SPRING 2016
Mechanical Engineering Magazine
Greetings from Aggieland!

We had an exciting 2015 in the Department of Mechanical Engineering. Dr. J.N. Reddy, Professor of Mechanical Engineering, Distinguished Professor, Regents Professor, and holder of the Oscar S. Wyatt Endowed Chair, was recognized for his contributions to composite structures and engineering education in his election to the National Academy of Engineering. Dr. Reddy is most deserving of the honor of National Academy of Engineering member, and we are so proud to call him a member of our academic family.

The department also celebrated the selection of three faculty, Drs. Jaime Grunlan, Prabhakar Pagilla, and Alan Palazzolo, to receive endowed professorships.

The department hosted three distinguished lectures last year. We had the pleasure of hosting Dr. John A. Rogers (University of Illinois) and Dr. Joseph J. Beaman (The University of Texas at Austin) as presenters of the Fowler Distinguished Lectures in the spring and fall, respectively, and Dr. Fredric Ehrich (MIT) as the Turbomachinery Distinguished Lecturer last fall.

We welcomed three new tenured/tenure-track faculty to our department and promoted nine faculty last year. We also welcomed several teaching and research faculty, including two associate professors of practice. We are sure their future contributions to the department and the field of mechanical engineering will help propel our department toward preeminence.

The department has improved our facilities with a focus on enhancing the learning experience for all of our students. Renovations to create a dedicated student collaboration flex space on the second floor of the James J. Cain ’51 Building were completed in time for the fall semester. We are also creating a 3-D printing design studio/space in the Cain Building. The vision is to allow all mechanical engineering students access to inexpensive 3-D printing and advanced 3-D printing capabilities.

There are so many undergraduate and graduate students in our program who exemplify the standard of excellence in education and research we hold in the department, and it is my pleasure to introduce some of them featured in this issue.

James J. Cain ’51, namesake of the Engineering Physics Building, which houses Mechanical Engineering labs, passed away last fall. Cain’s long-term commitment to the mechanical engineering department included over 30 years of gifts and contributions. His Estate Gift to the mechanical engineering department will be transformative for our students and faculty.

I would like to offer a sincere thank you to all of the donors who generously support programs in our department through contributions to scholarship and development funds. Your support enables us to continue enhancing the quality of education we provide to our students.

Sincerely,

Andreas A. Polycarpou, Ph.D.
Head and Meinhard H. Kotzebue ’14 Professor

Table of Contents

Annual Report 4
Faculty Promotions 6
Faculty Features 8
Dr. J.N. Reddy
Dr. Bilal Mansoor
Dr. Andrea Strzelec
Dr. Yong-Joe Kim
Senior Design Course 12
Student Recognition 13
Jessica Gallegos
Ashley Helferich
June Saichu
Trey Torno
Joanna Tsenn
Student Ambassadors 20
Student Organizations 21
Scholarships and Fellowships 22
Advising Office Highlight 24
Faculty and Staff Awards 25
Industry Advisory Council Update 26
Remembering James J. Cain 28
Distinguished Lecture Series 29
Donor Recognition 30

Credits

Mechanical Engineering
Kate Goodman
Sharli Nucker
Haley Posey
Jay Walton

Engineering Communications
Rachel Mayor
Tim Schnettler

Texas A&M Engineering Communications 2016
Online Master of Engineering Degree Mechanical Engineering (M.Eng.)

This is a coursework-based master’s degree for the student wanting to develop advanced and focused knowledge in specialized areas of mechanical engineering. Consistently one of the top-ranked mechanical engineering programs, mechanical engineering at Texas A&M is a world-renowned program with over 70 full time faculty. To complete the degree, students register for 30 credit hours, 24 of which should be in mechanical engineering.

Students are able to specialize in:
- Mechanics including biomechanics and solid mechanics
- Materials and manufacturing including nano-scale manufacturing and polymer and metallic materials
- Dynamics and control including robotics and mechatronics
- Design including product design, systems optimization and systems realization
- Thermal fluid science including combustion, energy systems and heat transfer

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To find out more, please visit: engineering.tamu.edu/mechanical/academics/degrees/graduate/meng

For tuition and fee information: sbs.tamu.edu/accounts-billing/ tuition-fees/schedule/

To apply: engineering.tamu.edu/mechanical/prospective-students

Senior capstone design course projects

The capstone experience successfully prepares future engineers by bridging the gap between classroom and industry. Students are required to use their knowledge and skills to complete an engineering design project equivalent to the assignments they will soon receive as aspiring professional engineers. Students perform the projects in groups, forcing them to develop the skills necessary to succeed in diverse industry design teams. Employers value graduates with capstone design experience because these students have gained broad experience by applying their extensive knowledge base to solve complex engineering problems as a team.

The fall-spring sequence typically has industry-sponsored problems and the spring-fall sequence typically has larger-scale NASA sponsored problems. The projects can include exploratory studies, conceptualization, analysis and simulation, prototyping and validation of the design solutions. Projects can be products, parts or systems. Typical results include several written reports that document the design exploration, design refinement and analysis and prototyping process. Results also include the presentations given to the sponsor and prototypes.

For more information contact:
Dr. Peter Hamilton,
Associate Professor of Engineering Practice
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Phone: 979.845.3081

For project sponsorship information please visit: engineering.tamu.edu/mechanical/capstone-design/become-a-sponsor
**2015 ANNUAL REPORT**

**STUDENT QUALITY**
- ME average SAT Score - 1291
- Texas A&M average SAT Score - 1220
- ME average GRE Score - Verbal 155/160, Quantitative 155/160
- Dwight Look College of Engineering average GRE score - Verbal 153/163, Quantitative 166/170
- Dwight Look College of Engineering average SAT score - 1280

**SCHOLARSHIPS**
This past year over $600,000 in undergraduate scholarships and graduate student fellowships were awarded.

**U.S. NEWS & WORLD REPORT 2016 RANKINGS**
- Among Public Institutions
  - Undergraduate - 8
  - Graduate - 8

**FACULTY**
- College Station Faculty - 72
  - Professors - 28
  - Associate Professors - 16
  - Assistant Professors - 10
  - Academic Professional Track Faculty - 18
- Qatar Faculty - 13

**ENDOWED POSITIONS**
- Chairs - 6
- Professorships - 13
- Faculty Fellowships - 10
- Career Development
  - Professorships - 4

**PROFESSIONAL SOCIETY FELLOWS**
- Faculty - 55%

**ENDOWMENT FUNDING**
Total Endowment Funding - $40.0 million
- Chairs/Professorships - $22.5 million
- Scholarships - $11.3 million
- Fellowships - $2.8 million
- Department Excellence Fund - $2.2 million
- Other - $0.8 million
- Planned gifts - $11.0 million

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**2015 Research Funding**

- Federal: $7.48 Million
- Other Funds: $1.53 Million
- Foreign: $2.21 Million
- Internal: $2.04 Million
- Private: $3.74 Million

Additional $8 million funded through 2 major Mechanical Engineering research centers.

**Fall 2015 Enrollment Data**
- 1473 Enrolled students
  - 701 Undergraduates
  - 243 Ph.D.
  - 213 Master’s

**2014-2015 Degrees Awarded**
- 368 Total awarded
  - 246 Bachelors
  - 88 Master’s
  - 34 Ph.D.

* sophomore-senior

**Entry to a major explained:**
Beginning in the fall of 2014, freshmen applicants selected for admission are admitted to the Dwight Look College of Engineering with a preference for the major noted on the admissions application. Admitted students follow the first-year engineering curriculum. These changes offer admitted students the freedom to learn about the different engineering majors to better equip them to make informed decisions concerning which engineering discipline is the best fit for their career goals. Due to this process each of the Look College’s departments’ reported statistics have excluded freshman students from the grand totals.

