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A Message from the Dean

To our prospective students: Welcome to the world of engineering at the University of Tennessee, Knoxville.

Many of you may wonder, “What exactly is engineering?” Engineering involves solving problems using science and math. Engineers are creators, designers, innovators, and problem-solvers. Engineers help provide a more technologically advanced, cleaner, and safer world.

Engineers play a role in the production and development of almost everything we use in our daily lives—from iPod-like music and video players to the chips that power our computers; from the microfibers that make up the fabric of a new jacket, to the materials used in space and air craft; from biomedical devices to miniature robots used in national security.

Engineers helped mankind land on the moon and assist in the explorations of our oceans. Engineers design and build bridges and roads and set up the transportation systems that make them work. They also develop new alternative fuels and vehicles and means of harnessing energy such as wind turbines and photovoltaic solar cells.

Engineering is not just about facts and numbers. Engineering is about using your intelligence, education, training, and creativity to improve the quality of life for the people on our planet.

The Tickle College of Engineering offers you an opportunity for a superior education in the engineering field. For over 175 years, our college has provided the advanced engineering skills and training that place our graduates on the forefront of contemporary technological developments. We appreciate your interest, and hope you will visit our campus in the near future.

Best regards,
Wayne T. Davis
Dean of Engineering
Wayne T. Davis Endowed Dean’s Chair
Pre-College Summer Programs
enr.utk.edu/pre-college

Provide high school students an introduction to engineering, showcase the applications of math and science, and explore what engineers do in the real world.

Participants learn about ACT prep and careers in engineering, tour UT labs and facilities, compete in engineering challenges, and jump start their academic careers.

Prospects for Success

Professional engineers are in great demand, both in the US and internationally. Career opportunities for graduating students are excellent, and salaries for entry-level positions are very good.

Visit UT’s Center for Career Development at career.utk.edu

Well-known and respected corporations regard UT as a target university for hiring new engineers. Many of our graduates have risen to top positions in industry, government, and academia. An engineering degree from UT offers an excellent foundation for a successful career.
Engineering Degrees at UT

Aerospace Engineering
mabe.utk.edu

Uses the basic sciences and mathematics to develop a foundation for the design, development, production, testing, and applied research associated with aerospace vehicles. These vehicles include aircraft, spacecraft, and missiles. Auxiliary and propulsion systems are also an integral part of this education. These include guidance, control, environmental, ramjet, rocket, turbo-jet, and piston engine systems. Emphasis in the senior year is directed toward these topics, and the program culminates in a major aerospace design project.

Biomedical Engineering
mabe.utk.edu

Connects engineering to medicine through the design, development, and manufacturing of devices that enhance human diagnosis, treatment, and general health. The program prepares students for careers in a variety of healthcare-related professions, including medical device manufacturers and regulatory governmental agencies.

Biosystems Engineering & Soil Science
bioengr.ag.utk.edu

The design and development of processes involving natural systems to enhance resource use and production of foods, biofuels, and other biobased products while maximizing sustainability and minimizing environmental impact, all through application of a broad-based expertise in biology, chemistry, physics, and engineering sciences.
Chemical & Biomolecular Engineering
cbe.utk.edu

Uses an understanding of physical, chemical, and biological processes in combination with molecular information and discovery to develop new processes and products that are not only essential to everyday life but also critical to advancing human health and developing and improving environmental conditions.

Civil & Environmental Engineering
cee.utk.edu

This field is concerned with designing the infrastructure of our society and includes construction, transportation, energy needs; dealing with climate change, pollution, and other environmental problems; and the design and development of urban areas. Civil engineers are usually employed as structural or geotechnical designers on buildings, bridges, or transportation systems. Environmental engineers identify, evaluate, and resolve environmental concerns.

