Welcome to Mechanical Engineering

A World-Class Education
The Department of Mechanical Engineering (ME) at The University of Texas at Austin (UT) is one of the premier mechanical engineering departments in the country, and the university is among the top research institutions in the world. The Times of London ranked UT Austin 15th internationally and second in the United States among all research universities. Our graduates enjoy leadership roles in engineering, business, medicine, space, government and education. The department embraces the university’s core values — learning, discovery, freedom, leadership, individual opportunity, and responsibility.

History of the Department
Engineering was established as a discipline on campus in 1895, and the School of Mechanical Engineering (now a department) was founded in 1913. Today the department is home to approximately 1,000 undergraduate students, 340 graduate students, 69 faculty members and 30+ staff members. ME is housed in a 10-story, 137,000-square-foot building on Dean Keeton Street. Additional research facilities are located at the Pickle Research Campus in North Austin.

Research Overview
The undergraduate core curriculum has stayed relatively consistent since the department’s inception, but the research and careers of current graduates and faculty have changed dramatically. The main research areas (also known as Thrusts) are Clean Energy, Advanced Manufacturing, Nano- and Micro-Scale Engineering, and Mechanical Systems Intelligence. Many of our faculty members are world-renowned research scientists. Their leadership provides students an unparalleled opportunity to learn and make valuable contributions to science and industry.

The Future Is Yours
This is an exciting time to be studying mechanical engineering. Today’s global challenges are certainly daunting, and solving them is something many people cannot even begin to fathom. However, they present great opportunities for the next generation of engineers who want to make a difference in the lives of millions worldwide. Mechanical engineering is about developing solutions to everyday problems and using energy wisely to improve the lives of people around the globe. It is a challenging discipline that offers many rewards. Engineering is not easy work, but it is tremendously important and empowering.

Find Out More
Read more about the stories featured in this booklet on the Mechanical Engineering Web site. See the slideshow or link to the long description (under the slideshow on the home page) to search or view them. http://www.me.utexas.edu.

You can also keep up with current news on the department’s Facebook fan page. Search Department of Mechanical Engineering, The University of Texas at Austin.
Below: UT students compete in the annual Rube Goldberg Machine Contest, named after an American cartoonist and engineer who depicted complex inventions, laboriously contrived to perform simple operations. ME student Tyler Luce, prepares his winning Jurassic Park machine to perform 39 steps flawlessly, ending by turning on a light bulb.

Left: Engineering students compete in a games day during E-Week.
An Industry Overview

No profession unleashes the spirit of innovation like engineering. Mechanical engineers are often described as the “general practitioners” of engineering because the scope of the profession is so diverse. From research to real-world applications, engineers improve our lives by creating bold new solutions that connect science to life in unexpected, forward-thinking ways. Few professions have such a direct and positive effect on people’s everyday lives.

Mechanical engineering involves the design and implementation of various kinds of mechanical systems and technologies. Currently, green energy solutions make up the broadest area of departmental research. UT ME researchers are studying solar and nuclear energy, lithium-ion battery design and production, fuel-efficient engines, wind turbine design and algae oil as a possible environmentally safe biofuel. But that’s not all, we also have teams working in nano- and micro-scale engineering, bio-medical laser surgery, biomechanics and the development of prosthetics for amputees and post-stroke patients.

Getting Started Early

Students desiring a career in mechanical engineering may want to start preparing for it while still in high school by taking as many math and science courses as their school offers. Most of our students have taken either pre-calculus or calculus before starting their college career.

Mechanical engineering students are some of the hardest-working students on campus. Many held leadership roles in high school, and that desire to lead and contribute continues to define who they are. ME students share bragging rights to one of the university’s most rigorous courses of study, earning great respect and prestige from peers, industry and the community at large.

Below: Graduate and undergraduate students on the UT Austin Challenge X team, supervised by Professor Ron Matthews, participated in a hybrid car design contest sponsored by GM. They doubled the standard Equinox’s mileage in their final design presented at the 2008 competition.
Below: ME graduate student Shilpa Gulati, who specializes in artificial intelligence, worked as the software engineer for an Antarctic expedition to map the topography of an underground lake. She is standing in front of the submarine robot at a testing site. The robot went under the ice in Lake Bonney, Antarctica. In the future, the research will be used by NASA to map underwater terrain on other planets.
The Competitive Advantage of Your UT ME Degree

High Admissions Standards and Academic Rankings
In the 2008-09 academic year, all ME undergraduate students were in the top 7 percent of their high school graduating class. The median score on the two-part (Math and English) SAT test was a 1350. UT ME is the only top 10 department in the southwest according to U.S. News and World Report. The next closest top 10 mechanical engineering department is located over 900 miles from Austin.

The Price of Knowledge
The University of Texas at Austin makes a world-class education possible for Texas residents. Some institutions are very expensive, but the graduates do not always achieve an increased advantage in the workforce. Conversely, in-state residents enjoy the same advantage as graduates from other elite out-of-state institutions at a fraction of the cost.

In the 2007-08 year, according to U.S. News and World Report, the top 10 mechanical engineering departments in the United States had an average undergraduate out-of-state tuition cost of $28,629. By comparison, UT ME’s in-state flat rate tuition is $9,344. The Scholarship Office in the Cockrell School of Engineering is available to assist you with financial aid and scholarship information.

The University of Texas at Austin is a land-grant institution and is partially funded by its own investments. The Cockrell School of Engineering reports that it derives half of its operating budget from research funding. Only 8 percent of its operating budget comes from tuition. The rest comes from state funding, corporate giving and endowments. When you attend UT ME, you invest in a superior education at a reasonable price.