Data Source: Texas A&M University Data and Research Services
dars.tamu.edu/Data-and-Reports/Student
Mechanical Engineering undergraduate students utilizing the new student collaboration space located in the James J. Cain Building.

**Fall 2015 Demographics**

All students:

- **22% International**
- **21% Minority**
- **57% White**

**Undergraduate**

- 26% Minority
- 71% White
- 3% International

**Graduate**

- 13% Minority
- 26% White
- 61% International

**Gender - all students**

- 87% Male
- 13% Female
Faculty promotions and endowments

The Department has six endowed Chairs, 13 endowed Professorships, four career development Professorships, and 10 Faculty Fellowships. Texas A&M University has recognized three of our faculty as Regents Professors and three as University Distinguished Professors. The annual externally funded research grants for the department are over $25 million including two major research centers.

It is imperative to the Department of Mechanical Engineering to highlight and award our faculty for its continued success and great contributions. We are pleased to announce the following promotions and endowments for 12 of our faculty members.

Dr. Debjyoti Banerjee
Professor

Banerjee joined the department in 2005. His current research focuses on developing nanotechnology-enabled platforms for enhancing cooling, sensing and energy storage (involving both experimental and computational studies).

Dr. Anastasia Muliana
Professor

Muliana joined the department in 2004. Her research focuses on nonlinear and time dependent constitutive material models; thermal stress analyses; and micromechanics of composite and functionally graded materials and creep tests on polymer composites.

Dr. Harry Hogan
Professor

Hogan joined the department in 1986. His research focuses on musculoskeletal effects of mechanical loading and unloading; changes in properties due to disuse, simulated microgravity, exercise, estrogen deficiency, diet changes, and other treatments; and countermeasures.

Dr. Xinghang Zhang
Professor

Zhang joined the department in 2005. His research interests are in deformation physics of nanotwinned metals and metallic multilayers, and microstructure analysis by high-resolution transmission electron microscopy (HRTEM).

Dr. Daniel McAdams
Graduate Program Director & Professor

McAdams joined the department in 2008. His research interests are in design theory and methodology with specific focus on functional modeling; innovation in concept synthesis including computational methods; bio-inspired design methods; design for disability; and technology evolution as applied to product and system design.
Associate Professors

Kim joined the department in 2009. His research interests are in Computational Mechanics, Computational Aeroacoustics Analysis (CAA), Finite Element Analysis (FEA), Boundary Element Analysis (BEA), and Statistical Energy Analysis (SEA).

Malak joined the department in 2009. His research is focused on discovering new principles, methods and tools for decision making, knowledge characterization, and optimization in engineering systems.

Rathinam joined the department in 2009. His research interests are in motion planning and control of unmanned vehicles, collaborative decision making, vision based control, and air traffic control.

Staack joined the department in 2009. His research interests are in plasma engineering, non-thermal plasmas, micro- and nano-scale plasmas, electric propulsion for spacecraft, plasma enhanced materials processing and synthesis, plasma enhanced fuel conversion and combustion, biomedical plasma applications and laser and spectroscopic diagnostics.

New Named Faculty Fellow

Jacobs joined the department in 2006. His research interests include internal combustion engines, in-cylinder combustion and emission formation processes, fundamental experimental diagnostics and investigations, advanced and novel combustion processes, alternative fuels, aftertreatment systems and their coupling to IC engines.

New Named Professorships

Grunlan's research is focused on transport properties of polymer nanocomposites. His research interests are in the development of multi-functional thin films for flame retardancy, gas barrier/separation, and thermoelectric energy generation.

Pagilla joins us from Oklahoma State University, where he served as the Centennial Professor in Engineering, a Professor of Mechanical and Aerospace Engineering, and a faculty researcher at the Web Handling Research Center. His research interests lie in the areas of modeling and control of roll-to-roll manufacturing systems, control of large-scale systems, mechatronics, and robotics.

Palazzolo has been teaching and conducting research at Texas A&M for 30 years. He is presently performing research on heart pumps, energy storage flywheels, desalination centrifuges, rotating machinery vibration control, and drill string vibration control.
Dr. J.N. Reddy elected to the National Academy of Engineering

J.N. Reddy, professor in the Department of Mechanical Engineering at Texas A&M University, was inducted into the National Academy of Engineering (NAE) during a ceremony in Washington, D.C. Reddy, who is a Distinguished Professor, Regents Professor and holder of the Oscar S. Wyatt Endowed Chair, was recognized for his contributions to composite structures and engineering education.

Reddy came to Texas A&M as an endowed chaired professor in 1992, bringing his passion for education and research to enrich the Department of Mechanical Engineering. He is the author of nearly 500 journal papers and 18 books (several with second and third editions) on energy principles, variational methods, plates and shells, composite materials, mechanics of solids, and the finite element method and its applications. He has delivered more than 120 plenary, keynote or general invited lectures at international conferences and institutions, taught over 90 short courses, and advised 32 postdoctoral fellows and research visitors and over 100 graduate theses.

Reddy believes that learning is a self-driven process, and a teacher’s role involves more than just imparting knowledge to the students. A teacher should provide motivation to the students to learn and help in organizing their thought process to understand and develop skills necessary to be successful in professional and personal life.

He firmly believes that the hallmark of a successful engineer is to have a strong grasp of fundamental concepts and a creative-thinking capability to apply the fundamental concepts of the profession or discipline to solve real-life problems. A closer look at the textbooks written by Reddy show that his teaching philosophy is based on motivating students to fully understand fundamental concepts and mathematical tools necessary to formulate the problems of engineering, and developing creative and critical thinking in students so as to build solutions to real-life engineering problems.

He reminds his students time and again that engineering is a “problem-solving discipline” that requires an understanding of the fundamental principles/axioms of nature and their role in formulating the underlying mathematical models. He does not compromise, as judged from his books, on mathematical rigor and physical understanding required to address the problem to be solved. This is the part that most students, even though initially a bit scared of the mathematical tools he uses to explain the physics, appreciate the most.

Reddy’s research centers on theoretical formulations and numerical simulations of problems in solid and structural mechanics, composite materials, computational fluid dynamics, numerical heat transfer, geology and geophysics, and computational biology. Reddy’s most significant contribution is the development of refined third-order and layer-wise plate and shell theories that bear his name in the literature. His plate and shell theories, which account for transverse shear deformation and interlaminar stresses in laminated composite materials, are well-received by the composite materials and structures community all over the world and they are highly cited. The Defense Evaluation and Research Agency, DERA, Ministry of Defense of the United Kingdom contracted ABAQUS (HKS, Inc.) and Reddy as a consultant to incorporate his ideas on higher-order and layerwise theories into the software, which is used by universities as well as most structural analysis companies around the world. Reddy was the principal architect of a 3-D fluid flow finite element program based on the penalty function method in NISA finite element software, which is one of the most comprehensive engineering analysis suites available to address the automotive, aerospace, energy and power, civil, and electronics industries. His work on non-Newtonian flows was the basis of the code HyperForm (Reddy’s Ph.D. student was hired by Altair, which owns the software).

Throughout his career, Reddy has earned numerous national and international awards, including: the Worcester Reed Warner Medal (1992), the Charles Russ Richards Memorial Award (1995), and the Honorary Member (2011) Award from the American Society of Mechanical Engineers; the Raymond D. Mindlin Medal (2014), the Nathan M. Newmark Medal (1998), and the Walter L. Huber Civil Engineering...
The Department of Mechanical Engineering at Texas A&M University currently has 13 full-time professors at the Texas A&M University at Qatar campus. Each year Dr. Andreas Polycarpou, head of Texas A&M's Department of Mechanical Engineering, works with the program chair for the Qatar program to select one faculty member to travel to the College Station, Texas, campus to conduct research and teach current mechanical engineering students. Through this exchange professors from both campuses have the opportunity to work in world class facilities, work with students from around the world and continue to add to the engineering knowledge base. For the 2015 academic year Dr. Bilal Mansoor, an assistant professor in mechanical engineering at Qatar, was selected to come to College Station and conduct his research on multifunctional materials.

