



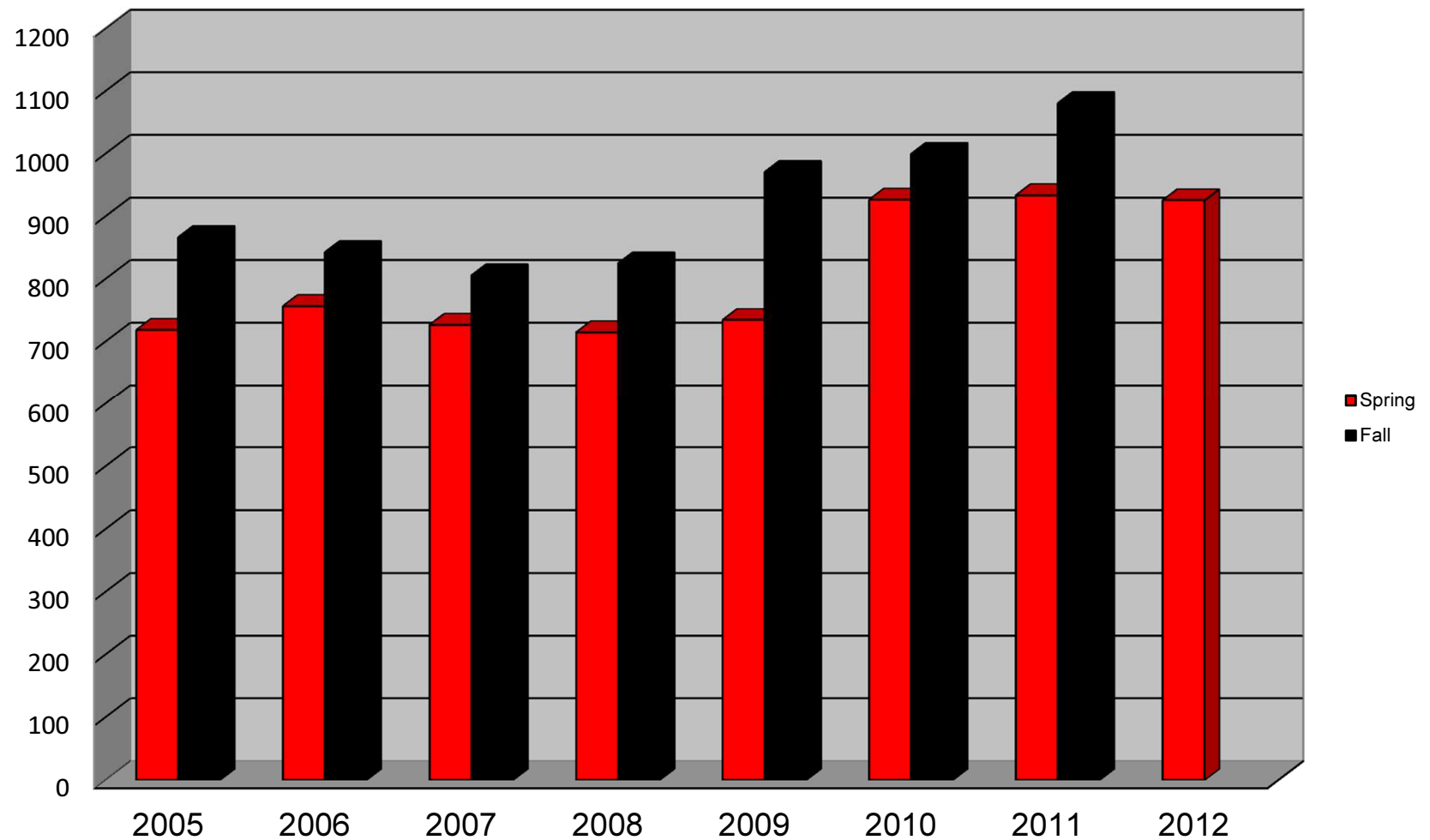
TEXAS TECH UNIVERSITY

Dr. Jharna Chaudhuri  
Professor and Chair  
Department of Mechanical Engineering  
Texas Tech University  
Presentation to  
ME Industrial Advisory Board,  
ME Academy,  
April 2012



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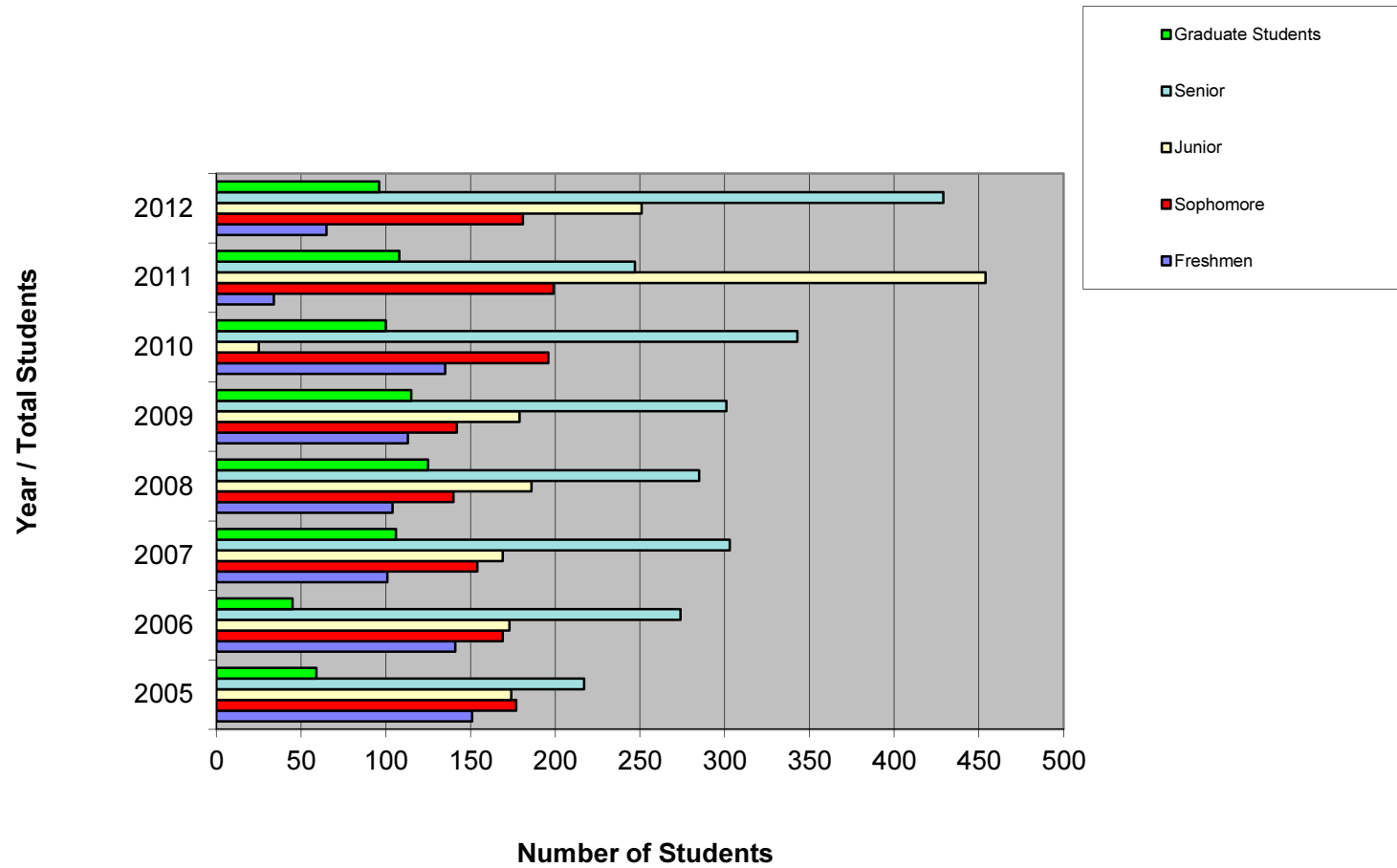
## Undergraduate Enrollment History in Mechanical Engineering at TTU