The Impact of High Academic Rankings on Career Opportunities
Graduation from a top-tier university has a significant impact on employment and graduate school options, since employers and universities focus their recruitment efforts on the highest-ranked departments. This makes a lot of difference when it comes to starting salaries and signing bonuses. Our graduates are in great demand. Our 2007-08 ME graduates received an average starting salary of $62,290, which was $5,281 higher than the national average for ME graduates at other institutions. *http://www.ecac.engr.utexas.edu/students/perm_Salary.cfm

Associate Professor Richard Neptune and his team design devices to improve the walking ability of individuals with post-stroke hemiparesis and lower-limb amputations.
Below: Assistant Professor Halil Berberoglu and his team at The Solar Energy and Biofuels Laboratory (SEBL) are studying algae as a possible source for biofuels because it offers a more energy-efficient and economically-sustainable alternative to agricultural-based biofuels.
Research Groups as Small Business Entities
The University of Texas at Austin is a major research institution. You may wonder why that is important to you as an undergraduate. While some of your professors do not maintain active research programs and simply focus on being masterful teachers and communicators, most conduct research in a particular aspect of mechanical engineering, as well as teach undergraduate courses. These professors are much like small, entrepreneurial business owners. They promote their research efforts and acquire funding to keep their projects afloat, which provides students the opportunity to work on research teams. Not only can students learn from top researchers, but they are often paid for their efforts and may be able to earn course credit toward their engineering degree.

In addition to research into green energy solutions, researchers also work on the development of bio-medical tools and devices. One team is developing a laser-surgery tool that may become instrumental in eliminating individual cancer cells. Another team studies human movement and is designing better prosthetics for lower-limb amputees and stroke patients. Even as an undergraduate, you may be able to join a research team.

Senior Design Projects—Undergraduate Research
There are other ways for undergraduates to get involved in real engineering projects, instead of simply working for a professor. All graduating seniors complete a capstone Senior Design Project (SDP) in their senior year. The students work closely with a sponsor to design and/or build their project to the sponsor’s needs and specifications. Upon completion, the sponsor owns the technology developed during the semester-long process. The students gain real-world engineering experience and make valuable professional connections in the process. It’s a win-win situation for everyone involved.
Below: Assistant Professor Carolyn Seepersad (right) and graduate student Lia Kashdan use a process originally developed at UT called selective laser sintering to design custom products and prototypes. The technique uses a high-power laser to fuse particles into a three-dimensional object. On the table are designs by Seepersad’s research group and classes for deployable airplane wings, a customized backrest and bicycle pedals, a clock and tailored honeycomb mesostructures.
Life’s Lessons

A College Education—More Than Just an Academic Exercise
“What starts here changes the world” is the motto for the university. Perhaps you’ve seen it on our campus literature and Web sites, but have you really thought about what it means? At UT ME, we embrace that concept seriously, and enthusiastically encourage our students to become people who will change the world.

Empowering Experiences
We support our student organizations and our study abroad program because we understand that the experiences our students take from them are just as important as what they learn in a regular academic setting. At a young age our students are making real-world contributions to the lives of others. Some of these organizations include the Society of Women Engineers (SWE), the American Society of Mechanical Engineers (ASME), Pi Tau Sigma (ME Honor Society), the Society of Automotive Engineers (SAE), the American Nuclear Society (ANS), Student Engineers Educating Kids (SEEK) and Engineers for a Sustainable World (ESW-UT).

Leadership Opportunities
Many of the student organizations are involved in engineering, social services and construction projects, under the guidance of engineering faculty members and professional mentors. UT ME has a strong commitment to hands-on learning because it reinforces both the importance of engineering in our daily lives and the actual engineering concepts taught in the classroom.

How to Apply to UTME

Prospective Undergraduates
To apply to the Mechanical Engineering Department, please visit http://bealonghorn.utexas.edu/. Even if you are in the top 10 percent of your Texas high school class, you still must complete the online application by the date specified to gain acceptance to the university. The entire application process is online, and no interview is needed.

Prospective Graduate Students
Students applying to graduate school must also fill out the ApplyTexas Application as well as our department’s Supplemental Application. For detailed instructions see the graduate portion of our Web site: http://www.me.utexas.edu/graduate/applying.php.

Contact Us

Prospective Undergraduates
For more information, prospective undergraduates should contact the undergraduate office at (512) 471-1136 or e-mail meugo@me.utexas.edu. Please also visit the Department of Mechanical Engineering Web site (http://www.me.utexas.edu) and the Cockrell School of Engineering site (http://www.engr.utexas.edu).

Women in Engineering Program
Female students may contact the Women in Engineering Program (WEP) at (512) 471-5650 or e-mail wep@engr.utexas.edu. Please visit the WEP Web site at http://www.engr.utexas.edu/wep/.

Prospective Graduate Students
Prospective graduate students may contact the graduate office (gradofc@me.utexas.edu), call (512) 232-2701 and/or read the graduate section of our Web site.

Alumni and Corporate Relations
Alumni and others wishing to connect with the department should call Danielle Fournier at (512) 471-2969 or e-mail her at danielle.fournier@me.utexas.edu.

We look forward to meeting you and are happy to answer all your questions.
UT ME offers both for-credit classes and financial support to student organizations, enabling students to gain hands-on experience in real-world situations. Adventurous undergrads are working with an indigenous tribe in a remote region of Panama to upgrade their inadequate water system. They surveyed, tested water, mapped the communities and studied existing infrastructure. The location was only accessible by small aircraft and canoe, as shown below.
About the Photos:

Cover: Astronaut Dr. Karen Nyberg pictured aboard the Space Shuttle Discovery, received her Ph.D. from UT ME in 1996. Photo courtesy of NASA.

Above: “Clock Knot,” a sculpture by Mark di Suvero, was recently installed outside the ETC building.