Mansoor is the director of the Multifunctional Materials and Manufacturing Laboratory (M3L). The laboratory's research is seeking to understand the interplay between structural characteristics and behavior of novel, multifunctional materials under different loads and extreme environments. The M3L team is currently utilizing funds from multiple Qatar National Research Fund grants to develop new multifunctional materials and related manufacturing technologies, which seek to emulate the intricate designs found in nature. The research team is currently working on hybrid metallic foams with potential applications in transportation, medicine and energy storage and conversion industries. Metallic foams are extremely expensive and are only used in some niche commercial applications. The research on metallic foams is heavily focused on the foaming process to create metallic foams with nature inspired controlled porous architectures. In addition, the M3L researchers are working to develop a novel manufacturing process to create intricate geometry metallic foam parts at high volumes and low cost for practical applications. Once established, this novel manufacturing method will promote the use of metallic foams in a range of important applications such as energy absorbing crash structures, heat exchangers, vibration dampers, filters, catalysts, thermal insulation and biomedical implants for bone and tissue ingrowth.

Mansoor believes materials with multi-functional properties are the building blocks of the future and will have important future economic and societal relevance. Use of these materials will allow engineers to develop cheaper, more efficient designs that will significantly reduce our carbon footprint.

For more information on the Qatar campus and faculty:
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Air pollution remains a major health hazard, despite significant improvement in the U.S. air quality since the passage of the Clean Air Act in 1970. Globally, air pollution is the largest environmental risk to human health. Technological improvements such as catalytic converters and particulate filters have yielded immense health benefits, but many challenges remain. Dr. Andrea Strzelec, assistant professor in the Department of Mechanical Engineering at Texas A&M University, focuses on reducing the pollution from automotive exhaust via aftertreatment devices in her Combustion and Reaction Characterization Laboratory (CRCL).

Catalytic converter is the generic name associated with exhaust aftertreatment devices found on vehicles. They convert engine-out pollutants into safer and cleaner gases. To meet Federal emissions standards auto manufacturers control diesel emissions through the use of five major types of aftertreatment devices: the Diesel Oxidation Catalyst (DOC); Diesel Particulate Filter (DPF); Lean NOx Trap (LNT); Selective Catalytic Reduction (SCR) Catalyst; and use the Three-Way Catalyst (TWC) for gasoline engines.

Strzelec remains particularly interested in investigating particulate matter from both diesel and gasoline direct injection engines, in anticipation of Gasoline Particulate Filters (GPFs) being required on vehicles in the future. For the oxidation catalysts to work properly — turning toxic species such as carbon monoxide and hydrocarbons into water and CO2 — they must first reach their “light-off” temperature. When a vehicle is first started (called cold-start), the electronic control unit (ECU) instructs the engine to run fuel-rich for a few seconds to heat the catalyst to the required temperature as quickly as possible. It is the ECU, often referred to as the vehicle’s computer, which controls the fueling rate; engine performance and the emissions control devices.

The ECU keeps track of the catalyst temperature and adjusts fueling to keep it hot enough to be active. Fuel that goes to keeping the catalyst from experiencing light-out (getting too cold to be effective) does not go to the motive power and is seen as a reduction in fuel economy to the driver. Improved catalyst materials, like the ones Strzelec’s group is working on, can reduce this fuel penalty.

When a vehicle is tested for EPA emissions standards, it is placed on a chassis dynamometer — a set of power-absorbing rollers — that allows the vehicle to be run through simulated real-world driving scenarios without moving. Recently, it has come to light that some ECUs were programmed to recognize when they were on a dynamometer (the ECU recognized the hallmarks: only two of four wheels turning, no motion in the steering wheel) and only make sure that the emissions were being met during that time. Leveraging her joint appointment with the Texas A&M Transportation Institute, Strzelec’s team uses a chassis dynamometer as well as the more relevant Portable Emission Measurement System (PEMS), when evaluating the viability of their materials. PEMS units are small, portable devices that fit in the trunk of a car and attach to the tailpipe to measure emissions in real time as the vehicle is driven on the road. In this case, the vehicle cannot tell it is being evaluated and is experiencing the same conditions that it might for the consumer, making PEMS a better method to evaluate the vehicle’s emissions.

Strzelec believes her research will lead to improvements upon the current emissions devices installed on vehicles, and perhaps the implementation of new, highly-efficient and lower cost catalytic materials.

For more information about Dr. Strzelec’s emissions research:
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Team led by Dr. Yong-Joe Kim utilizing acoustophoretic methods to detect cancer

Mechanical properties such as compressibility, size, density, and the response to sound waves, are unique for each cell in the human body. The acoustophoretic, microfluidic method utilizes the pressure generated from a resonant sound wave in a sub-millimeter fluidic device to manipulate cells to be viewed under a microscope. When excited by the pressure, the speed at which healthy and unhealthy cancerous cells move is dependent on the biophysical properties of the cell.

Dr. Yong-Joe Kim, associate professor & Pioneer Natural Resources Faculty Fellow II in the Department of Mechanical Engineering at Texas A&M University, is the director of The Acoustics & Signal Processing Laboratory (ASPL) where he and his students are working to develop an acoustophoretic, microfluidic method to detect the mechanical properties of cancer cells. Utilizing a National Science Foundation (NSF) grant, the team worked with students from the NanoBio Systems Laboratory directed by Dr. Arum Han, associate professor, in the Department of Biomedical Engineering at Texas A&M University, to develop an acoustophoretic, microfluidic manipulation device that could potentially decrease the amount of time between treatment and diagnosis for cancer patients. The device they have developed is designed to be fitted with a small camera that has the ability to film the cell trajectories at 30-50 frames per second and at approximately 100 times magnification. “The mechanical properties of the cancer cells when shaken using acoustic wave excitations in a sub-millimeter, acoustophoretic, microfluidic device, causes them to act uniquely different from healthy cells in the blood sample,” Kim said.

By identifying the mechanical properties of a particular cancer cell versus the healthy cells in the body, more specific treatment plans can be implemented, allowing for faster modification of ineffective medications. “This is different from the current cancer detection methods as we are identifying how a cancer cell is behaving based on its mechanical properties in response to a specific treatment.” When treating cancer, time is the most important variable to consider for both the patient and the doctor. Time allows doctors to increase the knowledge of the specific cancer plaguing a patient, which will hopefully allow for a more effective treatment plan. For the individual battling the cancer every second spent post diagnosis is counted as if could be the last. Cancer detection currently is done utilizing; CT scans, special X-ray tests that produce cross-sectional images of the body using X-rays, MRI’s, magnetic fields and radio waves are used to form images of the body, or FDG-PET imaging, a nuclear medicine medical imaging technique that produces a 3-D image of functional processes in the body, all of which have the potential to deliver false negative results, are costly and time consuming.

The team is interested in developing a commercially viable device with the ability to manipulate small target samples and accurately measure the mechanical properties. If successful the researchers will potentially develop a viable label-free separation technique with a lower operation cost than current methods being employed. Kim’s research has provided mechanical engineering students an interdisciplinary research opportunity combining acoustics, microfluidics, lab-on-a-chip, biology, and computational physics. Most importantly the device will significantly decrease the time spent on ineffective treatments and buy more time for the patient.

In its current state the device has not been approved for human trials, however Kim is optimistic that the team is on a path to develop a device that would drastically change the current landscape of cancer detection. “We have proven the viability for analyzing the biophysical properties of cancer cells,” said Kim. “As we continue the research we anticipate developing modeling methods that will significantly advance the design of acoustophoretic microfluidic systems.