Computer Engineering
eecs.utk.edu

Integrates the electronic hardware side of electrical engineering and the programming side of computer science. With the increasing future needs of both industry and technology, computer engineering has become a discipline by itself. Students explore topics like microprocessors, computer architecture, digital signal processing, operating systems, data communications, and other related material.
Computer Science
eecs.utk.edu
The systematic study of theory, experimentation, and engineering design to create efficient automation and computational systems. Graduates work in virtually all fields, including artificial intelligence, biomedical devices, bioinformatics, computer networks, image and signal processing, and robotics.

Electrical Engineering
eecs.utk.edu
Concerns the application of the physical laws of electricity and magnetism to design devices and systems. This wide-ranging field impacts all aspects of modern life from miniature integrated circuits to large-scale power systems.

Industrial & Systems Engineering
ise.utk.edu
Industrial engineers design, install, improve, and control large complex systems to increase effectiveness. Applications include the integration of people, materials, machines, and facilities in the fields of manufacturing, transportation, construction, healthcare, retailing, entertainment, public service, and finance.
**Materials Science & Engineering**
*mse.utk.edu*

Primarily involved with the processing and testing of materials (metals, ceramics, polymers, composites, and semiconductors) and the relationships between processing, properties, performance, and internal structure. Developments in materials science and engineering are on the cutting edge of modern technology, as new and improved materials are critical to the development of advanced products.

Graduates work on automobiles, aircraft and spacecraft, surgical implant devices, alternative energy technologies, computers, optical displays, textiles, and sports equipment.

**Mechanical Engineering**
*mabe.utk.edu*

Involves the design, analysis, testing, and manufacture of mechanical and thermal systems. Mechanical engineers are employed in nearly every industry, from research through mass production of energy systems, computer software/hardware, robotics, and vehicles of all kinds. Students focus on mechanical design, solid and fluid mechanics, thermodynamics, heat transfer, vibrations, manufacturing processes, instrumentation and automatic control.

**Nuclear Engineering**
*ne.utk.edu*

Focuses on the application of subatomic processes for the benefit of both humanity and the environment. This includes nuclear system design, analysis, and sustainability; reactor safety and security; and other aspects of the nuclear fuel cycle. Radiological engineering involves the design and safe use of radiation for applications in industry, government, and medicine.
The college is rooted in tradition but is always facing the future. Students of this program walk away with a strong foundation in traditional engineering, but we are offered a great deal more as well. As a freshman, the engage™ program welcomed me into a community of hard work and camaraderie. The friends I met there remain my friends and colleagues years later.

The career resources offered by the college helped me navigate to my co-op with Eastman Chemical Company, a global specialty chemical company, where I now work as a full-time Supply Chain Analyst.

Though these skills are key to any work, I find them especially crucial working in supply chain. Every day I am balancing the functionality of world-class software applications, like SAP, with the best practices for supply chain planning and execution. I am challenged to create the best solution by bringing people and technology together. Even as a new employee, I am able to leverage the leadership skills I acquired at UT to lead training classes and complex projects with seasoned team members.

Somewhere along the way, school turned into graduation, and graduation became a career. There is one thing that will never change. I am proud to be a Vol for Life!

“The Tickle College of Engineering taught me the two most powerful skills there are to take into the workforce—sharp problem-solving skills and the ability to work in a team.”
Life on Campus and Beyond

Engineering students lead a busy life! Lectures and labs require focus, time commitment, and hard work. But it’s important to balance academics by taking a break to recharge your mind and body.

Connect with students and more than 500 social, sports, and other special-interest clubs through the Center for Student Engagement. Visit go.utk.edu.

Discover Knoxville’s thriving downtown music, culinary, and art scene as well as the Urban Wilderness—miles of hiking, biking, and kayaking await! Visit recsports.utk.edu and outdoorknoxville.com.

Just 45 minutes away, the Great Smoky Mountains National Park is full of trails, wildlife, and rivers to explore. Visit nps.gov/grsm.