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# Enrollments

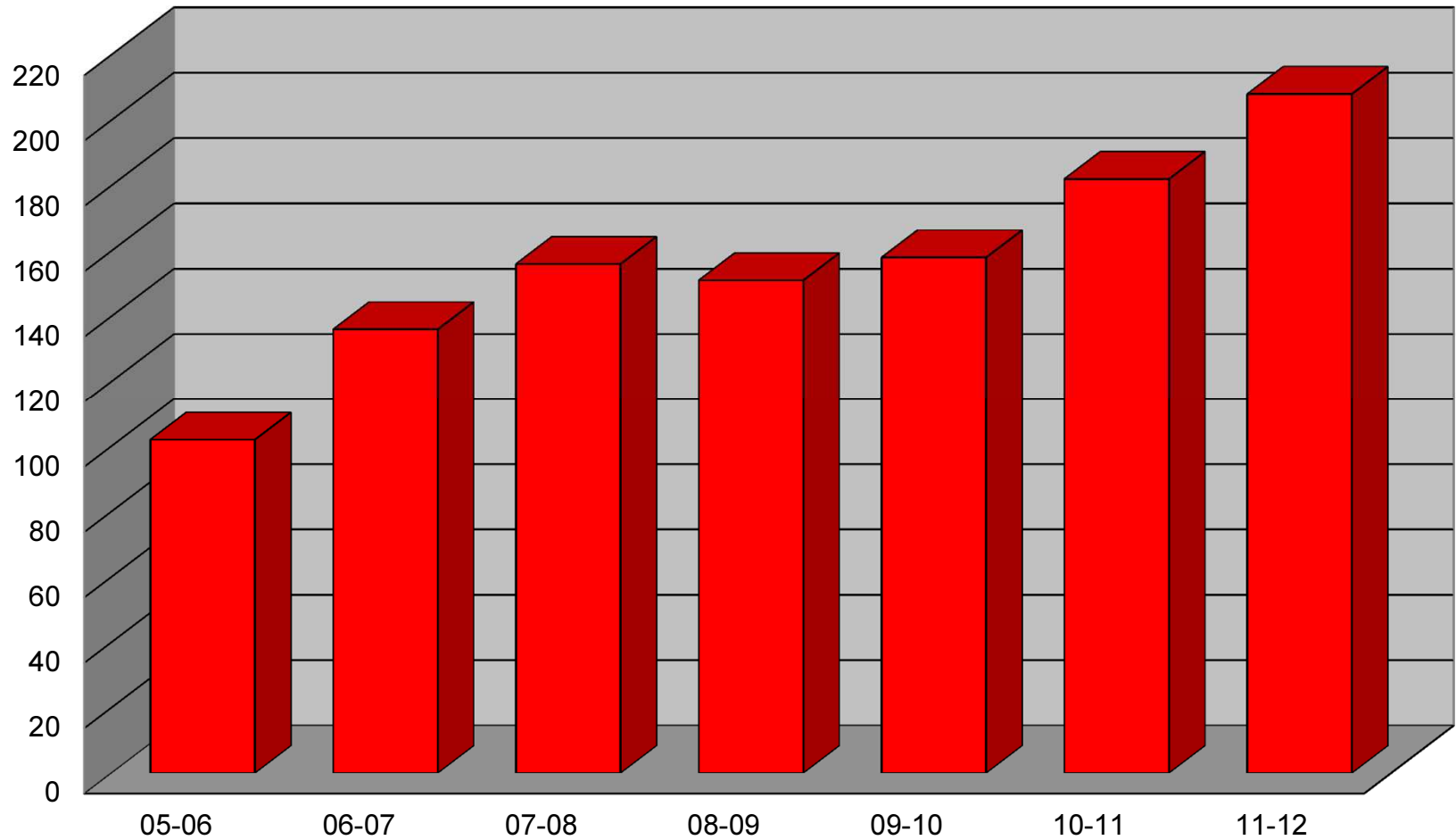




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## Bachelor's Degrees Awarded

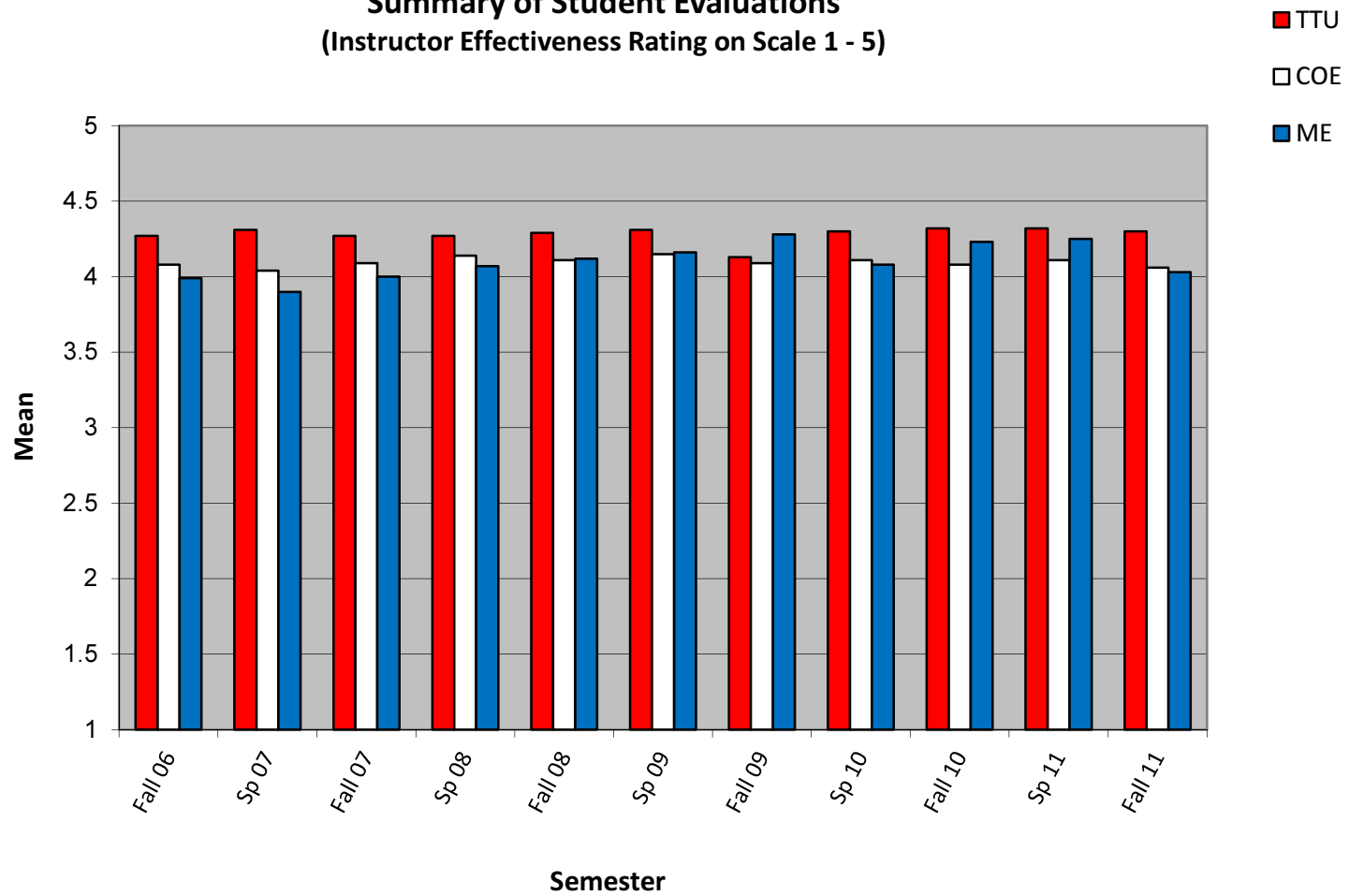
(Degrees awarded for 11-12 are estimated)