For more information about Dr. Kim's acoustophoretic research:
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SpaceX Design Weekend at Texas A&M

Elon Musk, the CEO and CTO of SpaceX, first challenged the engineering community with his 2013 white paper to develop Hyperloop, a way to safely move people from Los Angeles to San Francisco in 30 minutes, at speeds of up to 760 mph. In June of 2015, Space-X initiated a pod design competition to spur the interest in, and development of, a prototype for the Hyperloop. Texas A&M University was chosen to host the SpaceX Hyperloop Pod Design Weekend scheduled for Jan. 29-30, 2016.

Soon after this competition was initiated, engineering students at Texas A&M University learned that Texas A&M would be offering a Hyperloop-themed interdisciplinary senior capstone design course.

At Texas A&M, senior design projects are designed to challenge students by simulating real world engineering challenges they will face in their careers. The Hyperloop, a complex engineering challenge with a simple end result, fits well into this curriculum.

Previous capstone design classes taught by Dr. William Schneider, Zachry Professor of Engineering Practice in the Department of Mechanical Engineering, have typically been NASA specific design problems that required some level of expertise that a typical Google search doesn’t provide. Schneider retired as the senior engineer from NASA after a 38-year career that included leading the team tasked with investigating the Space Shuttle Columbia accident, as well as designing equipment currently on the moon. As part of Schneider’s class, students must learn to write a needs statement, generate a function analysis from the needs statement and then combine the two to produce a design that proves they have solved the original problem.

The popularity of the Hyperloop Pod Competition project at Texas A&M allowed for multiple design studio classes dedicated to the competition. Mechanical engineering students, along with students from multiple disciplines participated in the class and were split into two studios, one led by Schneider and the other by Dr. Andrea Strzelec, assistant professor in the Department of Mechanical Engineering. Within these studio sections the students were divided into four groups that had to generate unique designs to compete against the other teams in their section developing a large idea pool that was drawn from for the selection to a single design from each studio. Students attended a lecture led by Schneider and during a design studio session the professors took on a consultant role, allowing students to receive input on their various pod designs. By facilitating an environment of competition, the professors taught students how to identify multiple solutions to engineering problems such as friction, safety and cost, and to determine the most effective processes in order to compete with their peers. Students selected and presented their best ideas to the other three groups and their section’s professor. The two studio sections completed their final selections to form a single, unified team with a strong design.

The students joined 100 teams from universities around the world, as well as six other Texas A&M sponsored teams to present the best overall design. During the SpaceX Hyperloop Pod Design Weekend, engineers converged upon the Texas A&M campus and had their pod designs evaluated for an opportunity to compete in the final competition scheduled for June 2016 in Hawthorne, California.

Important Dates:

Summer 2016: Competition weekend selected pods compete at the SpaceX hyperloop test track (Official date and location TBA)
Student Highlights

According to the 2016 U.S. News and World Report, both the undergraduate and graduate mechanical engineering programs at Texas A&M University are ranked eighth among public institutions. The mechanical engineering department at Texas A&M strives to ensure students are afforded world-class learning opportunities in classrooms and research laboratories.

Undergraduates of the department have reported expected starting salaries of $75,000, while graduate students surveyed reported expected salaries of $82,000. This is according to the Texas A&M University Career Services’ survey conducted during graduation. The national salary estimate for an occupation held by a mechanical engineer in May 2014 was $87,140 according to the U.S. Bureau of Labor statistics. Graduates of the department are continually in high demand.

Our students have opportunities to work on projects that have real-world applications such as 3-D printing, automotive emissions testing, biomechanical projects, aerospace projects, and petroleum projects that will prepare them for the various industries mechanical engineers find employment in. As the department continues to grow, it’s imperative to provide students resources to help facilitate their learning. Recently the mechanical engineering department opened a student collaboration space on the second floor of the James J. Cain ’51 Building. The space offers students resources such as multiple electrical outlets installed near couches and chairs, dry erase white boards and Wi-Fi enabled monitors.

Currently the collaborative student space has enough seating for 90 individuals, the adjoining classroom is rated for 71 individuals and when completed the project presentation space will have enough room for students to present industry sponsored projects for classes such as Mechanical Engineering 401, Intro to Mechanical Engineering Design, 402, Intermediate Design, or 404, Engineering Laboratory.

“So far I’ve really enjoyed the student space’s white boards more than anything else, they really help group collaboration and we can interact and learn from each other,” said Walker Wiggins, a junior mechanical engineering major.
Jessica Gallegos

Jessica Gallegos, a senior in the Department of Mechanical Engineering at Texas A&M University, credits her success in the program to her determination to excel and overcome no matter what the odds against her may be. In high school she excelled in calculus and physics and knew she wanted a career where she could combine the two concentrations in a way that she could work to help solve the world’s challenges. Engineering wasn’t something many people in her high school were even thinking about choosing as a career, but Gallegos felt being different was a necessity in order to separate her from the crowd. Gallegos was the salutatorian of class at a south Dallas high school, and she immediately knew she would have to push the societal norms around her to attain the level of success she wanted. “When I was looking at colleges and majors, I knew I wanted a challenge that would make me think outside the box and push me to levels I didn’t think possible,” Gallegos said. The department’s curriculum is designed to ensure that students are prepared to approach the challenges they will be tasked to solve in their careers. Gallegos has not only learned the curriculum, but she has set the standard for other students she has worked with on projects. “Other students have learned in working with me that I’m dedicated almost to a maddening level to succeeding in this program,” said Gallegos. “I know that I have to put in the extra hours needed. I’m going to call email or text them to keep pushing because to me, failure is not an option.”

Gallegos has excelled in the program and has maintained a 4.0 GPA. She is thankful for all she has learned in the program and believes without a doubt her decision to be different from the start was the best decision she could have made. “Knowing what I do in my career could potentially have a positive impact on someone’s life will always be the motivation I need to continue to challenge myself to be better tomorrow than I was today,” said Gallegos.
Adrian Gomez, a senior in the Department of Mechanical Engineering at Texas A&M University, chose Texas A&M to pursue his degree because he felt the department’s faculty would provide him with a personable learning environment. After nearly completing his Bachelor of Science degree in mechanical engineering, he believes the department has provided him with a broad range of engineering skills and knowledge, which will benefit him when he begins his engineering career.

Gomez grew up in Montgomery, Texas, a small town in south Texas where his parents and teachers instilled the value and importance of an education. Growing up he remembers being fascinated with exploring and figuring out how things worked. His high school physics teacher challenged him to realize his potential to excel. By nurturing those interests, his family and his teachers helped him realize mechanical engineering was an attainable career path. After visiting other mechanical engineering departments, Gomez knew he had found a home at Texas A&M after five minutes in the James J. Cain ’51 building. “I chose Texas A&M mechanical engineering because I knew it would give me the broad knowledge base so that I could explore my fascination with taking objects apart and seeing how things work,” he said. “I also chose it because of the tight-knit culture that the mechanical engineering department facilitates through hosting numerous student events and faculty sponsored learning activities outside of the classroom.”

Gomez volunteers for a multitude of student organizations. He has been a member of the Mechanical Engineering Leadership Council (MELC), the Society of Asian Scientists and Engineers (SASE) and the American Society of Mechanical Engineers (ASME).
Ashley Helferich

Ashley Helferich, a senior in the Department of Mechanical Engineering at Texas A&M University, chose mechanical engineering at Texas A&M because she believes the university has one of the best engineering programs in the nation. Helferich, who is from Odessa, Texas, visited Texas A&M prior to her senior year of high school and immediately felt at home. Since then she has taken advantage of every opportunity that she has been given during her time in the department.

