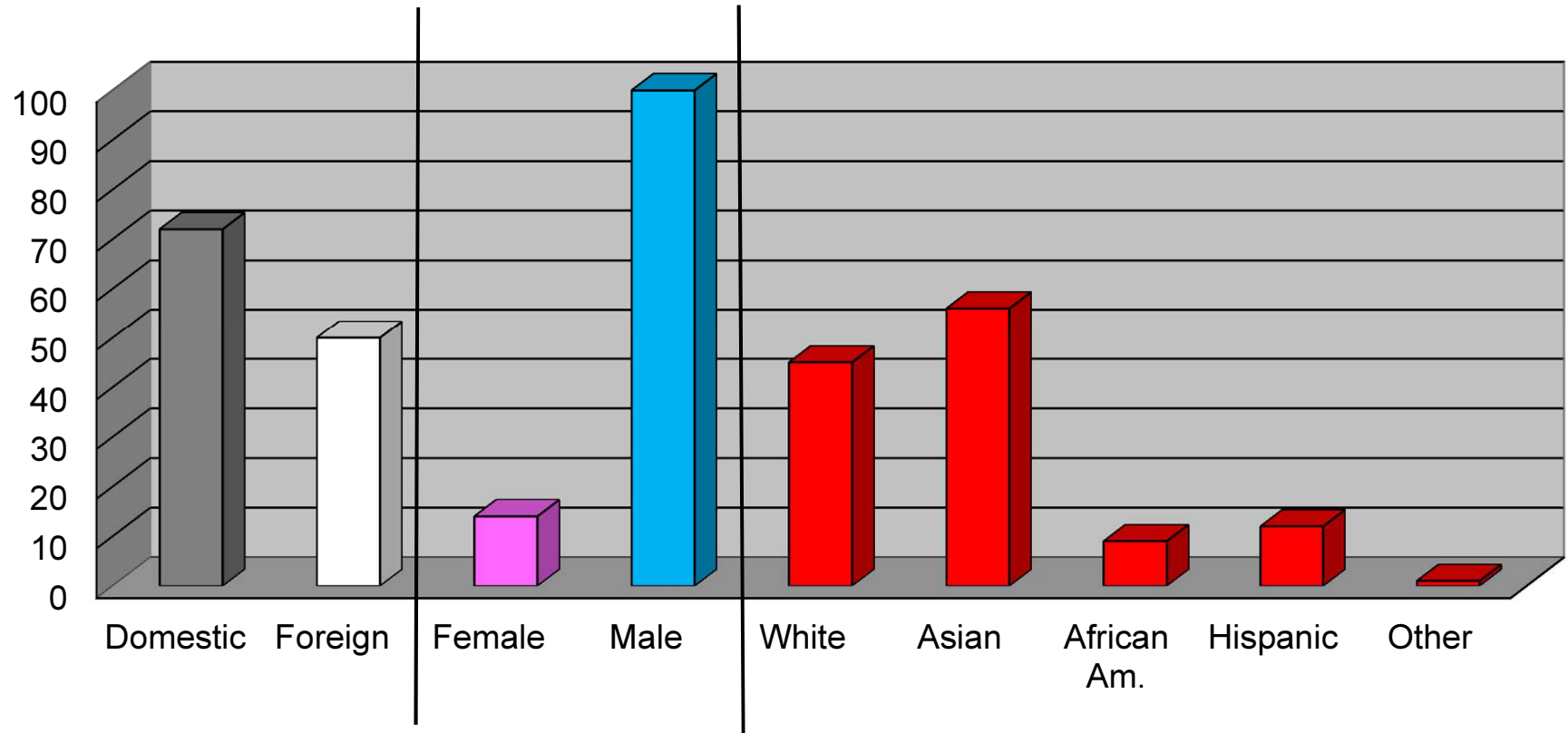


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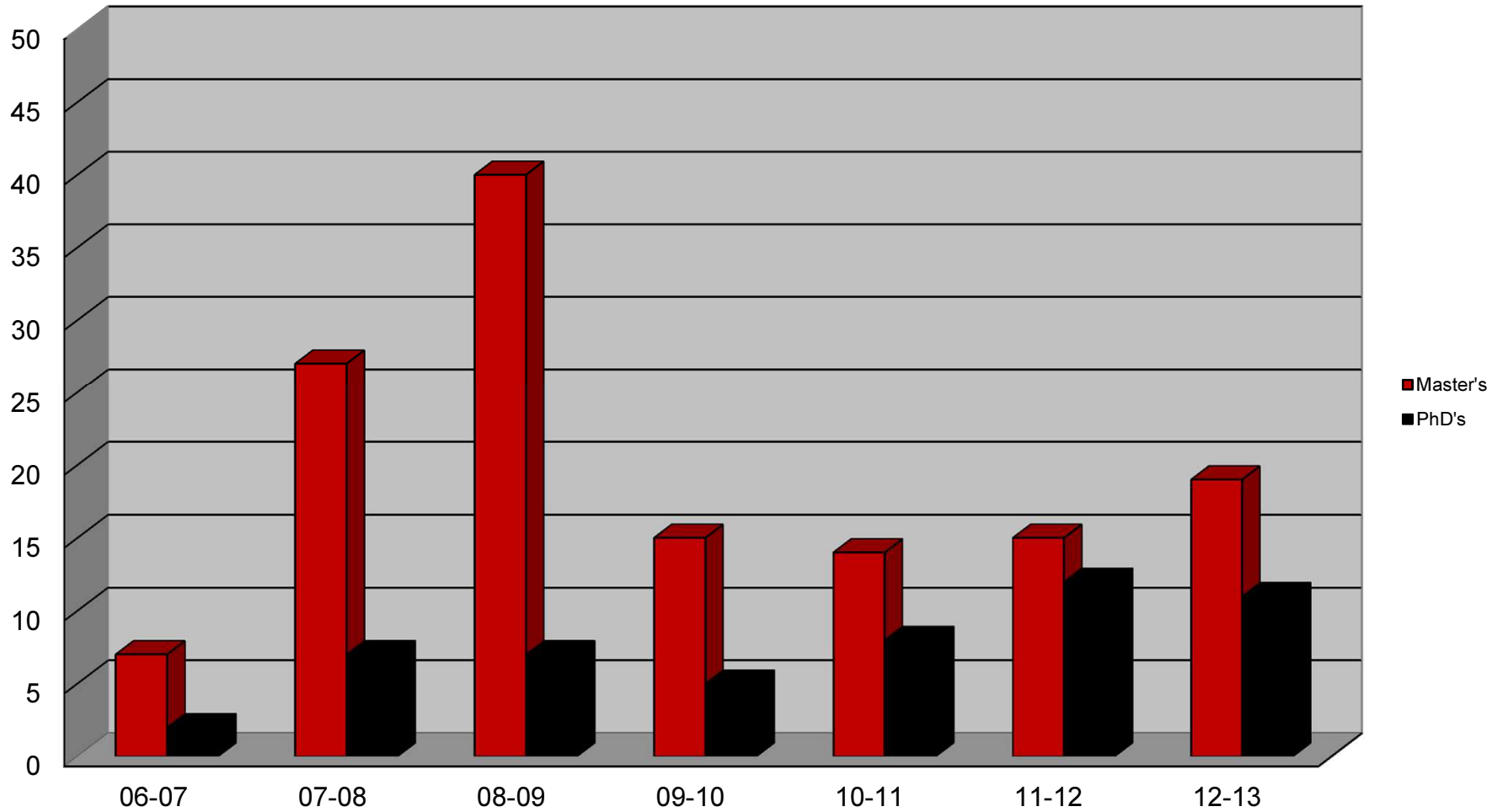
Department of Mechanical Engineering