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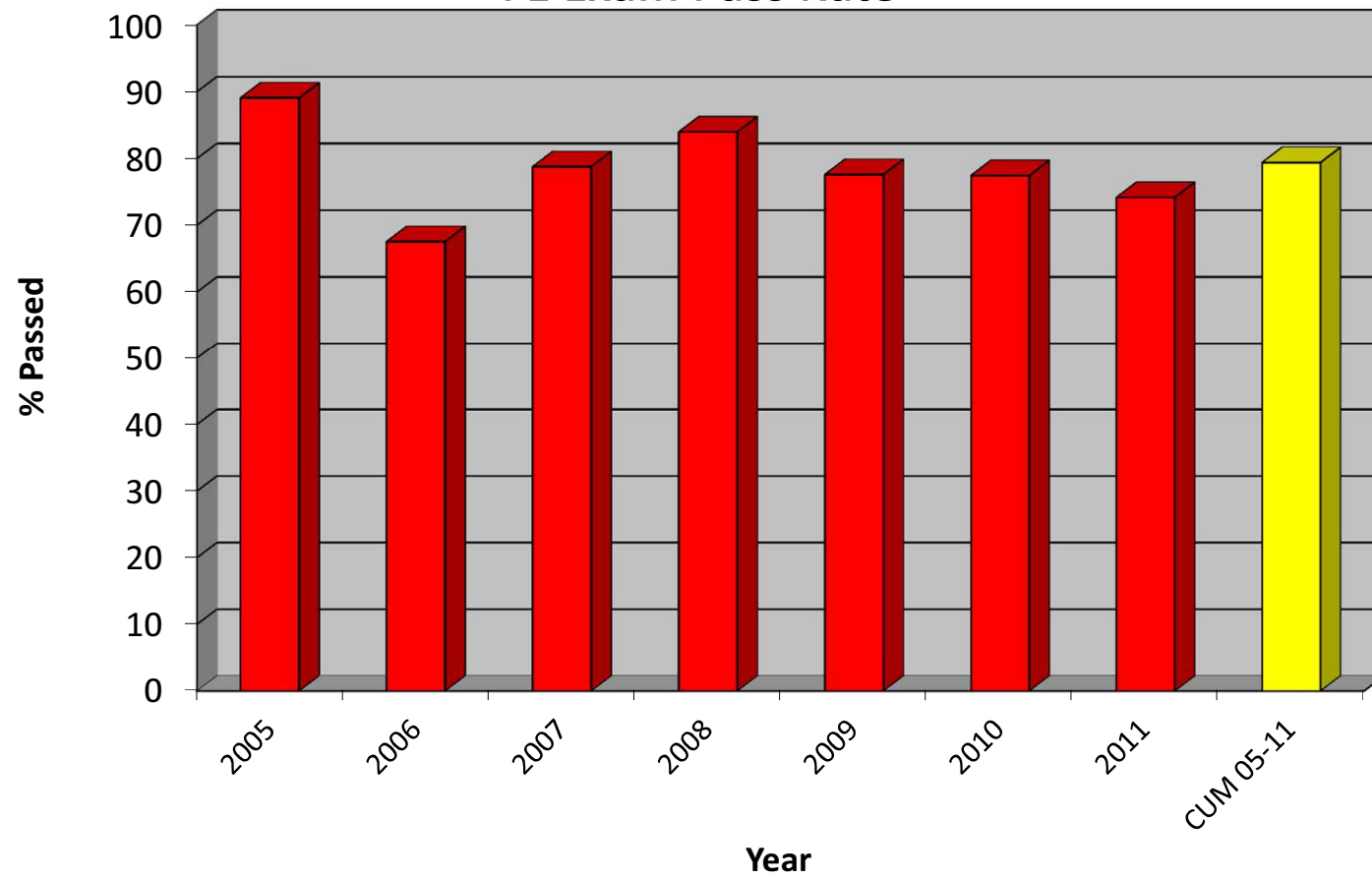
### Summary of Student Evaluations (Instructor Effectiveness Rating on Scale 1 - 5)





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## TTU Mechanical Engineering FE Exam Pass Rate

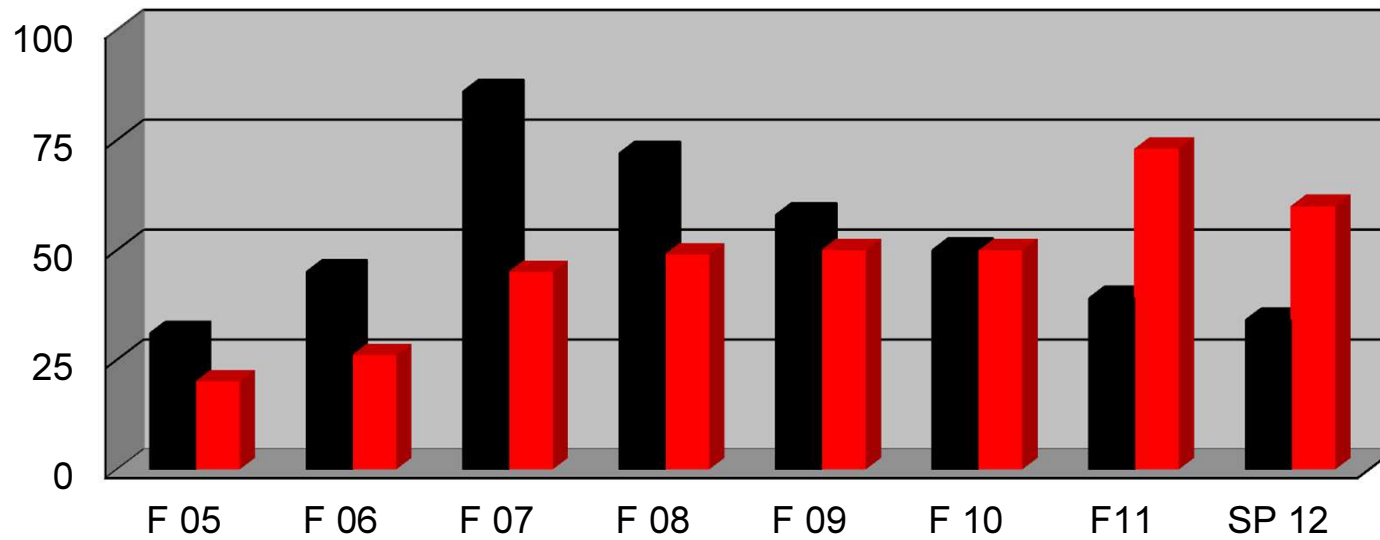




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## Graduate Enrollment History in Mechanical Engineering at TTU