It takes an outstanding student to not only excel in this program, but to challenge it, add to it and make it better. Helferich is that outstanding student. Not only has she been academically successful, but she has been actively involved in the creation and leadership of Pi Tau Sigma’s MEEN Ambassadors Program and MEEN Peer tutoring program. These programs work with students to aid them in their mechanical engineering endeavors.

Helferich has been involved in American Society of Mechanical Engineers and Pi Tau Sigma Mechanical Engineering Honor Society, where she is currently a public relations officer. Pi Tau Sigma is a student organization that strives to prepare students for success in the engineering profession. Her contribution to this organization has been significant. In addition to helping facilitate the creation of the MEEN Ambassadors Program and the MEEN Peer tutoring program, she is also the current co-coordinator of the tutoring Program. “I am passionate about helping young engineers succeed and find joy in the engineering profession,” said Helferich. “I feel like I have been able to do that through the mechanical engineering department at Texas A&M.”
June Saichua, a graduate student in the Department of Mechanical Engineering at Texas A&M University, began her master’s program with a unique perspective. The year before she received her undergraduate degree, Saichua interned for Texas Instruments and was hired upon graduating.

“I think the experience that I have really helped define my path in grad school because I knew what is expected of me in an industrial setting and I was also able to gain a better sense of direction for my career growth,” she said. “I am most excited to have increased my knowledge base and am eager to be able to apply my skills in my future career. I look forward to being presented with technical problems, having to generate possible solutions, analyzing and testing the solutions and delivering quality results.”

Saichua believes that in recent years the engineering profession has drastically improved in regard to diversity.

“All single person has to work hard in engineering,” said Saichua. “Engineering is about the quality of your work and how much effort you put in. Gender does not dictate success.”

Being a woman in engineering is an honor for Saichua. She believes the playing field continues to become more level and is honored to experience the change.

Saichua would like to start her career in design and analysis of mechanical structures, preferably sub-sea equipment for an oil and gas company. She believes that the mechanical engineering department has helped her become a well-rounded engineer who can effectively communicate and innovate.

“When I graduate I hope to fulfill both goals as an engineer and solve problems in an innovative way,” she said.
Trey Torno

Trey Torno, a senior in the Department of Mechanical Engineering at Texas A&M University, believes in the importance of selfless service. He believes his degree will give him the broadest career options to effect change in someone’s life. Torno is currently fulfilling his desire to help others by mentoring underclassmen through the MEEN Ambassador program. “My older brother mentored me when I first started my degree,” said Torno. “As an ambassador, I get to be a mentor to underclassmen that may not have an older brother or friend to ask questions.”

Another aspect of the program Torno has enjoyed is the opportunity to conduct research with faculty members as an undergraduate. Torno is part of the PHAse Transformation Engineering (PHATE) research group directed by Dr. Patrick Shamberger, assistant professor in the Department of Material Science and Engineering at Texas A&M. PHATE is currently researching shape memory alloys.

“I’m hopeful that our findings can be combined with other research to develop more efficient shape memory alloys.” said Torno. “The best part of the research was the opportunity to be mentored by Dr. Shamberger. I learned how important it is for cross-disciplinary research in engineering.”

Torno believes the mechanical engineering department at Texas A&M gave him the tools he will need to reach his career goal to work in the medical device industry. “In whatever niche I find myself in, I want to help drive efficiency and innovation to benefit the patient,” he said. “I’m excited to potentially design something that would help improve someone’s quality of life.”

Torno has learned quite a bit and is looking forward to beginning his engineering career. “I am grateful for everything the department has taught me and I am confident it’s only been possible for me to grow how I have because of my faith in God,” said Torno.
Joanna Tsenn, Ph.D. student in the Department of Mechanical Engineering at Texas A&M University, knows that mechanical engineering is more than gears and motors. However, choosing such a broad degree path has proven difficult to explain the many potential career opportunities she has upon graduation.

She is interested in design, particularly the development of algorithms and methods that can help designers produce innovative design solutions.

“I enjoy the more human and cognitive design side of mechanical engineering rather than the core technical side,” said Tsenn. “I also enjoy working with materials, although it has been interesting trying to merge my interest in the two aspects, which has made it possible for me to pursue a unique research path.”

Being able to be flexible in her studies has been important to Tsenn. A few years into her research, Dr. Daniel McAdams, professor and graduate program director in mechanical engineering, helped Tsenn change her dissertation topic to one more aligned with her interest.

“I wanted to look at the design of materials, and I was given the time to learn more about the field and present an alternative topic,” said Tsenn. “I greatly appreciate the flexibility the department gave me. Since changing I now take ownership of my research and it’s something I’m proud of.”

The Department of Mechanical Engineering provided Tsenn the opportunity to take part in real world projects as well as a teaching fellowship. Tsenn believes the department has prepared her for a future in industry or academia.

“Whatever I do in my career I know this program has given me the tools I’ll need to make someone else’s life better through engineering,” she said.
Student Ambassadors

The Undergraduate Advising Office in the Department of Mechanical Engineering at Texas A&M University has launched a new initiative aimed at student outreach and engagement. The Student Ambassador program was created last year and is managed by the Mechanical Engineering Leadership Council (MELC), in conjunction with the Undergraduate Advising Office.

The ambassadors are hired as student employees, supervised by the advising office and are upper-level, undergraduate students who are passionate about promoting the field of mechanical engineering and sharing their experiences at Texas A&M. Each ambassador holds walk-in hours that have been set up to accommodate prospective students and their families seeking information about the department. “The intention of the program is to provide a more personable experience to individuals who may otherwise feel lost or overwhelmed with information,” said Rachal Thomassie, Senior Academic Advisor I.

Ambassadors must be mechanical engineering students who have completed their sophomore level coursework and they must maintain a 3.0 GPA or higher. The program allows ambassadors to speak from an experienced perspective on the department’s expectations for students. Ambassadors answer a multitude of questions prospective students or freshman may have including: what jobs can a mechanical engineer do; is a study-abroad/co-op/internship worth the time; and does mechanical engineering get easier? “By having students available to answer questions, the program reduces the load on the mechanical engineering advisors,” said former student ambassador Katherine Letourneau. “We sought to answer questions from the perspective that many students are looking for and ambassadors share their passion and advice with mechanical engineering students.”

Peer mentoring walk-in hours

Spring Schedule:
Monday - Thursday
10am - noon & 2-4pm
Location: 200 MEOB
Email: MEEN-Ambassador@tamu.edu

For more information: engineering.tamu.edu/25520.aspx
Student Organizations

ASME
The ASME (American Society of Mechanical Engineers) at Texas A&M University is the second largest ASME student chapter in the world. ASME hosts weekly meetings where industry representatives come and present information about their companies and provide career advice to the student engineers. MEEN Girls was established as part of ASME to foster a community among females interested in the field of mechanical engineering while educating participants on the benefits of a degree in mechanical engineering.

For more information: maroonlink.tamu.edu/organization/asme

ASHRAE
ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) was established in 1959. The Texas A&M Branch of the Houston Chapter of ASHRAE aids in the continuing education of students in the Colleges of Engineering and Architecture in Heating Ventilation and Air Conditioning (HVAC).

For more information: ashrae.tamu.edu

Materials Advantage
The Material Advantage Student Chapter at Texas A&M promotes increasing knowledge of materials science and engineering and all its branches, assists its members in their academic endeavors, and professional pride in their chosen life work.

For more information: maroonlink.tamu.edu/organization/ma

MEGSO
The Mechanical Engineering Graduate Student Organization (MEGSO), promotes positive communication within the Mechanical Engineering Graduate Program at Texas A&M University.

For more information: maroonlink.tamu.edu/organization/megso

Pi Tau Sigma
The Pi Tau Sigma Honor Society recognizes the outstanding achievements of undergraduate students in mechanical engineering. The Texas A&M chapter initiates 10 to 20 new members a semester.