Detailed Graduate Enrollment for Fall 2012



Master's and Ph.D.'s Awarded in Mechanical Engineering at TTU

(Degrees awarded for 11-12 are estimated)



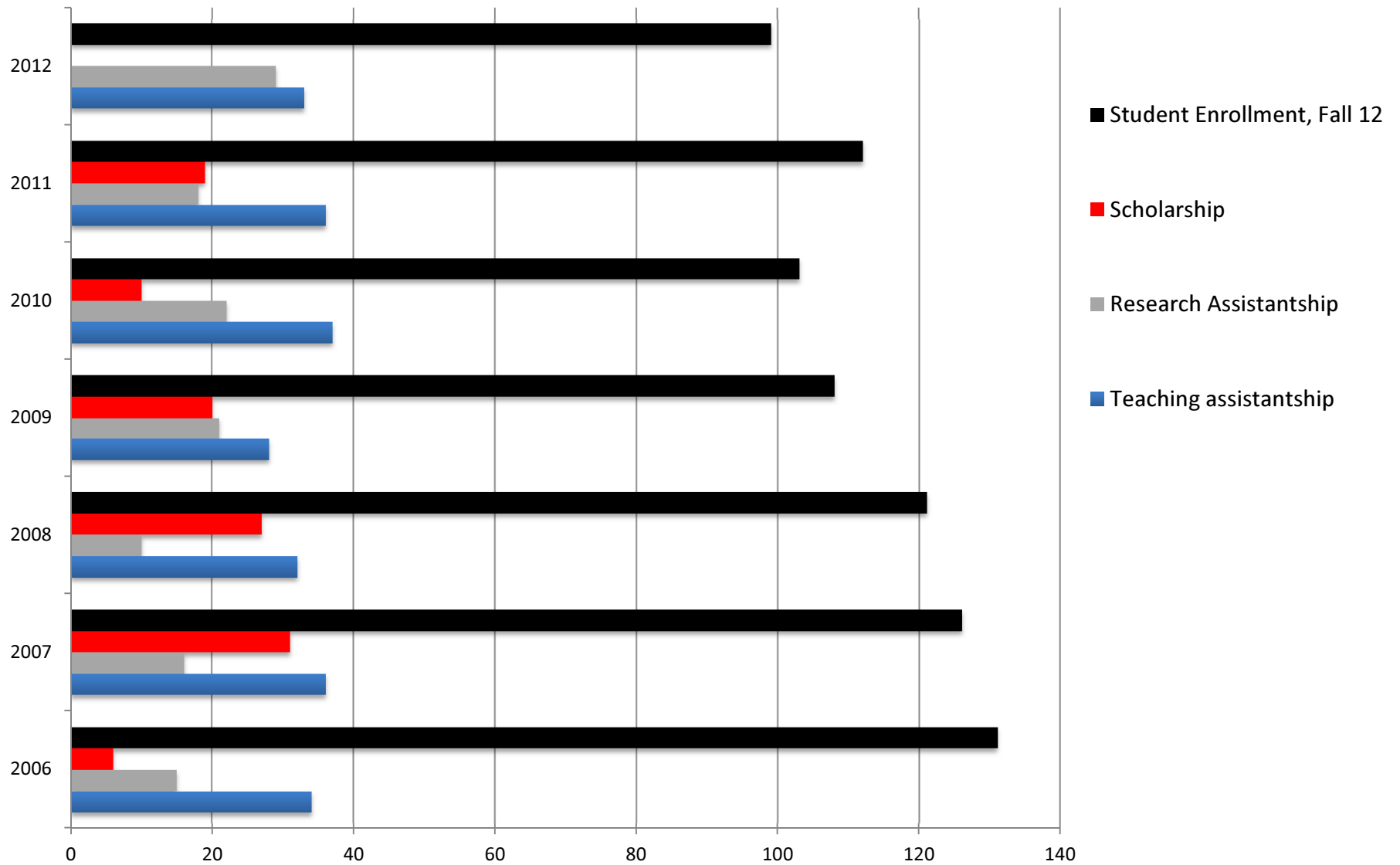


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Grad Student Support





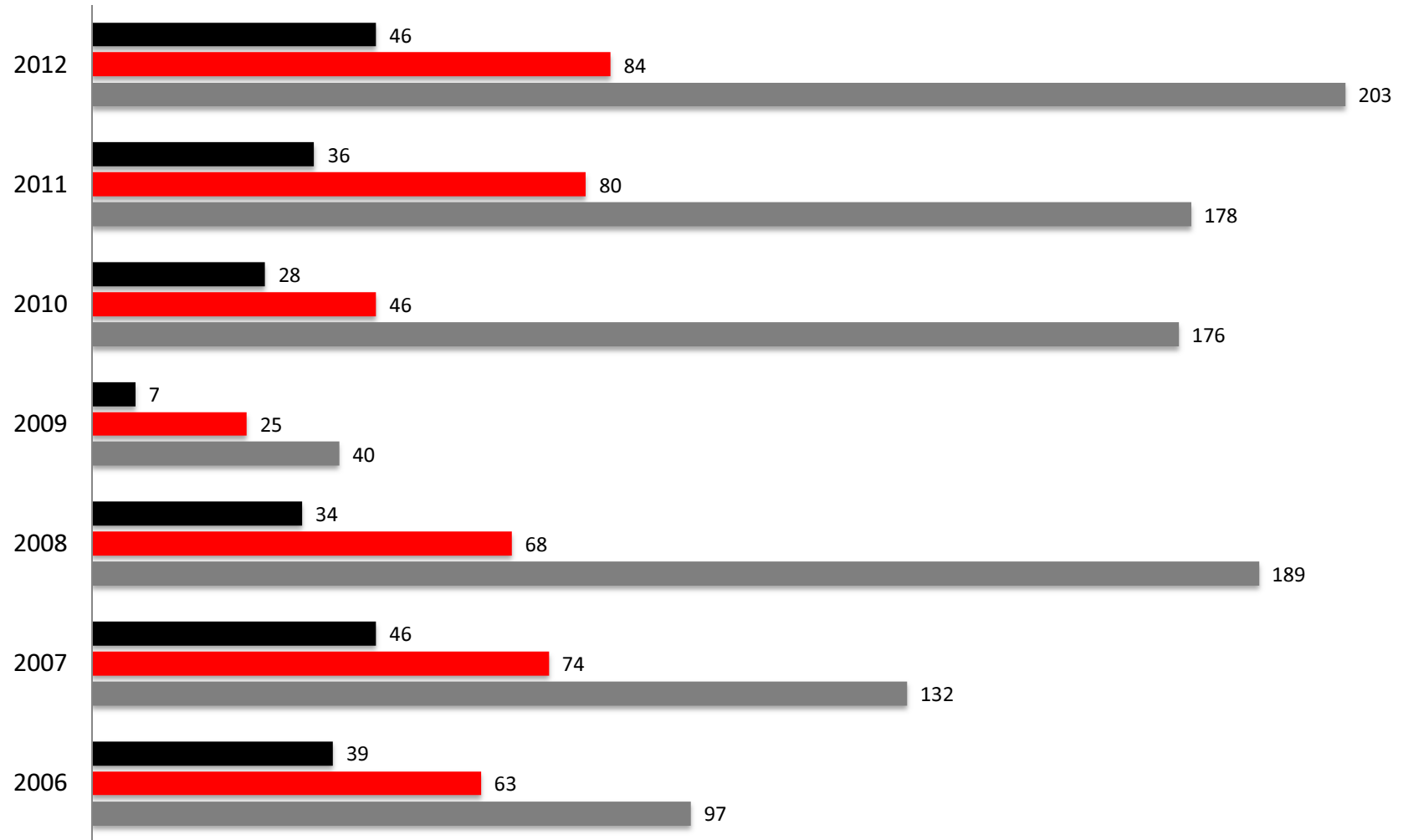
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Graduate Admissions History