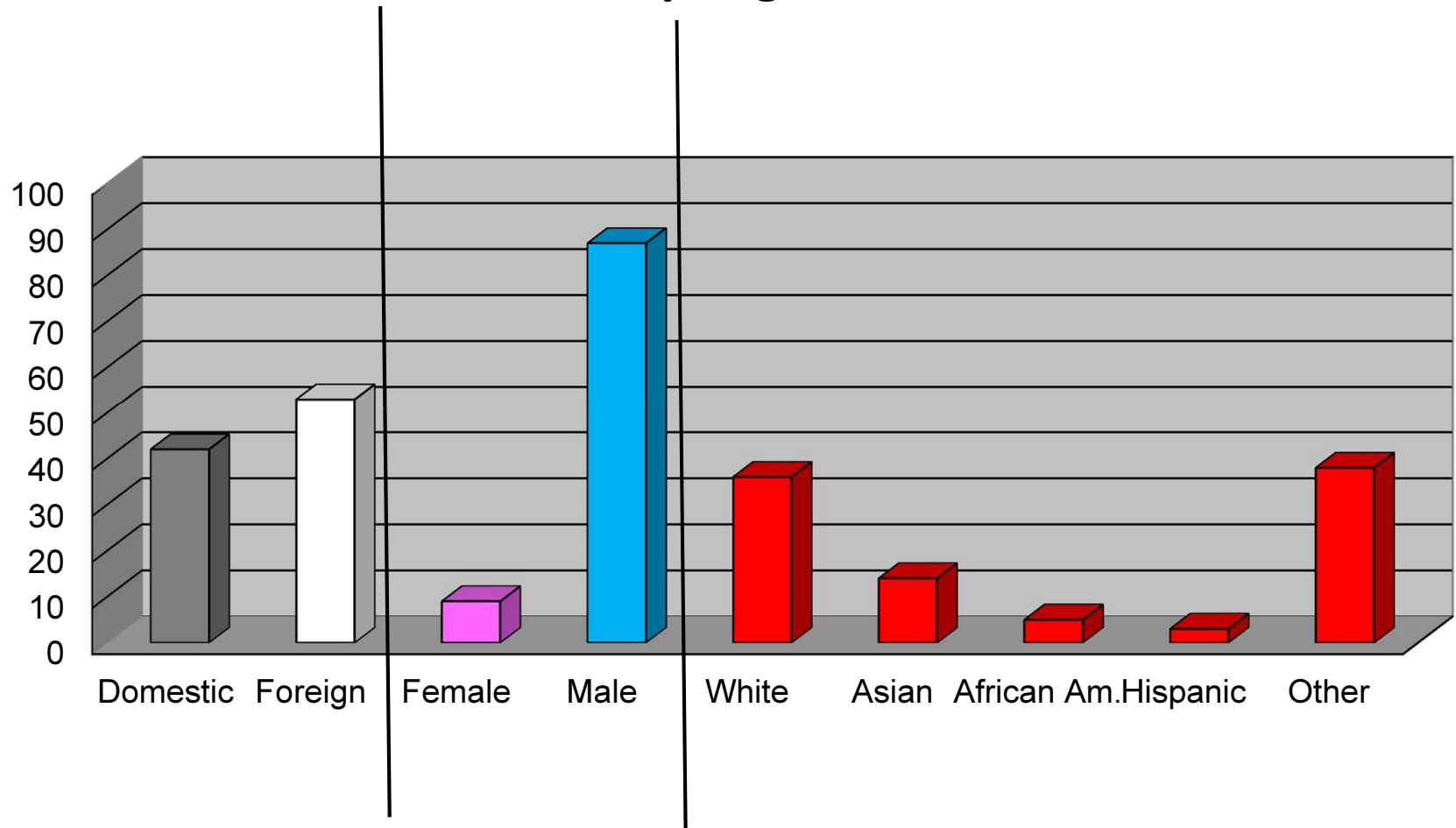
■ Master's  
■ PHD's





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## Detailed Graduate Enrollment for Spring 2012







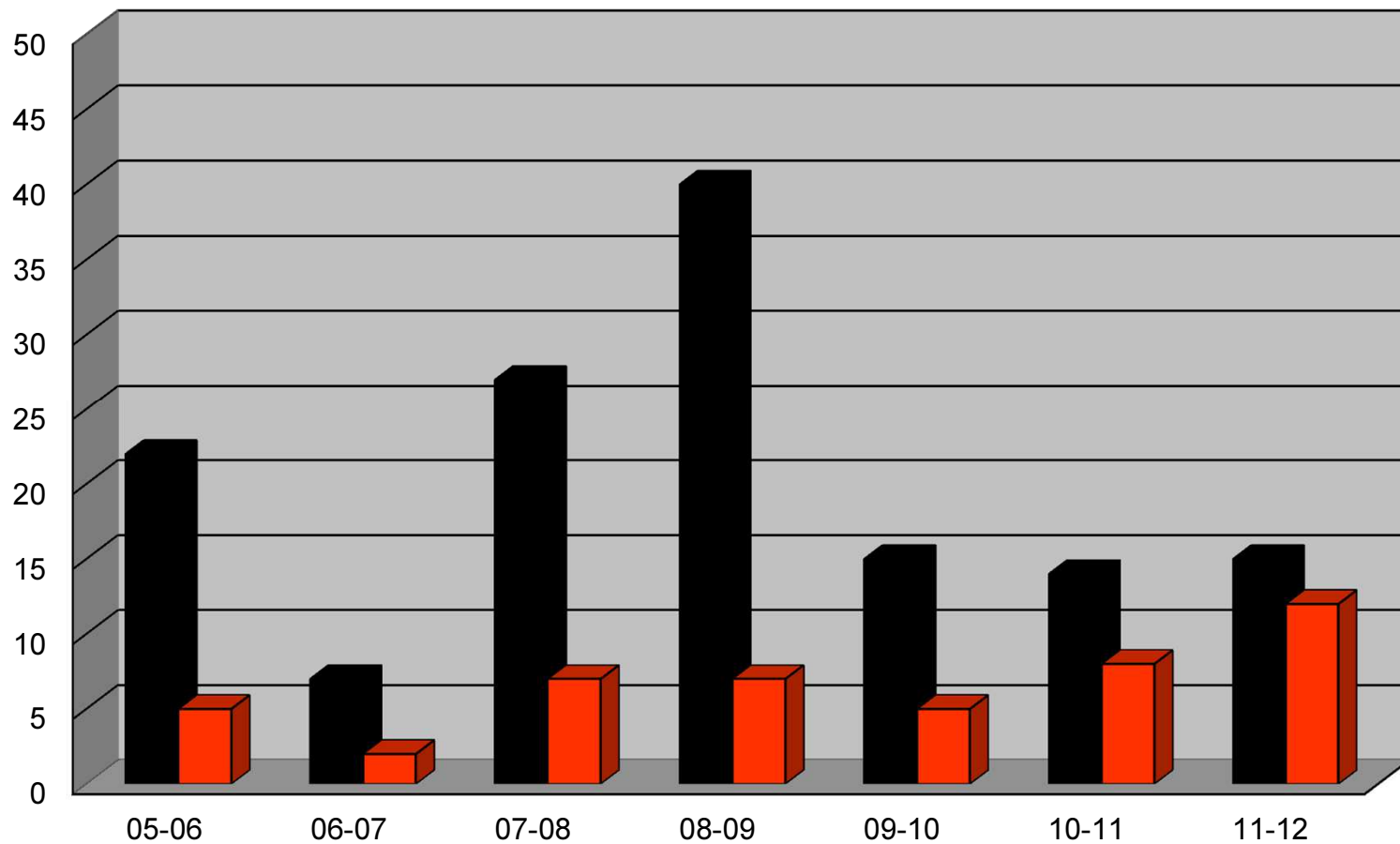
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## Master's and Ph.D.'s Awarded in Mechanical Engineering at TTU

(Degrees awarded for 11-12 are estimated)