For more information: maroonlink.tamu.edu/organization/pts

SAE
SAE (Society of Automotive Engineers) is an educational and scientific organization dedicated to advancing mobility technology to better serve humanity. The Texas A&M student chapter of SAE provides opportunities for students to learn about transportation industry challenges.

For more information: texasaggieracing.com
2015 Scholarship and Fellowship Recipients

The Department of Mechanical Engineering held its 2015 Donor Recognition & Scholarship/Fellowship Banquet on Oct. 15. The banquet is a time for donors to be recognized for their contributions and continued support of the department’s mission. During the banquet the mechanical engineering department highlights and thanks its students who have excelled in the program and represent its future. Below are this year’s scholarship and fellowship recipients. More photos from the event can be found on the department’s Facebook and Flickr accounts.

Gladys & William Allison ’44 Scholarship
Matthew Martinez
Patrice Odenborg
Emma Partridge
Elissa Richard
Arturo Sobarzo

William T. Asbill ’66 Memorial Scholarship
Jordan Brito
Caroline Fushino
Makaylee Hinds
Alexander Kirkland
Jonathan Markcity
Sarah McDonald
Madyson Muscarello
Dustin V. Nguyen
Helen Schmidt
Laura J. Upleby

ASME Golf Scholarship
Kayla Barden
Hossein Davoudi
Rafael Dugarte Zepa
Caleb Williams

Edmond I. Bailey ’66 Memorial Scholarship
Kelly Mullen
Meredith Spradlin

Betchel Scholarship
Cailin O Connell
Vennela Pothugunta

Alison J. Berry ’76 Scholarship
Courtney Shrode
Tess Volanski

Henry J. Bettencourt ’49 Scholarship
Daniel J. Brubaker

British Petroleum Scholarship
Matthew Runyon
Courtney Toler

Mr. & Mrs. Douglas Broussard ’44 Scholarship
Kaci E. Dove
Mitchell Matthews
James McCabe
Clare McDouggall
Caitlyn Talbert

Clayton T. Burger ’00 Scholarship
Gabriel Avila
Valentina Senano

Lou & C.C. Burton ’42 Scholarship
Syeda Ada
Sima Ahmadizadyek

Troy P. Anora
Gbotemi Balogun
Garrison Barrilleaux
Chauncer Baughman
Sudiksha Bhardari
Colton D. Brehm
Evelyn Brower
Troy Carreon
Cody Chalmers
Victoria De Bacco
Deepak Dhankani
Jose M. Duran
Levi French
Casey Gjolberg
Daniela Gomez Sierra
Richard Green
Troy Guichard
Brent Gutierrez
Terrell Hemphill
Kristian Hernandez
Fredy Herrera
Tyler Hoyt
Xavier Huerta-San Juan
Ashlynn N. Karstrom
Phillip Klingesmith
Veronica A. Knisley
Seungjun Lee
Hyongtae Lee
Jared Lee
Sarah Lemay
Qijun Liu
Jacob Lozano
Benjamin Lyons
Tyler Marr
Ian J. McLeod
Patrick McNeeley
Luis Mendez Alva
Yasushi Mizuno
Tyler Moore
Reed Morgan
Joshua Mosqueda
Emmanuel Nwoye
Daniela Ocada
Jesse O’Connor
Matthew Pacholczuk
Meet Patel
Ryan Penney
Holly Petrie
Jevon Phandi
Sahil Rama
Patricio Ramirez Alanis
Shyam Ravichandran
Felipe Reyes Miftajov

Alberto Reyes-Marquez
Jonathan Rickert
Richardo Rojas
Zane Rudd
Tyler Smith
Andre Tayar
Manjil Thapa Magar
Julia Thomet
Uday Toodi
Oluwasegun Tytler
Joshua A. Vandervort
Giancarlo Vitale Heider
Joseph Walker
Clint Weaver
Walker Wiggins
Sydney Williams
Kyong Windle
Ye Xie
Jeffrey L. Zhao

Chevron Scholarship
Hernan Espinosa
Keaton Hruezek
Katie Walker
Zhuruan Xiao

Vandiver L. Childs III, Captain

USAF, Memorial Scholarship
David McDermott

Cockrell-Freeport Scholarship
Fengyi Li

Aaron Cohen ’52 Scholarship
Kenton Cozart
Jaret Villarreal

Jeannette & Robert B.
Conn ’51 Scholarship
Matthew Villarreal

ConocoPhillips Scholarship
Tatyana Atherley
Zachary Beck
Jose Bendana
Faye Davidson
Peter Johnson
Kyle Nielsen

Don P. Dixon ’57 & Sons Scholarship
Joshua Duke
Daniel Joaquín

DOW Aggies Scholarship
Justin Feldt

Billie G. Earnheart ’43
Memorial Scholarship
Elizabeth Hill
Emily Scamardo

Diane P. Thomas E. Fisher ’66 Scholarship
Rohit Nasa

Flour Scholarship
Natalie Mitchell
Manuel Rodriguez

FMC Scholarship
Michael Moellering

Morris E. Foster ’56 Scholarship
Meagan Gillar
Veronica Kierig

Marie & James H. Galloway,
Jr. ’29 Scholarship
Kevin Swinney

Bobbie & Louis Gee ’44
Endowed Scholarship
Robert Strawhorn
Oscar Zamaron

Mary Ann & Gordon Gibson
’55 Scholarship
Benjamin Jackson
Haylee Young

Jennifer ’93 & Scott ’93 Gill Scholarship
Kelsey Fieseler
Joly Velasquez

Eva C. & Ernst H. Gras ’44 Memorial Scholarship
Hannah Ahart
Moyosoreoluwa Ajepe
Meghan Bates
Mitchell Burden
Rita Fuentes
Christina Gleason
Katharyn Grant
Anupriya Gupta
Monica Hanna
Anne Lowak
Jenna Lusk
Audrey Munson
Rachel Pokorney
Morgan Riffe
Kristen Rosenthal
A.W. Guill ’41 Endowed Scholarship
Drake Anthony
Austin Helmreich