■ Total New Students/Term ■ Total Grad Apps Accepted ■ Total Grad Applicants



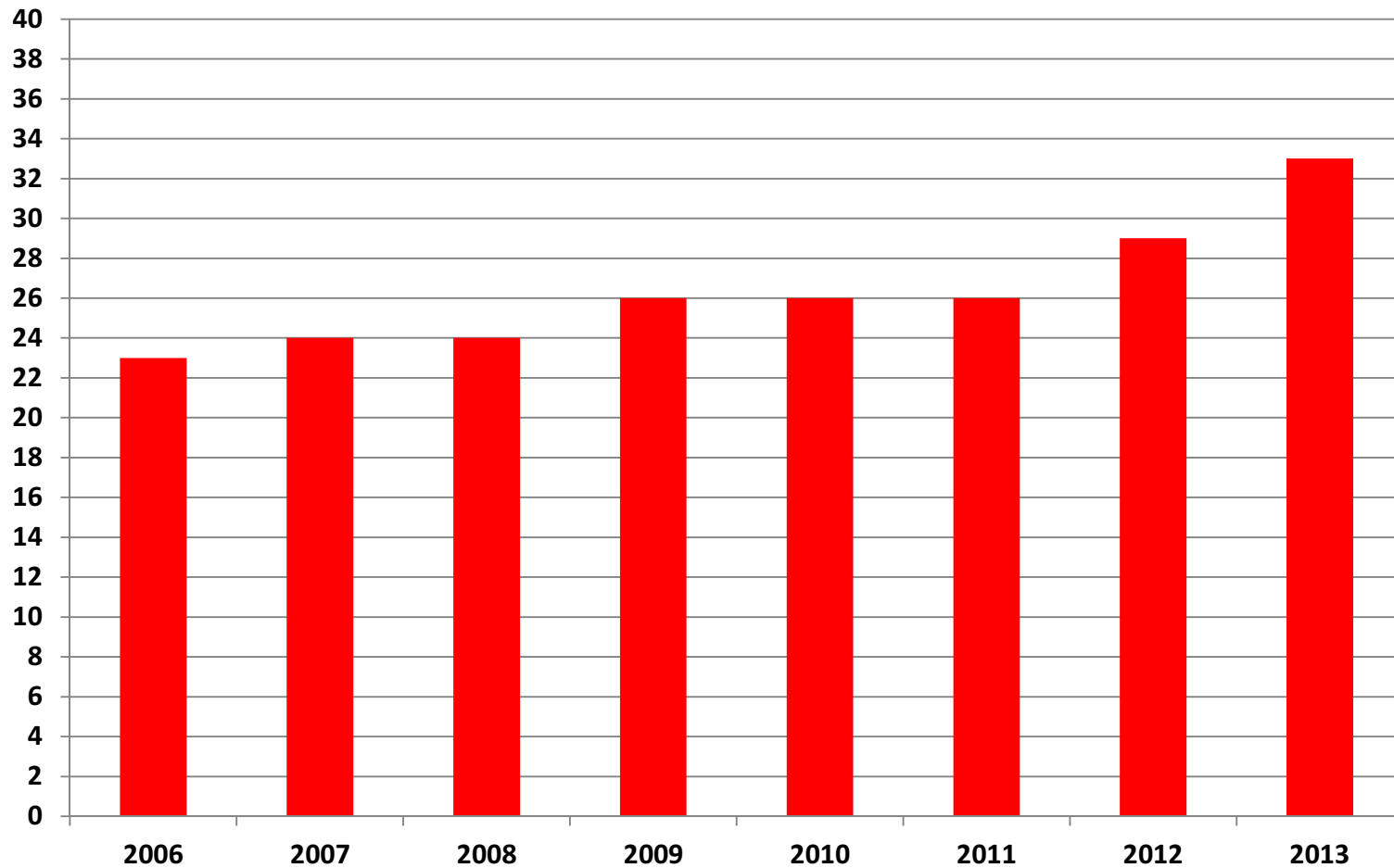


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Mechanical Engineering Faculty, Tenure-Track (Data through Spring 2013)