■ Master's

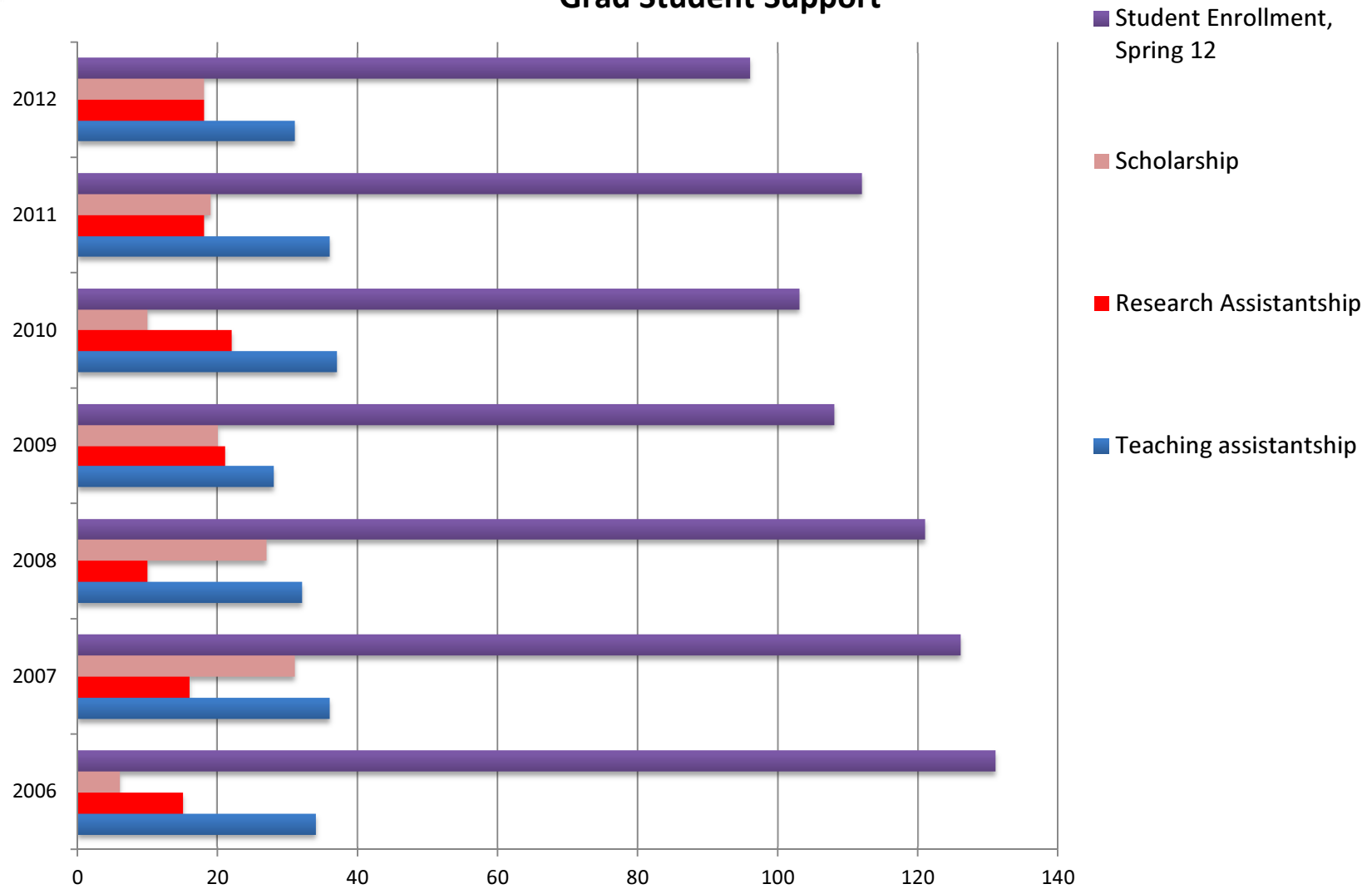
■ PhD's





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## Grad Student Support

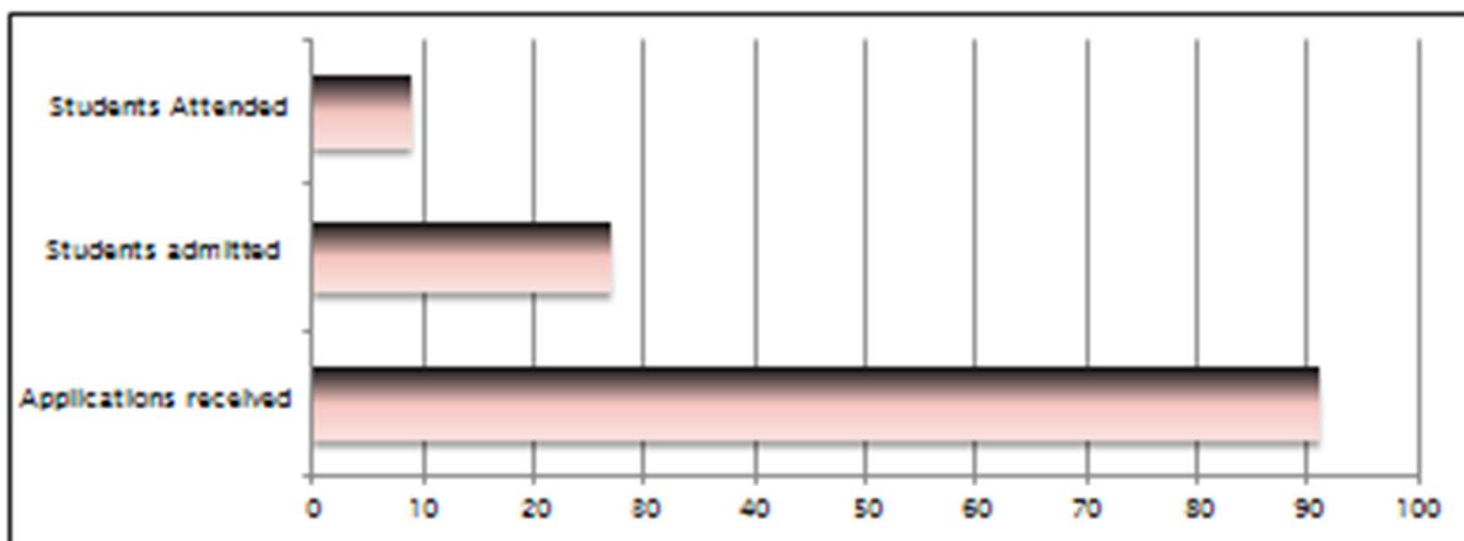




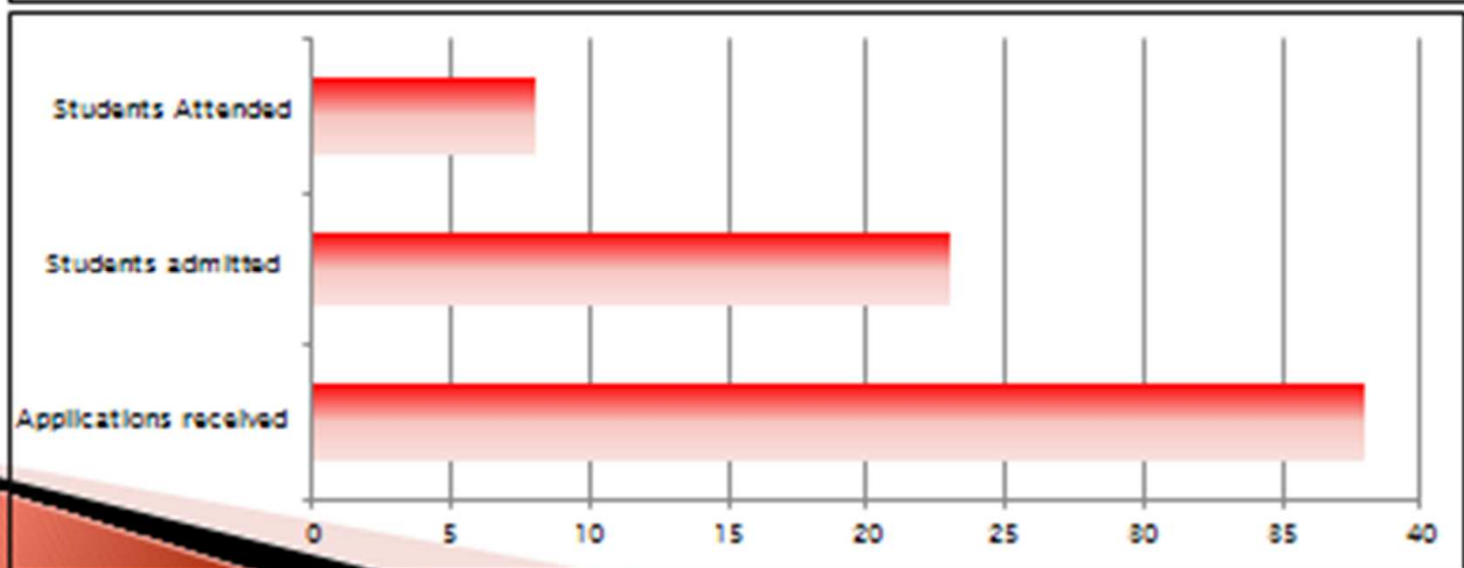
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## Graduate Admissions Fall 2011