Janice & William Hanna
’58 Scholarship
Erin Barre
Tyler Buffington
William Bryan ’47 & Frances Thomas McDaniel Memorial Scholarship
Andres Crucotta Nieto
Joe C. Merritt ’63 Endowed Scholarship
Amanda D. Cheek
Coleman Fincher
Dominic Jarecki
Victoria Nguyen
Rebecca Novak
Felipe Reyes Miftajov
Alejandra Rivera
Felix Sierra
John Williams
Edward R. Mrozik Scholarship
Jody Vu
Ginny & Emmitt J. Nelson ’51 Scholarship
Peter Wong
Thomas Christopher O’Leary ’12 Memorial Scholarship
John Theiss
Janet & Thomas Paul ’62 Scholarship
Adrian Alba
Timothy Austin
Christopher Bornskie
Mario Heredia Velasquez
William Knape
Parker West
Pioneer Natural Resources Scholarship
Jon Elorriaga
Ryan Gautier
Adrian Gomez
Quoc Huynh
Christopher Kroupa
Alberto Lopez
Teryn McGinness
Taylor Messinger
Brian Ramirez
Austin Schexnaider
K.R. Ramamani Undergraduate Thesis Award
Tyler Buffington
The Roden Family Scholarship
Christian Alejandro
Hillary Angele
Anna Church
Justin T. Coe
Elizabeth Copper
Megan Dawkins
Ameeti Kaia
Christina Meaders
Sylvia Titus
Joanne Yoo
San Antonio Endowed Scholarship
Mozheng Hu
Angela M. Olinger
Taylor C. Redwine
Pedro V. Riojas
Ruby Lee & George Sandars ’60 Scholarship
Willie D. Caraway
David L. Sanders ’90 Scholarship
Reynaldo Chavez
Eleanor A. & Thaddeus H. Sandford ’62 Scholarship
Brandon Jones
Trenton Seely
Linda & Ralph Schmidt ’63 Scholarship
Stephen Allen
John Andrews
Mary Jo & Donald R. Schroeter ’63 Scholarship
Marcus Real
Eric Redondo
Mollie & Jim Schulze ’63 Scholarship
Gabrielle A. Adams
Danielle E. Agler
Dr. Clifford M. Simmang ’36 Memorial Scholarship
Frida K. Rivera
Keith R. Slaughter ’49 Scholarship
Bryan T. Conlee
Kenneth C. Reihart
Alexis I. Urquiza
Jay H. Stafford ’48 Scholarship
Michael Alvarez
Jarrett Battistini
Andrew Bradley
Caroline Brooks
Mitchell Carson
Caroline Day
Christian DeBuys
Augustus Ellis
Jean-Claude Faa
Francisco Falcon
Connor Fear
Lars Frederikse
Megan Gardner
Mauricio Gutierrez
Anthony Hresko
Tanner Kirk
Johanna Knight
Gabrielle Krzysiak
Blake Leiker
Victor Leon
Dee & Ted Stephens ’52 Scholarship
Kyle Wiggs
Emil ’68 and Liz Swize Scholarship
Jiayao “Amy” Li
Fernando H. Vazquez
Sharon and Joel Talley ’83 Scholarship
Kyle R. Beurlot
Cherish DeBlois
Shelby Gagliardi
Hudson Quesada
Gladys P. and David M. Wilks ’69 Scholarship
Jerod Smith
Emily A. Tasker
Emil Buhler Aerodynamic Analog Fellowship
Nathan Eikhteim
Michaela Fasano
Don Vu
Vincent Lau
Arnab Nanda
Trevor Terrill
Baker Engineering & Risk/Quentin & Jana Baker Fellowship
Darren Law
Sally and Ray Bowen ’58 Fellowship
Mitchell Allain
Charles Crawford ’19 Fellowship
Md. Nafiz Hossain Khan Chowdhury
Doe Young Hur
Xiao Kang
Chong Ke
Mengying Liu
Tobias Neumann
Seshendra Palakurthy
William E. Dark ’54 Graduate Fellowship
Austin Rogers
Joanna Tsenn
Dwight Look College of Engineering Graduate Fellowship
Samuel Friedman
Timothy Kroeger
Sammy Meleika
Rachel Rebagay
Warren Rooney
Kelsey Rollag
Linda D. & Joe R. Fowler ’68 Fellowship
Shelby Hopkins
Alyssa John
Joe Mejía
Jonathan Lai
Morgan O’Neil
Austin Rogers
Kozik Hervey Fellowship
Zachary Branigan
Eddie & Joe Mattei Graduate Fellowship
Dickens Law
Kevin Ly
Ralph E. James Endowed Fellowship
Tanja Baumann
Janet and Thomas Paul ’62 Graduate Fellowship
Jeffrey Shive
Aruna and J.N. Reddy Distinguished Fellow in Computational Mechanics
Namhee Kim
Harsh Tamakuwala
Oscar S. Wyatt Graduate Fellowship
Wooram Kim
Seyed Mohsen Mehrizan Nowruzpour
Helping students excel in life means more than success in the classroom to Doug Beck, senior undergraduate academic advisor II in the Department of Mechanical Engineering at Texas A&M University. Beck joined the department in 2010 after leaving the Department of Mechanical Engineering at Iowa State University where he was the director of student services.

Beck believes a key component of student success in the program depends on an advisor’s ability to build a positive rapport with students allowing for open honest communication. Beck helps students deal with issues such as what courses to take, co-op and internship opportunities or life after graduation. “I work to resolve student issues at the individual level,” Beck said. “I interact with students during a pivotal period in their lives. My advice has to give them the tools they will need to succeed and make positive life choices.”

Each semester the Department of Mechanical Engineering enrolls around 1,100 undergraduate students and awards between 200 and 250 Bachelor of Science degrees. Beck and the other members of the advising staff are typically the first interaction prospective students will have with the department. Through outreach and engagement activities the advising staff works to engage prospective students and explain how the Department of Mechanical Engineering will help get them reach their career goals. “Mechanical engineering is a very broad degree,” Beck said. “It allows individuals various engineering career options when they graduate from the program. The department has a strong reputation of graduating individuals who have gone into their careers and immediately worked to resolve complex engineering challenges.”

Beck’s 16-year advising career has allowed him to spend many hours mentoring, listening and helping individuals reach their full potential. “I hope the former students I’ve advised throughout my career retain some of the lessons I had the opportunity to teach them,” Beck said. “There is no greater satisfaction for me than knowing I have helped someone be successful in their life.”
Faculty Awards

N.K. Anand,
Executive Associate Dean of Engineering, James M. and Ada Sutton Forsyth Professor, Associate Director of the Texas A&M Engineering Experiment Station, was named Regents Professor, Texas A&M University System, 2015

Dara Childs,
Leland T. Jordan Chair, Regents Professor and Director of Turbomachinery Laboratory, received the Society of Automotive Engineers, Cliff Garrett Award, 2015

Jaime Grunlan,
Linda & Ralph Schmidt ’68 Professor, received the Dean of Engineering Excellence Award from Dwight Look College of Engineering, and ECRP award, Evonik Industries, 2015

Tim Jacobs,
Undergraduate Program Director and Associate Professor, received the Steve Brauer, Jr. ’02 Fellowship, The Eppright University Professorship of Undergraduate Teaching Excellence, and a Certification of Appreciation from ASME, 2015

Daniel McAdams,
Graduate Program Director and Professor, received a Dean’s Fellow Award, The Herbert H. Richardson Faculty Fellow Award, and an Outstanding Faculty Contribution Award, 2015

Partha Mukherjee,
Assistant Professor, received the Young Leaders Professional Development Award, the Young Faculty Travel Grant Award, and College on Multiscale Computational Modeling of Materials for Energy Applications Award, 2015

Ozden Ochoa,
TEES Research Professor, became an International Committee on Composite Materials (ICCM) World Fellow Life Member, 2015

Prabhakar Pagilla,
TEES Professor, received a TEES Professorship, 2015

Alan Palazzolo,
TEES Professor, received a TEES Professorship, 2015

J.N. Reddy,
Oscar S. Wyatt Jr. Chair, Regents Professor, Distinguished Professor, elected into National Academy of Engineering

Sivakumar Rathinam,
Associate Professor, received a best conference paper award at the International Conference on Unmanned Aircraft Systems (ICUAS), 2015

Andrea Strzelec,
Assistant Professor, received the Peggy L. and Charles L. Brittan ’65 teaching award for Outstanding Undergraduate Teaching and the Ralph R. Teetor Educational Award for Undergraduate Teaching

Staff Awards

Nicole Latham,
Administrative Assistant, received the James J. Cain Outstanding Staff award.

Laura Rueda,
Senior Office Associate, received the James J. Cain Staff Excellence award.

Rachel Thomassie,
Senior Academic Advisor, received the James J. Cain Outstanding Staff award.
The mechanical engineering department works diligently to ensure its students understand the fundamentals and principles of engineering they will be tasked with knowing as they transition into their professional careers. To foster idea exchanges between academia and the industries in which its students work, department leadership and key faculty members meet bi-annually with the mechanical engineering department’s Industrial Advisory Council (IAC), which is comprised of former students and industrial leaders who have proven track records with various industries.