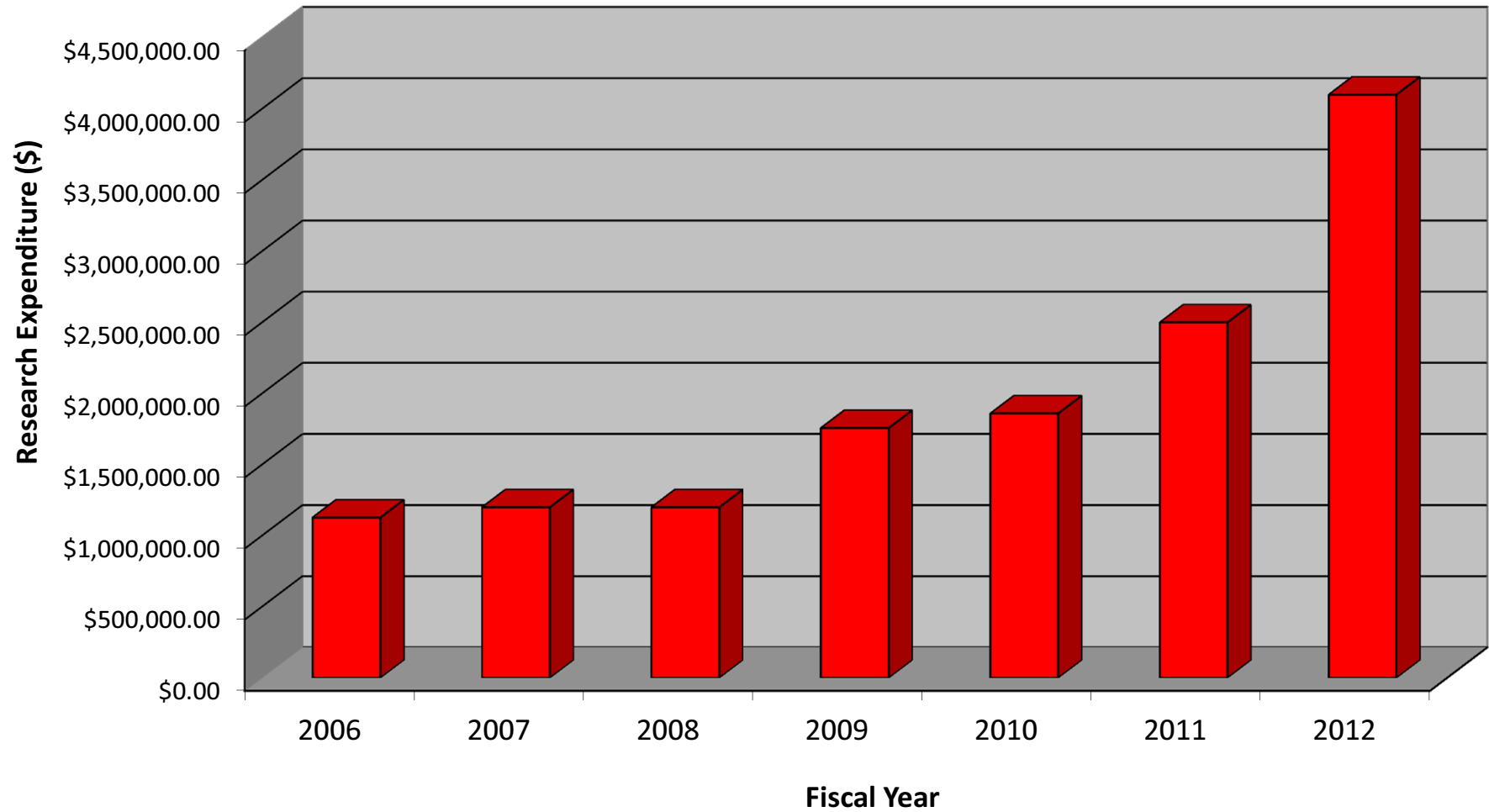


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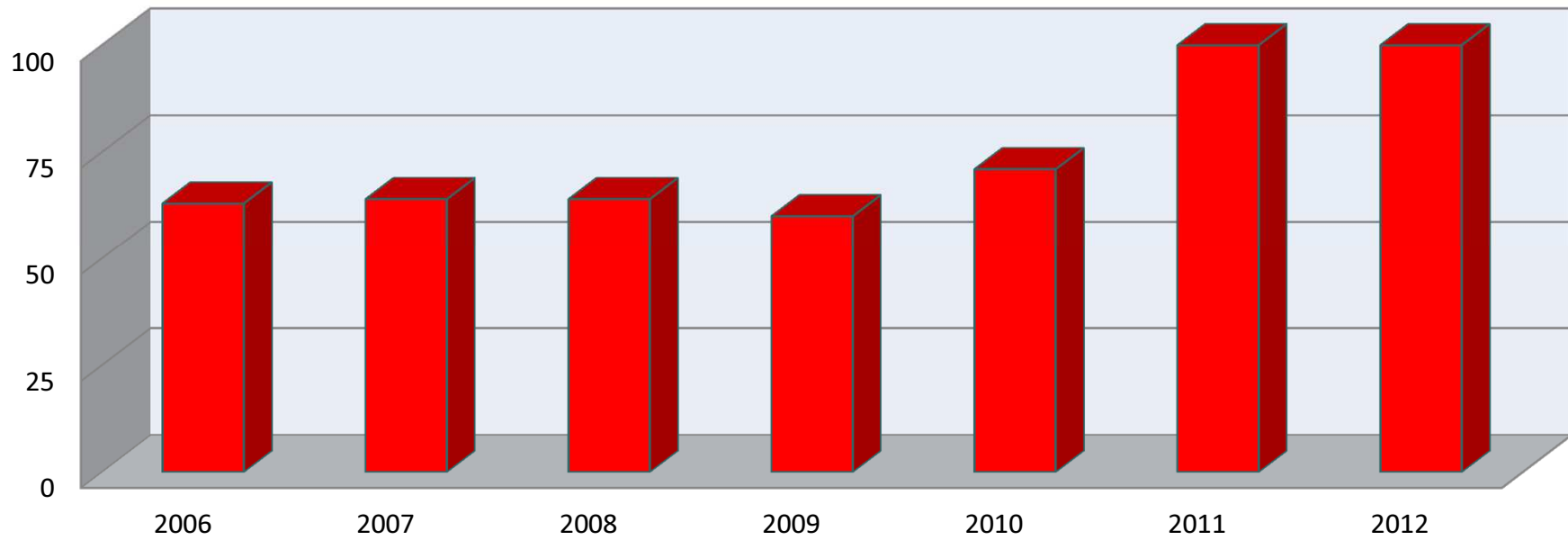
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TTU Mechanical Engineering Sponsored Research Awards By Faculty Home Department



TTU Mechanical Engineering Journal Publication History





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National Ranking

- The Texas Tech University Edward E. Whitacre Jr. College of Engineering overall graduate engineering program and seven individual degree programs are ranked in the 2013 edition of [Best Graduate Schools](#) by U.S. News Media Group.
- The **overall graduate engineering program** moved up to a ranking of **93rd among 198** programs nationwide in 2013.
-



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Awards



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Dr. James Yang Receives 2012 Chancellor's Council Distinguished Research Award



Yang Receives Teetor Educational Award from SAE



Dr. James Yang, an assistant professor of mechanical engineering, has been named a recipient of the 2012 SAE Ralph R. Teetor Educational Award from SAE International. The award is in recognition of his outstanding contributions to SAE's engineering education initiatives.

SAE Ralph R. Teetor Educational Fund's major program is focused on younger engineering educators. Its objective is to provide an engineering atmosphere that these educators can meet and exchange views with practicing engineers.



Yang Named Outstanding Faculty Mentor

- **Dr. James Yang**, an assistant professor of mechanical engineering, has been named a recipient of this year's Outstanding Faculty Mentor Award from the Center for Undergraduate Research.
- **Aimee Cloutier**, a mechanical engineering doctoral student, nominated him 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.



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Hanson won the 2013 Best ASME Advisor of the year for District E





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Hanson Named Distinguished Professor by Tau Beta Pi



- Dr. Jeff Hanson, an instructor of mechanical engineering and Texas Tech alumnus, has received the 2012 Distinguished Professor Award from the Texas Tech chapter of Tau Beta Pi.
- Tau Beta Pi seeks to honor professors that excel inside and outside the classroom. Hanson was selected because of his work to innovate the current mechanical engineering curriculum as well as his desire to help students engage in discussion of real world topics that better prepare them for the engineering industry. He was also commended for his passion for engineering integrity.



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Ph.D. Student Ms. Aimee Cloutier Received 2013 National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP)





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Zhipeng Lei Received the 2012 Chinese National Scholarship for Outstanding Self Supported Student Studying Abroad





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Jared Gragg received the 2013 Helen DeVitt Jones Excellence in Graduate Teaching Award





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Senay Imam received Harrington Graduate Scholarship Award for the academic year of 2012 – 2013



Student Group won 5th place in the ASME design challenge with a autonomous robot



Clinton Harkey, Paul Marcin, Anna Santiago, Linden Duong



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Faculty News



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Dr. Walt Oler Retiring after Thirty Three Years of Dedicated Service to the Department and College