MS



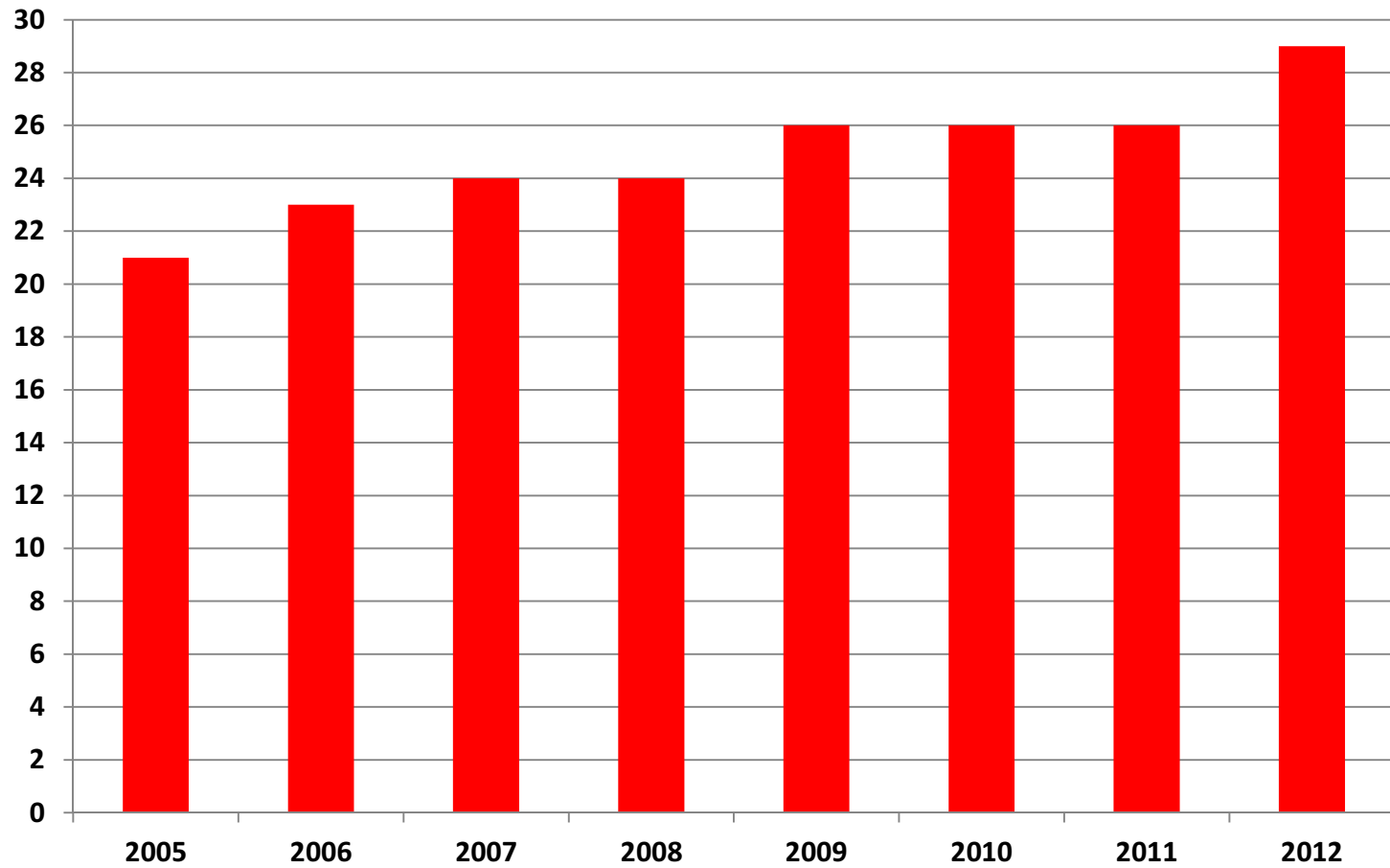
PhD





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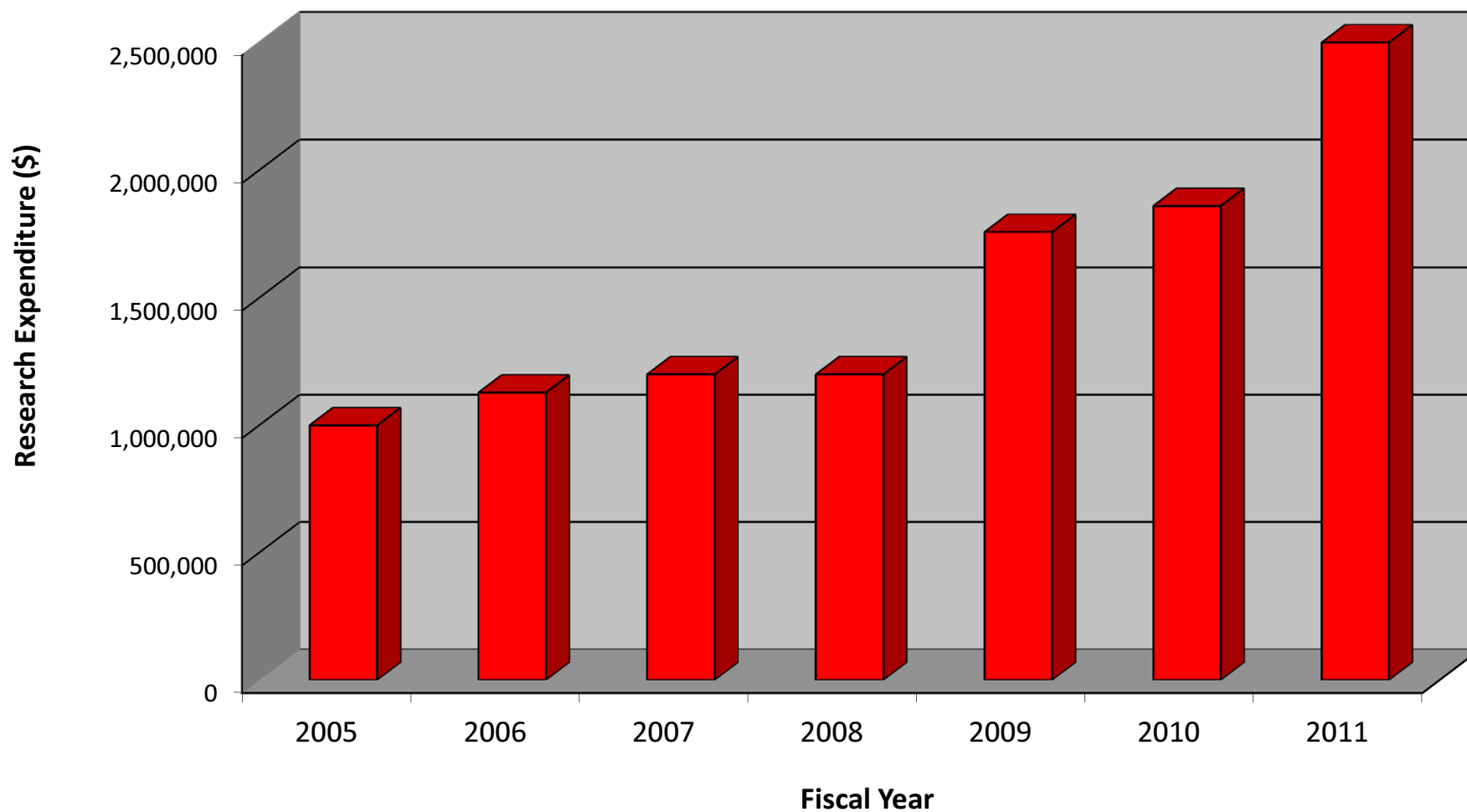
**Mechanical Engineering Faculty, Tenure-Track  
(spring 2012 data)**