The IAC consists of 30 to 35 former students who volunteer their time to keep the department informed of the challenges they face each day in their respective fields. Members of the IAC are selected for their leadership, accomplishments and willingness to support the mission of the council, which is to support the department and mechanical engineering students. Quentin Baker, Industrial Advisory Council chair said, “The IAC is a valuable asset for the department, as our mission is to provide a real world connection to the challenges the engineering profession is facing. The IAC proactively supports the department in research networking and resource development. During our meetings we enjoy interacting with mechanical engineering students, and we work diligently to provide support to student engineering organizations that desire industrial sponsorship.”

During the event the council breaks out into four sub-committees to discuss subjects such as current student development, faculty and industrial partnerships, current goals of the department and former student engagement. Brenda Hightower, IAC member, said, “We do a really good job of reaching out to our former students and keeping them engaged through the foundation. It’s our goal in the IAC to improve on the relationship with all of our mechanical engineering graduates regardless of if they graduated in 2015 or 1915.”

As part of the IAC’s bi-annual meetings Dr. Andreas Polycarpou, head of the Department of Mechanical Engineering, outlines the department’s current goals and interacts with the members throughout the day. “Interacting with the IAC allows me to ensure our department is truly preparing students for the challenges they will face in their engineering professions,” said Polycarpou. “It’s also a time for us to highlight the achievements and successes of our faculty, staff and students as we strive to be a preeminent mechanical engineering department.”

The IAC meeting concluded with a tour of the new student learning space recently opened in the James J. Cain ’51 Building. The space offers students resources such as multiple electrical outlets installed near couches and chairs, dry erase white boards and Wi-Fi enabled monitors. When the space is completed the project presentation space will have enough room for students to present industrial-sponsored projects for classes such as Mechanical Engineering 401, Intro to Mechanical Engineering Design, 402, Intermediate Design, or 404, Engineering Laboratory. “It was imperative we show the IAC members this space,” Polycarpou said. “This is a phenomenal example of the department understanding students must have adequate space to collaborate on and present their engineering projects to their industrial sponsors.”
Industrial Advisory Council Members

Randy Armstrong  
Raytheon Company

Russell Bayh III  
Halliburton Company

Larry Bloomquist  
Mechanical Reps, Inc.

Steve Brauer  
Hunter Engineering Company

Tom Bundy  
Conoco Phillips (Retired)

Cary Chenanda  
Cummins, Inc.

H. Craig Clark  
Wishbone Energy Partners

Wade Cleary  
Cleary Zimmermann Engineers

Dennis Corkran  
Jones Energy

David Costello  
M&H Enterprises, Inc.

Don P. Dixon  
Retired

Craig Fox  
Apollo Management

Jim Havelka  
ASL Healthcare

Charlie Havis  
Lockheed Martin Aeronautics

Sandeep Kishan  
Eastern Research Group

Craig Kuiper  
Pioneer Natural Resources

Kathy Lynn  
Sumitomo Mitsui Banking Corporation

Harold McGowen III  
Navidad Resources, Inc.

Kenneth Meline  
DFW Consulting Group, Inc.

Jack Miller  
Stress Engineering, Services, Inc.

Gary Mitchell  
Anadarko Petroleum Corporation

Arnold Muysendondt  
Sandia National Lab

Andrew Nelson  
Lisam Systems

Thomas Roesner  
Cameron

Mark Santen  
The Boeing Company

Lance Simmang  
The Dow Chemical Company

William Sims  
Accent Wire

Michael Smith  
Bell Helicopter

Scott Spreen  
NEC

Allan Taylor  
Wood Group Mustang

Clay Vaughn  
ExxonMobil Development Co.

Larry Wall  
NextEra Energy

Denzil West  
Reliance Energy

Gary Young  
Tymco, Inc.
Friends and colleagues of James J. Cain ’51 gathered to remember him as a great friend and benefactor of Texas A&M University during a memorial service held to honor the Texas A&M graduate. Cain’s long-term commitment to the mechanical engineering department included over 30 years of gifts, and contributions. His Estate Gift to the mechanical engineering department will be transformative for mechanical engineering students and faculty. Cain’s gifts have also benefited the Corps of Cadets, the biomedical engineering department and the President’s Endowed Scholarship Program.

Cain was the youngest of five children and was born and raised in Sherman, Texas. After completing high school, Cain attended Texas A&M and received a degree in mechanical engineering. During his long and distinguished career of more than 35 years at Mobil Oil, Cain was renowned for his desire to mentor students and faculty at Texas A&M. He took great pride in being a part of Mobil’s college recruiting team, often filling positions with Aggie graduates. Not interested in seeking his own recognition, Cain generously gave the students and faculty of Texas A&M his time, knowledge, expertise and financial support. As a result, throughout his 35 years as a mechanical engineer, Cain won almost every award Texas A&M bestows on distinguished former students. His longstanding commitment to Texas A&M included his support of The Association of Former Students for over 30 years, his Silver Membership of the Forsyth Heritage Society which recognizes friends and alumni of Texas A&M for their generous support.

As students earn their mechanical engineering degrees at Texas A&M, they will spend hours in the study spaces, laboratories and lecture facilities housed in the building which bears his name — a fitting legacy and most appropriate honor. The Engineering Physics Laboratory building, built in 1986, supports teaching and research activities associated with the departments of mechanical engineering and physics. The building is home to 12 mechanical engineering and 11 physics laboratories; 17 classrooms for general university classes; and the ASME student chapter office.
Fowler Distinguished Lecture Series April 15, 2015

Soft 2-D and 3-D Electronic Systems for the Human Body

Dr. John A. Rogers obtained his Ph.D. in physical chemistry in 1995. He currently holds the Swanlund Chair, the highest chaired position at the University of Illinois at Urbana-Champaign. Potential applications of his research range from continuous physiological monitors, to minimally invasive surgical implements to unique tools for neuroscience.

Rogers’ lecture described principles in mechanics that allow for ‘epidermal’ electronics with applications in distributed healthcare and clinical diagnostics, and 3-D mesoscale electronic networks for use in active cell/tissue scaffolds.

Turbomachinery Distinguished Lecture Series October 7, 2015

Observed Rotordynamic Phenomena in Aircraft Gas Turbine Development

Dr. Frederic Ehrich’s professional career has been dedicated to aircraft gas turbine technology with particular focus on rotordynamics. He has worked for companies such as Westinghouse, Rolls Royce and General Electric, where he retired in 1994. He is currently a senior lecturer at the MIT/Gas Turbine Laboratory.

Ehrich lectured on observations, analysis and understanding of out-of-the-ordinary rotordynamic phenomena (including several instabilities and nonlinear responses) observed in aircraft gas turbine engines and other high-speed rotating machinery over the course of his career in the design and development of aircraft gas turbine engines.

Fowler Distinguished Lecture Series October 28, 2015

3-D Printing, Additive Manufacturing, and Solid Freeform Fabrication: The Technologies of the Past, Present and Future

Dr. Joseph J. Beaman pioneered Solid Freeform Fabrication (SFF), also called 3-D printing in the mid-1980s, and continues to make contributions to the field. He was the first academic researcher in the field and he led a group of students and colleagues at The University of Texas at Austin that developed Selective Laser Sintering (SLS), which is now the most successful 3-D printing process for direct production of high-value, functional parts.

During his lecture Beaman discussed 3-D printing, solid freeform fabrication, additive manufacturing and the history of the process control for the technologies.
Donor Recognition

Jeremy Quast
Director of Development
Office: MEOB 111
Phone: 979.862.1517
Email: jquast@txamfoundation.com

Annette Forst
Assistant Director of Development
Office: MEOB 112
Phone: 979.862.7837
Email: aforst@txamfoundation.com

New Student Gifts
Kazim Akhtar ’74 Malala Yousafzai Scholarship in Mechanical Engineering
William E. Dark ’54 Graduate Fellowship
Kathy M. Lynn ’79 Scholarship in Mechanical Engineering
Wanda and Ken Roden Scholarship
Dolores ’85 and Mark Kelly ’83 Scholarship
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