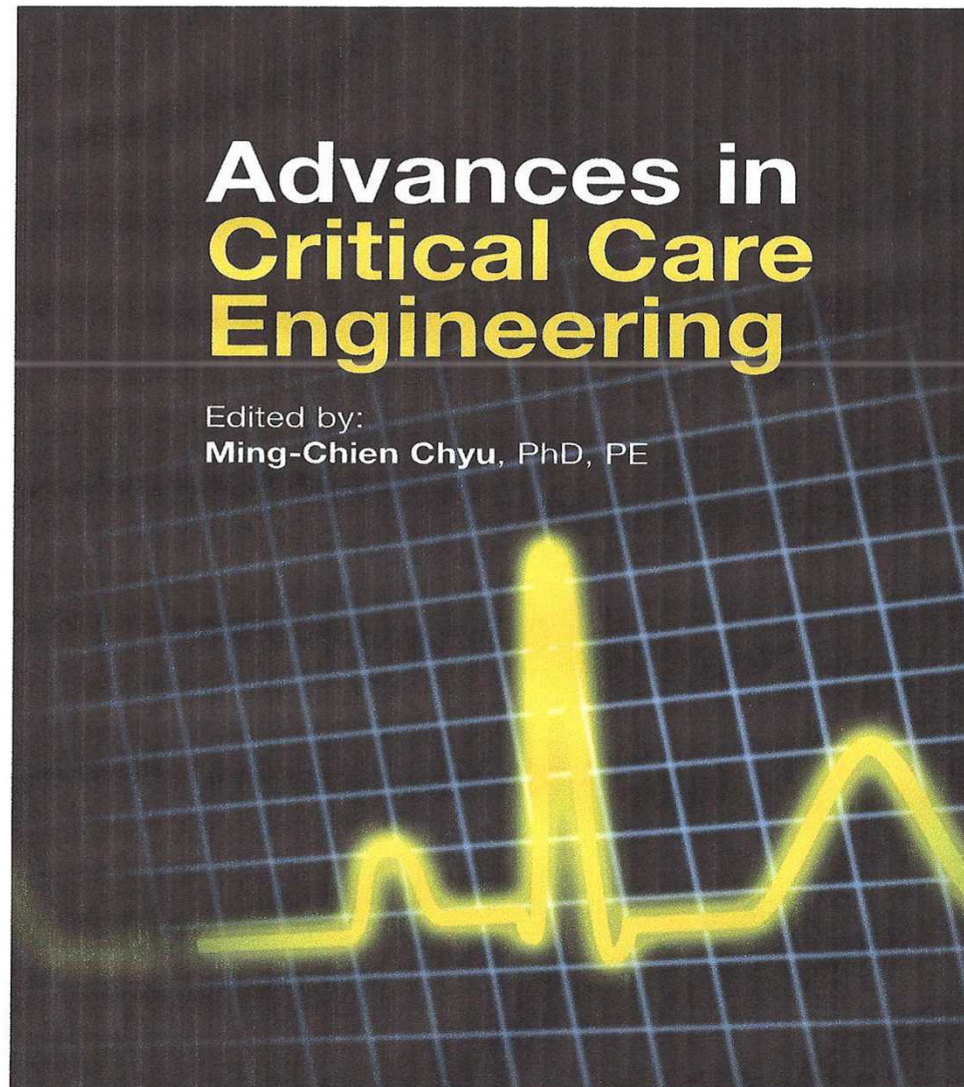


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Chyu Published a Healthcare Engineering Book



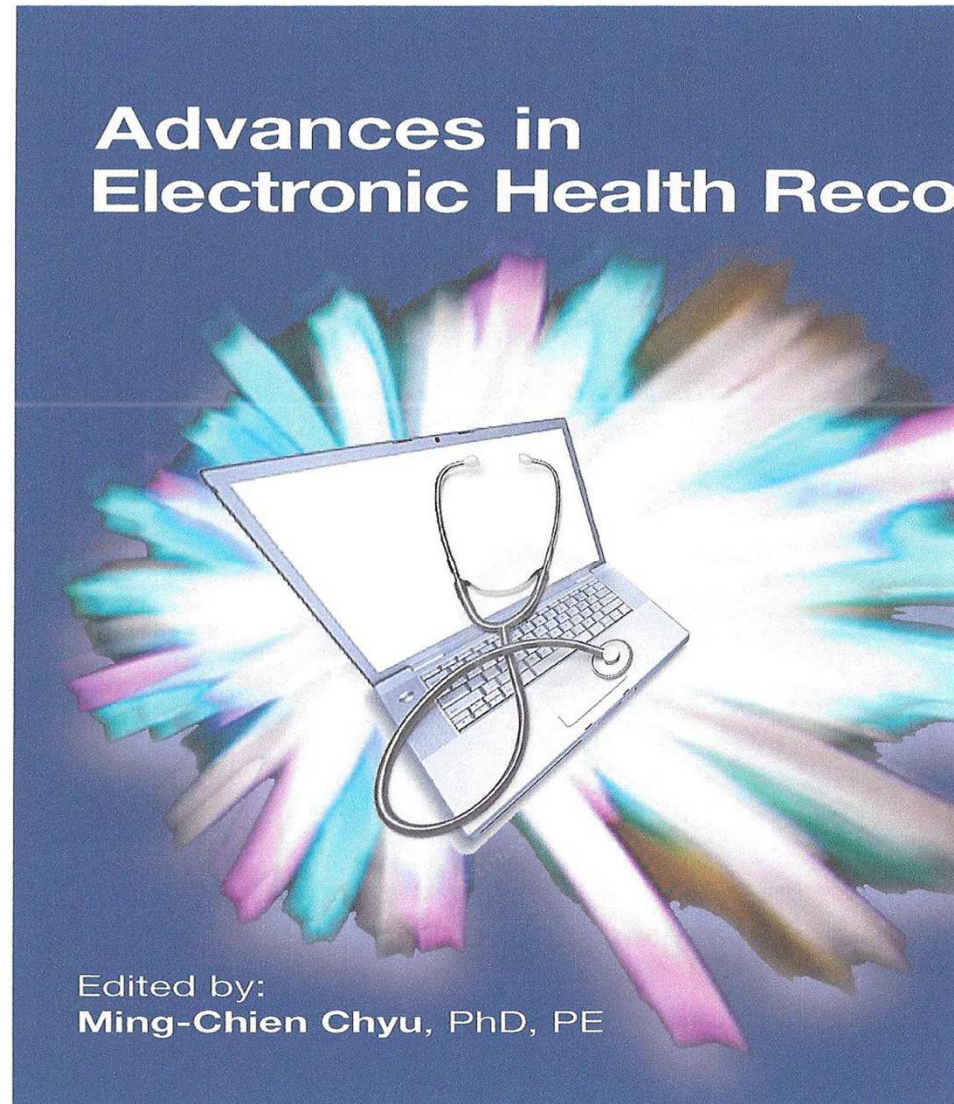


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Chyu Published a Healthcare Engineering Book