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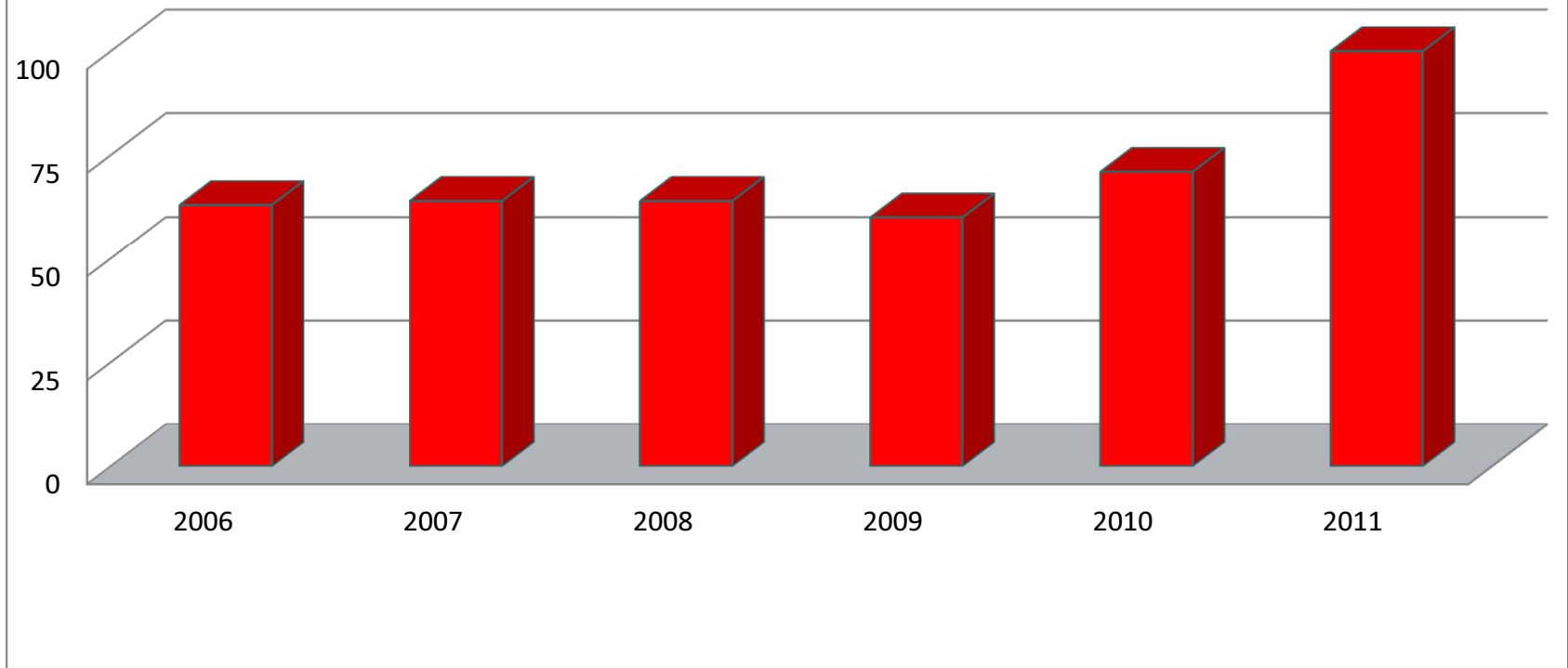
## **Sponsored Research Awards By Faculty Home Department**





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## 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.
- The **Department of Mechanical Engineering** ranked **81st** in the Mechanical category (the ranking has moved up from 93<sup>rd</sup> to 81<sup>st</sup>).
-



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- Faculty News



Awards

# Dr. James Yang Received 2012 SAE Ralph R. Teetor Educational Award



in recognition of his outstanding contributions to  
SAE's engineering education initiatives.



# Dr. Anderson Receives Premier Award



- **Dr. Edward E. Anderson**, professor of mechanical engineering, has been named a recipient of the 2011 Premier Award for Excellence in Engineering Education Courseware.
- The Premier Award competition is open to a wide range of submissions of high-quality, engaging, non-commercial learning innovations designed to enhance engineering education.

## Dr. Berg Elected ASME Fellow in 2011



- **Dr. Jordan Berg**, a professor of Mechanical Engineering, has been elected as a Fellow in the American Society of Mechanical Engineers (ASME). Approximately 2 percent of ASME members reach this distinction.



# Hanson Receives ASME IPTI PD Outstanding Faculty Advisor Award



Dr. Jeff Hanson, instructor of mechanical engineering, is the recipient of the American Society of Mechanical Engineers International Petroleum Technology Institute Petroleum Division 2011 Outstanding Faculty Advisor award.



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## Dr. James Yang Receives 2011 TTU Alumni New Faculty Award



**Dr. Yang** received the 2011 TTU Alumni New Faculty Award and the 2011 Research Excellence Award from the Whitacre College of Engineering, TTU.



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# Dr. Yanzhang Ma

## Appointed Faculty Fellow



- **Dr. Yanzhang Ma** was appointed by the Whitacre College of Engineering as Ed and Linda Whitacre Faculty Fellow. Dr. Ma received this recognition because of his research excellence in terms of scholarly publications, student supervision, national service, and external grants.



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# New faculty





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# Castillo Named Cash Chair



- Mechanical Engineering department has welcomed Dr. **Luciano Castillo**

**Dr. Luciano Castillo**, is joining Texas Tech University as the Don-Kay-Clay Cash Foundation Distinguished Engineering Chair in Wind Energy, the executive director and president of the NWRC, and professor of mechanical engineering.



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# Sheng named ME Whitacre Chair



Currently at Aerospace Engineering and Mechanics , University of Minnesota

Professor Sheng develops and utilizes advance multi-dimensional multi-species experimental methods to study flow structure interactions (FSI) in unsteady conical flows over deforming boundaries, turbulence wall interactions, environmental boundary layer, microscale flows, hydrodynamic interactions of microorganisms and surface, hydrodynamics of swimming and bio-mimetic locomotion, and biomedical related near surface transport.



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# New Asst. Professor Dr. Burak Aksak



**Research Interests:** Developing bio-inspired devices for adhesion, sensing, actuation, & energy harvesting; Building multi-functional, self-sufficient systems which exploit the increased surface to volume ratio & the high



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## New Asst. Professor Dr. Golden kumar



**Research Interests:** Environmentally benign and efficient processing methods to fabricate materials with functional properties at multiple length scales

## New Research Asst. Professor Dr. Guillermo Araya



**Research Interests:** Computational fluid dynamics of turbulent incompressible and compressible flows, wind energy array modeling, DNS, LES, RANS, URANS, turbulence modeling, heat transfer and



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# Undergraduate Student News



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## 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

## Jason Allen Received Internship at NASA Ames Research Center



- **Jason Allen** received the NASA Aeronautics Scholarship Program, funded by NASA headquarters and administered by ASEE. Allen is currently at an internship for NASA Ames Research Center in Mountainview, CA.
- Allen was asked by NASA headquarters give a briefing about his internship to the Director of Aeronautics. The briefing was featured in an agency wide news forum called "This Week@NASA". Allen appears in the "This



## Aimee Cloutier Receives Research Fellowship



- **Aimee Cloutier** received the Undergraduate Research Fellowship from the Honors College from Sept. 2010 to April 2011. She also presented her paper entitled “Motion Capture Validation for Digital Human Models” in the HCI International Conference in Orlando, FL in July. She will pursue her honors thesis under Dr. James Yang’s

- **Derek Eddins Participates in Bell Helicopter Boot Camps**



- For the fourth consecutive year Bell Helicopter, a Textron Inc. company, hosted college students from universities around the United States. This year, a total of 20 engineering students representing 11 different universities from across the country attended the boot camps. Texas Tech was one of the 11 universities that participated in

- **Alexander Matthey Presents Paper at NCUP Conference**



- **Alexander Matthey**, undergraduate senior student, presented a paper titled “Synthesis and High Resolution Transmission Electron Microscopy Study of Gallium Manganese Nitride Nanocrystals” at the National Conference on Undergraduate Research (NCUR) at Ithaca College, Ithaca, NY in March 2011. The other authors of the paper are Ph. D. students Archis Marathe and Xianwen Zhang, and faculty Drs. Yanzhang Ma and Jharna Chaudhuri.



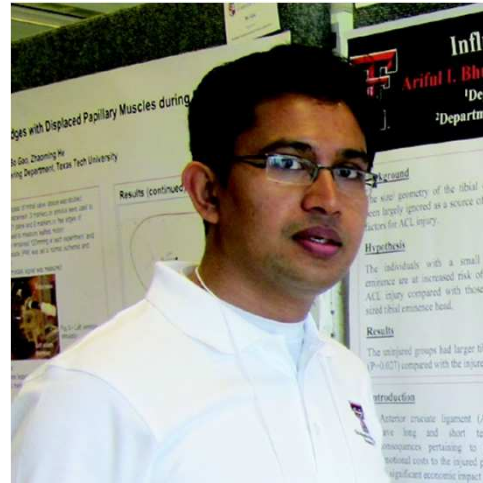
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# Graduate Student News



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# Ariful Bhuiyan



- **Received 2012 Helen Devitt Jones Excellence in Graduate Teaching Award**



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# Bradley Howard



- **Received 2012 Helen Devitt Jones Excellence in Graduate Teaching Award**



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# Aimee Cloutier Receives Graduate School Ph. D.Fellowship, 2012



# Ariful Bhuiyan Selected as TEACH Fellow



**Bhuiyan** was selected as "TEACH Fellow" for the coming Fall and Spring semester by TEACH Program Selection Committee. This year the competition was rigorous; applicants were from all other departments of the university.