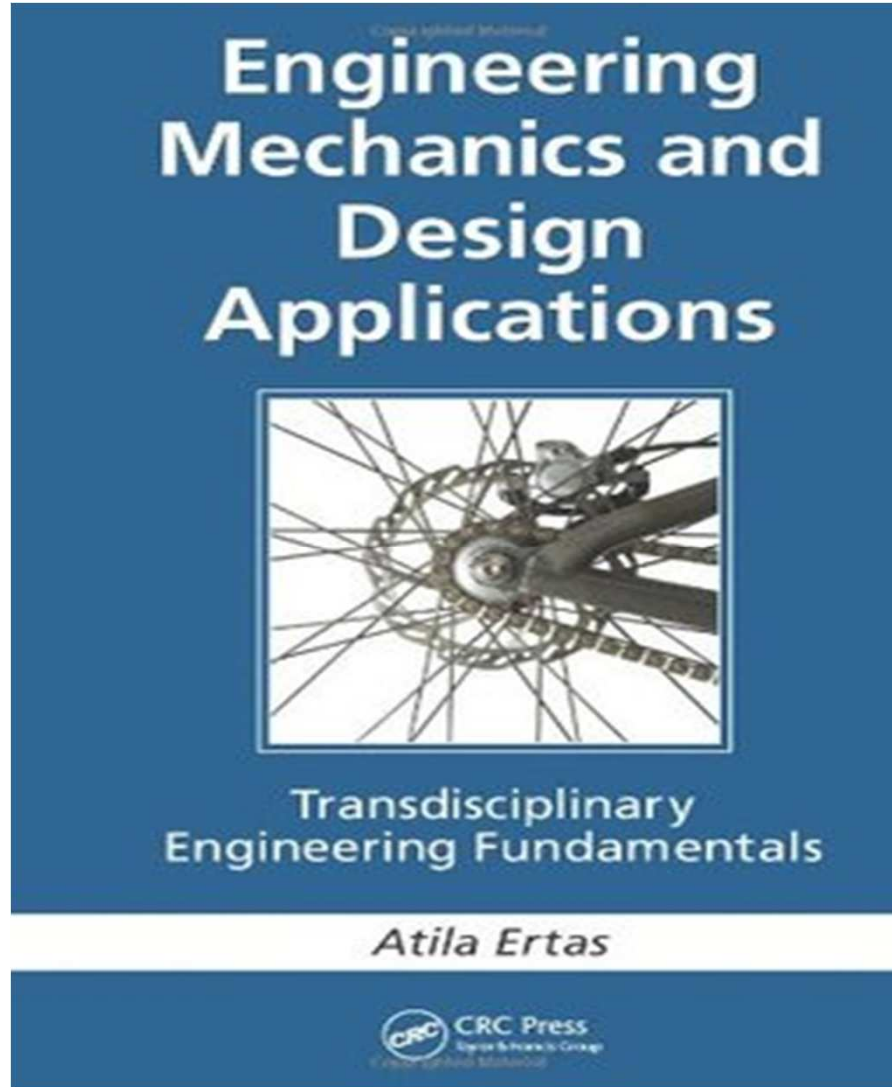


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Ertas Published a Design Book



This is a text book for engineering disciplines.

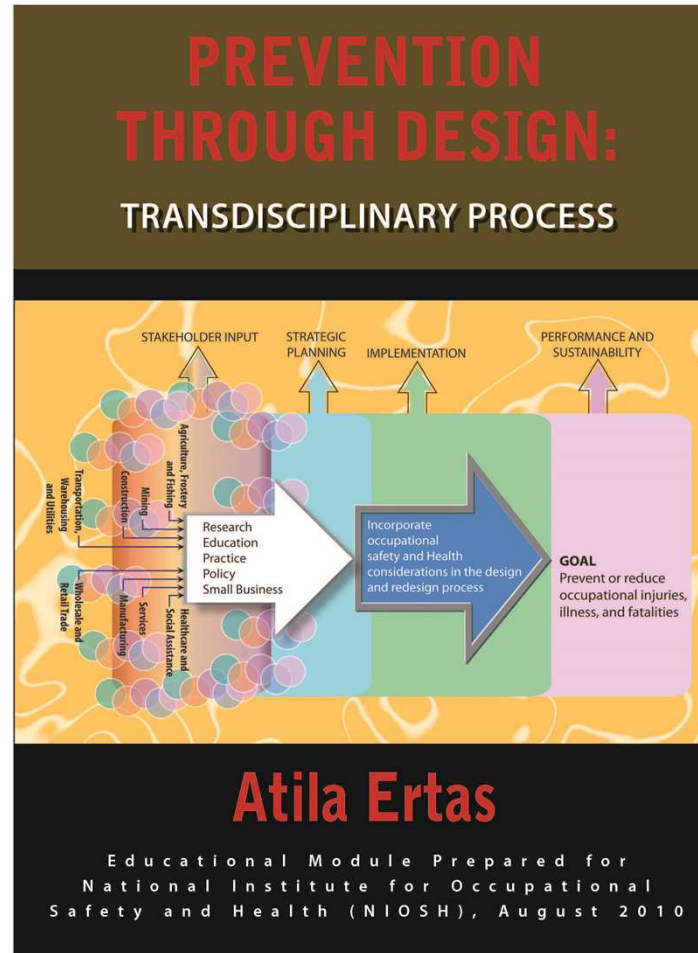


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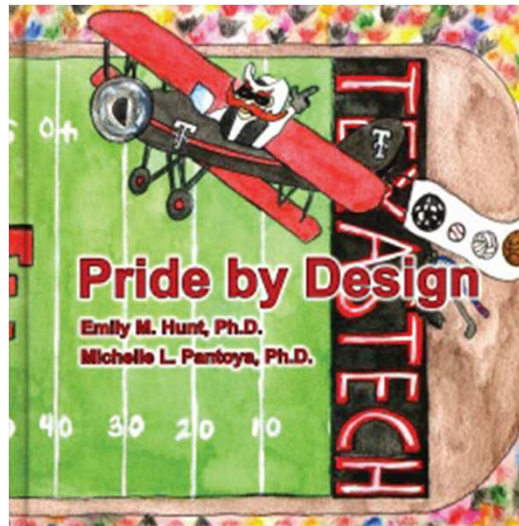
Department of Mechanical Engineering

Ertas Published a Design Book



(supported by National Institute for Occupational Safety and Health under the National Occupational Research Agenda, Prevention through Design Initiative). This is a supplementary text book for design classes.

Pantoya and Hunt Publish Second Children's Book



Dr. Michelle Pantoya, a professor of mechanical engineering, and Dr. Emily Hunt, a professor at West Texas A&M University, have published their second children's book. "Pride by Design" features Raider Red and Raider land and aims to stimulate young interest in engineering by portraying how sports and engineering go hand in hand.



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Department of Mechanical Engineering

Texas Tech Hosts FTC Regional Robotics Championship



Teams of 9th-12th graders from the western half of Texas participated in the FIRST® Tech Challenge (FTC) Panhandle-Plains Regional Championship Tournament on March 3 for an opportunity to win statewide recognition for design excellence, sportsmanship and teamwork and to advance to the National Championship in St. Louis.

The event was hosted by Dr. Alan Barhorst, a professor of mechanical engineering.



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Dr. Atila Ertas organized a Trans Disciplinary - Transnational - Transcultural conference

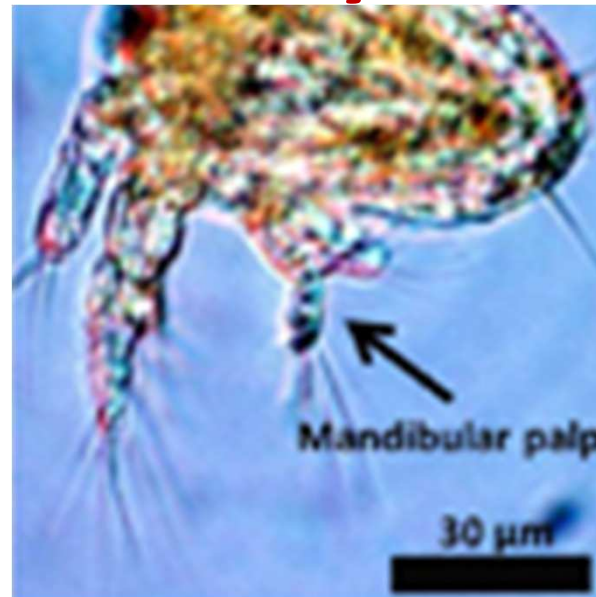


held in Taichung, at Asia university, Taichung, Taiwan. Conference was a huge success for Texas Tech University, Academy of Trans disciplinary Learning & Advanced Studies (ATLAS) and Asia University.