# Kunal Patil Awarded EcoCAR GRA Fellowship



- **Kunal Patil**, graduate student under Dr. Timothy, was awarded EcoCAR Graduate Research Assistant (GRA) fellowship from the US Department of Energy (DOE) for the Fall and Spring of 2010-11.
- In addition, Mr. Patil was awarded third place for best poster presentation at EcoCAR Spring 2011 Workshop held at Environmental Protection Agency (EPA), Ann Arbor, MI on March 2011.
- He also received dSPACE Embedded Success Award during EcoCAR year-3 final competition award ceremony held at Library of Congress in Washington DC on June 16th.



# Alumni News

## Alumnus Captain John D. Alexander Received 2012 Distinguished Engineer Award



- Captain John D. Alexander is the commanding officer of USS Abraham Lincoln (CVN-72), a nuclear-powered aircraft carrier in the U.S. Navy.
- Alexander is a native of Port Neches, Texas. He was commissioned in December 1982 through the Aviation Officer Candidate program and designated as a Naval Flight Officer in November 1983. He is a graduate of Texas Tech University with a Bachelor of Science in mechanical engineering; King's College, University of London with a Master of Arts in defense studies; the Royal Naval Staff College Greenwich (UK); the U.S.

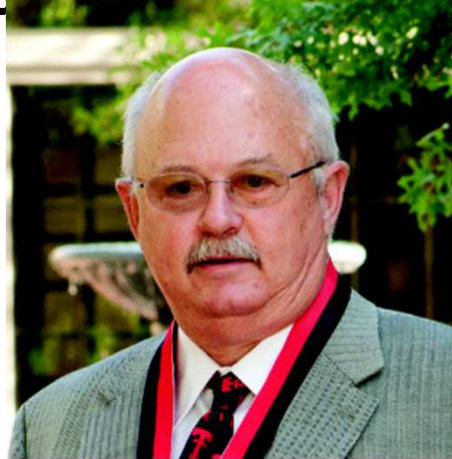
## Alumnus James E. Lowder Received 2012 Distinguished Engineer Award



- 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.



## Alumnus Jack Rentz Received 2011 Distinguished Engineer Award

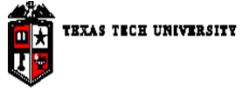


Texas Tech Alumni, **Jack Rentz**, received the 2011 Distinguished Engineer Award on April 15. Rentz is the founder, President, and CEO of RENTECH Boiler Systems Inc. The company designs and sells a wide variety of custom-designed and manufactured industrial steam boilers that are used by the refining, power generation and chemical industries. He

# Clark Inducted Into Mechanical Engineering Academy, 2012



- Charles Robert Clark graduated with a BSME degree from Texas Tech University in 1968. Charles and his wife, Tommye, reside in Dallas, Texas and have three children, Evangelyn, Kyle and Judson.
- After graduation, Charles started his career as a Jr. Engineer with Tennessee Gas Pipeline in Houston, Texas. He has held several engineering and management positions in various organizations since including: US Army as a Mechanical Engineer, Tennessee Gas Pipeline as a Division Compressor Engineer, Tippet & Gee Consulting Engineers as an Engineer, President of CRC Consulting Engineers, Partner at Perry, Clark & Young Consulting Engineers, Partner at Clark and Young Consulting Engineers, Partner at Clark, Young and Hargis Consulting Engineers, Inc., and President of CRC Consulting Engineers, Inc. in Abilene, Texas as well as McAllen, Texas. He is currently employed with Kinsman & Associates as the Vice President of Engineering.
-



## Watson Inducted Into Mechanical Engineering Academy, 2012



Clifford A. Watson graduated in 1986 with a BSME degree from Texas Tech University. He and his wife, Janet. (Nix) Watson, currently reside in Teague, Texas. with their children, Seth, Jordan Elise, Madison, and Alexandra. Janet is also a Texas Tech Alumnus.

Following graduation, Clifford has spent his engineering career with Luminant, a competitive power generation subsidiary of Energy Future Holdings Corp., formerly known as TXU Corp. At Luminant, he progressed from Associate Engineer in 1986 to his present position of Director of Generation. Clifford's career has been spent at the Martin Lake Plant, Stryker Creek Plant, Big Brown Plant and most recently, Oak Grove Plant. In addition to Professional Engineer registration, Clifford is registered as a Certified Maintenance and Reliability Professional (CMRP)

# Guinn Inducted Into Mechanical Engineering Academy, 2011



H. Brent Guinn, a 1983 graduate with a Bachelor of Science in mechanical engineering and a 1994 graduate with a Master of Science in industrial engineering, has been named a member





## Alumnus Dr. Louis A. Gritzko is the Chairman of ASME Heat Transfer Division.



- Alumnus, Dr. Louis A. Gritzko, is the Chairman of ASME Heat Transfer Division. Dr. Louis Gritzko is vice president and manager of research for FM Global.
- With over 3000 members, the ASME Heat Transfer Division is clearly the place where breakthroughs in research, development, manufacturing and policy are made. The division continues to attract new members.

## Alumnus Pioneers Novel Cryogenic Technology For Natural Gas Industry



- **Clark Butts** opened a business after graduating from Texas Tech with a Mechanical Engineering degree in 1973. After founding BCCK in 1980 , he and his team developed and patented a technology called the Nitech™ process. This method uses cryogenics to separate nitrogen from natural gas. The Nitech™ process also has been implemented to reduce coal mine methane, thus reducing the emission of greenhouse gases. The company also can remove CO<sub>2</sub>

- **BCCK facilities for nitrogen rejection, NGL recovery, CO<sub>2</sub> removal, helium recovery, and oxygen removal**





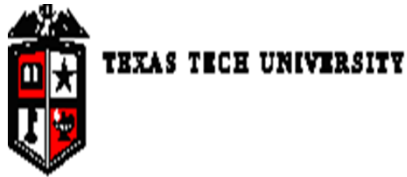
- **Alumnus Establishes Scholarship Within Two Years Of Graduation**



- **James Baumgartner** is a recent graduate of Texas Tech, graduating Magna Cum Laude in May 2009 with a Bachelor in Science from the Mechanical Engineering Department. During his time at Texas Tech he served as President of the 67-member Student Senate and Internal Vice President of the Student Government Association. He recently began his career as a contracts engineer within the Project Management & Execution function of ExxonMobil Development Company.
- With the help of matching funds from ExxonMobil, Baumgartner recently established a \$25,000 endowment fund creating scholarship opportunities for young leaders within the Whitacre College of Engineering. When asked what prompted his gift, he said, "Scholarships were important to me. They helped me go to school. It's important for me to do the same for others and invest in their future."

## Additional Faculty and Instructor Positions

- Second Whitacre Chair in Energy to be filled.
- Two new faculty positions received in Nano and Bio areas
- Adjuncts/Instructors/GPTI positions as needed due class size limitations (maximum 50 students).
- currently hired Mosedale, Hanson, Gray, C. Berg, Fanning, Branson,, GPTIs.



# Undergraduate Laboratory Development

- ❖ Spent about \$70,000 for three undergraduate laboratories –
- ❖ Mat. & Mech. lab, metallographic equipment, Hardness Tester
- ❖ Updating Control and Thermal-Fluid Systems labs
- ❖ \$20,000 came from the donation. \$9,000 from ME Academy.
- ❖ Proposals submitted to the college for renovation of three undergraduate labs and machine shop



# Recent Research Space Renovation

- Dr. Gordon Christopher's lab renovation completed
- Dr. Jenny Qiu's lab (133E)
- Dr. Aksak's lab (133C)
- Dr. Kumar's Lab shared with Dr. Jankowski
- Dr. Jian Sheng's lab (in wind tunnel area)



# General Comments

- The Mechanical Engineering Department students (1,181), faculty (29) 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.





# General Comments

- Currently, total numbers of students in 150 hr. BS/MS program is 18.
- Research in the department is growing.
- The department has completed its strategic planning to get us to the next level of achievement.
- The department had a very successful ABET visit



## Implementation Plan (Strategies)– 2012-2013

- 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.
- Get more laboratory/research space.
- Work with College Development office to raise funding.
- Implementing new undergraduate admission standard
- Implementing new standard of repetition of courses at the undergraduate level



# 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
- Get more space