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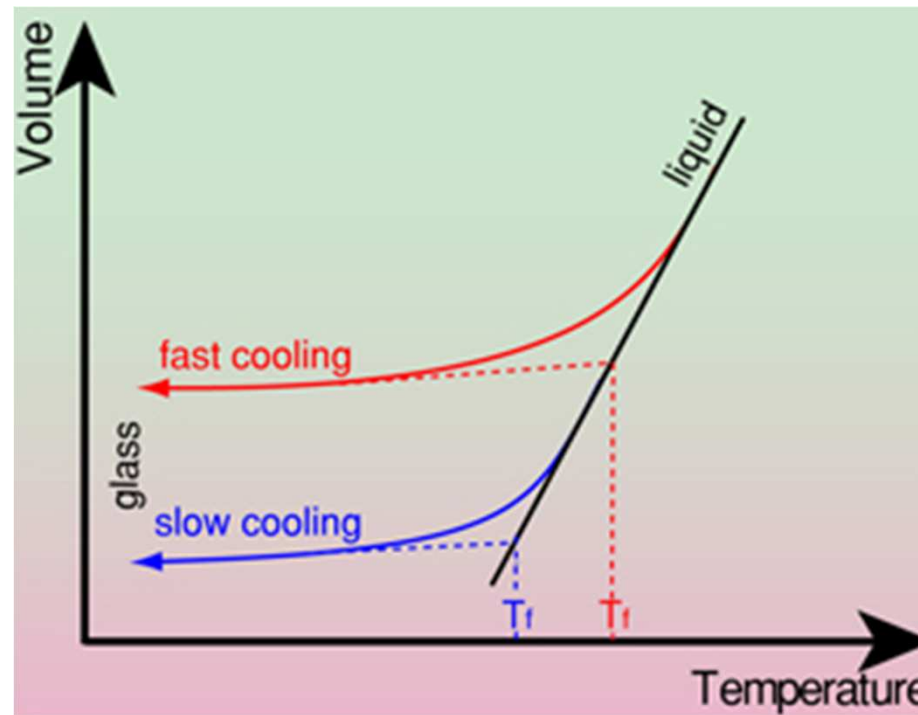
Researchers Discover Plankton Adjust to Changing Ocean Temperatures (PNAS Early Edition)



[Dr. Jian Sheng](#) from Texas Tech and two other Professors from UT Austin have discovered new information that explains how tiny marine plankton overcome changes in the viscosity of ocean water.



Researchers Explain How to Make the Hardest Metal Pliable (Nature Communications)



[Dr. Golden Kumar](#), assistant professor of mechanical engineering at Texas Tech, and Dr. Jan Schroers, professor of mechanical engineering and materials science at Yale University, have developed a model that can explain why some metallic glasses are always ductile or brittle, whereas others are sensitive to processing and aging. The model is based on the metallic glass' fictive temperature.



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ME Graduate Students and Faculty Members' Research Published in PNAS



ME graduate students and faculty members' (Dr. Cheng Ji (student, First Author), Dr. Yanzhang Ma (corresponding Author), Archis Marathe and Dr. Jharna Chaudhuri) groundbreaking research on boron nitride is featured in the latest issue of [PNAS](#). In the published work, the group reported successful transformation of soft boron nitride with high degree of disorder to wurtzitic boron nitride by way of plastic shear under high pressure, and provide mechanism for such transformation.

New faculty



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Department of Mechanical Engineering

Dr. Fazle Hussain

President's Distinguished Chair in Engineering and Science, Senior Adviser to the President, Professor





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Dr. Jay (Jungkyu) Kim

Assistant Professor





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Dr. Helen (Beibei) Ren

Assistant Professor

Department of Mechanical Engineering





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New Instructors



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Mr. George Gray





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Dr. Craig Snoeyink



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Student News

ASME Students Win Old Guard Presentation



Texas Tech won first place in the [Old Guard Oral Presentations](#) at the regional District E competition of ASME's Student Professional Development Conference (SPDC) and has qualified for a spot at the International ASME Meeting this November.

The winning student presenter was **Pejmon Arbrapour**. Their project was "Reinventing the Wheel: A Radially Collapsing Wheel for an innovative Wheelchair Design." **Kyle Ellis** won second place for the poster competition for the same project.



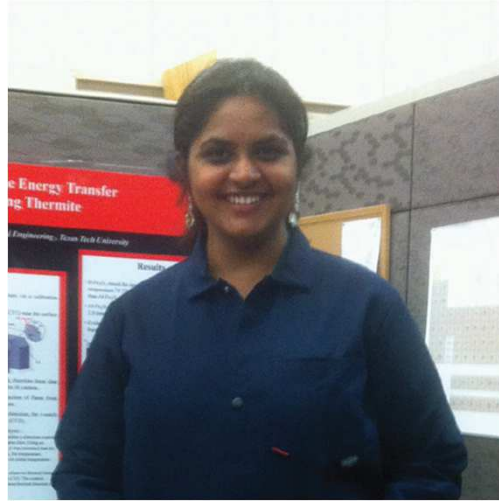
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Department of Mechanical Engineering

ME Student Receives NATAS Award



The North American Thermal Analysis Society (NATAS), a group that is dedicated to promoting the understanding and advancement of thermal analysis, has awarded Keerti Kappagantula, a doctoral student in the Department of Mechanical Engineering a NATAS Student Award.

The award recognizes the best original contribution by a graduate student to the advancement of the field of thermal analysis and is open to any student in a masters or doctoral program at a university in North America.



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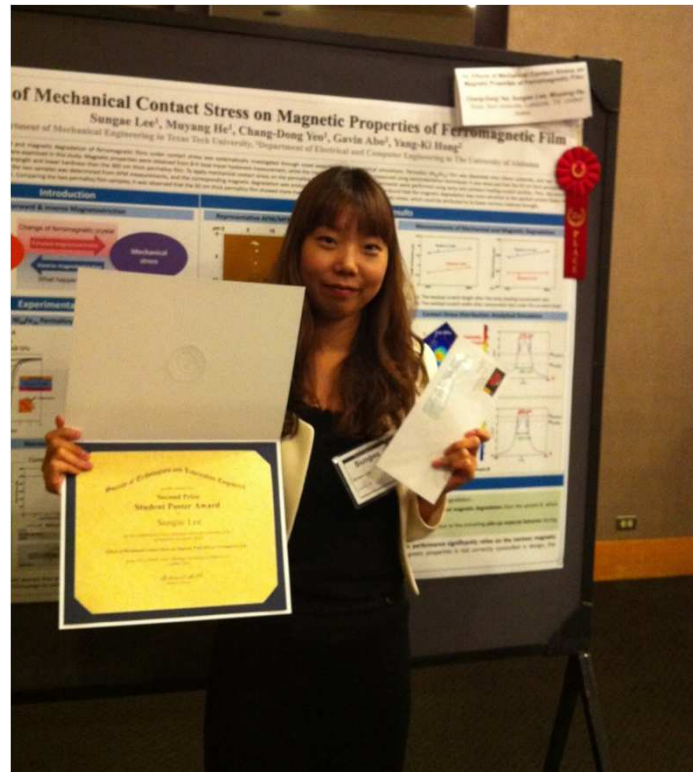
Lei Wins ISRP Paper Award Competition



Zhipeng Lei, a graduate student in the Department of Mechanical Engineering, has been named the International Society for Respiratory Protection (ISRP) Americas Section 2012 Student Research Award "Full Paper Award Winner." His paper is titled "Computational Fluid Dynamics-Based Respirator Fit Prediction - A Pilot Study." The paper will be published in the Journal of the International Society for Respiratory Protection.

The ISRP Americas Section sponsored the competition to encourage additional analysis of a National Institute for Occupational Safety Health (NIOSH) survey of approximately 4000 people that collected anthropometric data to update respirator test standards and fit-test panels. The students selected will be presenting their work at the upcoming 16th Biennial ISRP Conference in Boston on September 23–27, 2012.

Sungae Lee received the '2nd Prize' award in Student Poster Presentation.



- ASME/STLE International Joint Tribology Conference 2012 in Denver, CO.



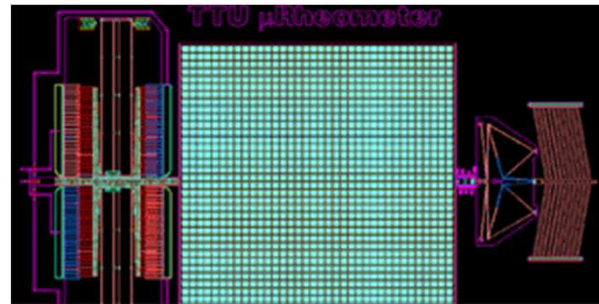
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Students Win "Novel Design" Category at Sandia National Laboratories MEMS Contest



- Texas Tech students won the "Novel Design" Category for the third straight year at the Sandia National Laboratories MEMS Student Design Contest. Teams from Texas Tech have been winners in the competition in six of the last eight years.
- Rheometers are used to measure material properties. The micro scale device incorporates an electro thermally actuated microstate and an integrated capacitance measurement structure to allow more efficient and effective quantification of biological materials and technologically relevant thin films. The **Texas Tech MEMS group**, led by **Dr. Tim Dallas**, associate professor of electrical and computer engineering, teamed up with **Dr. Gordon Christopher**, assistant professor of mechanical engineering, and his research group to produce the winning design. The students that contributed to the design submission included electrical and computer engineering students Gautham Ramachandran and Ashwin Vijayasai, as well as mechanical engineering student Zhenhuan Zhang.



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Alumni News

The Texas Tech Alumni Association Honored the 2013 Distinguished Alumni of Texas Tech University



Rear Adm. (select) Alexander is the assistant commander of Navy Personnel Command for Career Management. He has completed numerous sea duty assignments, most recently as commander of the USS Abraham Lincoln. The Port Neches native was commissioned in December 1982 and designated a naval flight officer in November 1983. He graduated from Texas Tech with a Bachelor of Science degree in Mechanical Engineering.



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Alumnus Rear Adm. (select) John D. Alexander Received 2012 Distinguished Engineer Award



Rear Adm. (select) Alexander is the assistant commander of Navy Personnel Command for Career Management. He has completed numerous sea duty assignments, most recently as commander of the USS Abraham Lincoln. The Port Neches native was commissioned in December 1982 and designated a naval flight officer in November 1983. He graduated from Texas Tech with a Bachelor of Science degree in Mechanical Engineering.



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Department of Mechanical
Engineering

Alumnus James E. Lowder Received 2012 Distinguished Engineer Award



- After retirement from Eagle Picher Industries in 1994, Lowder established evstar Technologies, Inc., a consulting business.
- James E. "Jim" Lowder was born in Abilene, Texas. After graduating from Wichita Falls Senior High, he, along with his high school sweetheart Betty Jo Splawn, attended Midwestern State University as art majors.
- In June 1953, Lowder entered the U.S. Army, and after basic training, was sent to Fort Richardson, Alaska to join a Chemical Corps group. Betty worked as a draftsman for the U.S. Army Corps of Engineers. Through the association of her coworkers, he was influenced to study engineering. He was honorably discharged in 1955 with a rank of Staff Sergeant. In the fall of 1956, Lowder enrolled at Texas Tech in the Department of Mechanical Engineering.



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Simek Receives ABOTA Lifetime Achievement Award



Patrick C. Simek, a 1971 B.S.M.E. graduate and a 1977 School of Law graduate, is the recipient of The American Board of Trial Advocates' [\(ABOTA\)](#) highest honor, the Lifetime Achievement [Award](#). Simek is a longtime ABOTA member and Lubbock, Texas, lawyer. He served as national president of ABOTA in 2002.

2013

Academy of Mechanical Engineers



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2013

Academy of Mechanical Engineers



Mr. Clark Butts is currently the President/CEO of BCKK Engineering Inc.

2013

Academy of Mechanical Engineers



Mr. Michael K. Farney works as a consultant/contract engineer at Farney Enterprises in Tulsa



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2013 Academy of Mechanical Engineers



Mr. Jerry Rawls is the Co-Founder, Co-CEO, and Chairman of Finisar Corporation. Forbes Magazine has included Mr. Rawls on one of its lists of Corporate America's 500 Most Powerful People.



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Additional Faculty and Instructor Positions

- Adjuncts/Instructors/GPTI positions as needed due class size limitations (maximum 49 students).
- Currently hired Mosedale, Hanson, Gray, C. Berg, Fanning, Branson, Han, Snoeyink, GPTIs.



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Undergraduate Laboratory Development

- ❖ Updated Control lab.
- ❖ Proposals submitted to the college for renovation of three undergraduate labs and machine shop



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Recent Research Space Renovation

- Dr. Kumar's Lab
- Dr. Jian Sheng's lab (in wind tunnel area)
- Dr. Jungkyu Kim's lab
- Dr. Beibei Ren's lab
- Dr. Hanna Cho's lab



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General Comments

- The Mechanical Engineering Department students (1,200), faculty (34) and instructors are increasing in number.
- The ME undergraduate program is well reputed as indicated by enrollment and competition among industry to recruit our students.
- Honors program in ME is working well.
- Implemented a mandatory exit exam in Design II.
- Research in the department is growing (\$4.1m)



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Department of Mechanical Engineering

Implementation Plan (Strategies)– 2013-2014

- Continuously improve undergraduate and graduate programs.
- Aggressively seek more external funding to support more graduate students on external funds.
- Work towards increasing the FE exam passing rate.
- Encourage more students to assume co-op/internship.
- Work with College Development office to raise funding.
- Implementing new undergraduate admission standard
- Implementing new standard of repetition of courses at the undergraduate level



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Long Term Implementation Plan- Strategies

- Maintain an excellent undergraduate program by improving it continuously
- Aggressively seek external funding; must support more graduate students on research grants.
- Improve ranking of the Graduate Program.
- Get more faculty
- Industrial Engineering space in Fall, 2013