Engage Living & Learning Community (LLC)

tiny.utk.edu/engage

LLCs are on-campus homes within a greater residential neighborhood of students, joined together for a common purpose. The Engage LLC provides a supportive environment for first-year engineering students who have been admitted to the college. Living together allows students to share notes, form study groups, and develop a sense of camaraderie.
This program has one of the nation’s most innovative, success-oriented approaches to first-year engineering education.

**Admission**

Students with a math ACT of 25 (or SAT of 590) who have been admitted to the college are automatically enrolled in the program.

**What to Expect**

Students are introduced to realistic problems in the engineering design process, allowing them to experience the same decision-making process as practicing engineers. The program provides support to assist students in their studies and projects during the crucial freshman year.

**Course Topics**

- **Engineering Perspectives**: An introduction to the different engineering majors offered at UT.
- **Computer Tools in Problem Solving**: The use of Excel and Matlab to solve engineering problems.
- **Teamwork**: Because learning to be an effective team member can be just as difficult as learning the physical laws and computational tools of engineering, students are trained in the use of the team process.
- **Communication**: Written project reports and oral presentations hone students’ communication skills.
- **Physics as an Engineering Fundamental**: Mechanics, fluids, waves, sound, thermodynamics, and electricity.
Provides rigorous intellectual pursuits and broader educational experiences for the college’s most driven students. Graduates are prepared to address the challenges of the twenty-first century, such as cybersecurity, engineering better medicines, and providing access to clean water.

Admission is by invitation of the dean. Recent entering classes have had an average high school core GPA of above 4.0 and an average composite ACT of 33.

Breadth Requirements
In addition to coursework, students must also complete two of the five following experiences: research, interdisciplinary coursework, service-learning, entrepreneurship, and a global experience.

Program Advantages
- Priority advising and course registration each semester
- Automatic qualification for registration in the first-year engineering Honors sequence (EF 157–158 Honors Physics for Engineers I & II)
- Enrollment in smaller honors courses
- Other opportunities exclusive to engineering honors students.

NAE Grand Challenge Scholars Program
Students in this program gain more in-depth experience across all five honors breadth requirements. In addition to the advantages listed above, scholars also create an individual academic plan with their advisor and receive national recognition upon graduation from NAE.
As an educator, my work is to help train a new generation of highly motivated students to achieve their full potential and to become leaders in their future roles as electrical engineers, managers, and innovators.

By working closely with our undergraduate and graduate students, we help conceive, design, build, and monitor the smart power grids of the future. We challenge students to think, to create, and to learn how to work as a team and to gain hands-on experience.

UT is an excellent choice for an engineering education. In addition to the high academic standards and our international reputation in many engineering areas, we offer a unique opportunity to connect with industry and national labs at a very early stage.

The college is dedicated to providing a rich experience for our students that will last a lifetime.
Dedicated to helping students find educationally relevant paid cooperative education (co-op) and internship education positions with hundreds of participating employers.

Benefits

Applied learning: While on assignment, students are exposed to real-world problems and challenges that enhance their classroom learning and improve problem-solving skills.

Mentoring: Most employers provide students with a mentor to help coach students during their work assignments on engineering concepts and professional development.

Leadership: During co-ops, students experience leadership lessons first hand and develop key leadership skills needed for long-term success.

A Competitive Edge

On average, 75 percent of co-op students receive a job offer from their employer upon graduation.

Engineering Expo

Each fall and spring semester, national and regional employers come to UT to meet and talk with students interested in co-op and internship positions. The fall 2016 expo was the largest ever—80 employers and 731 students attended, with countless connections made.
Office of Engineering Diversity Programs

Works to recruit, retain, and graduate underrepresented students through pre-college camps, academic coaching, scholarships, mentoring, industry tours, and corporate networking opportunities.

The Tennessee Louis Stokes Alliance for Minority Programs provides underrepresented students monthly seminars, tutoring, peer mentoring, graduate school prep, and assistance finding careers in science or engineering.

UT is home to student chapters of the National Society of Black Engineers and the Society of Hispanic Professional Engineers.

The college is proud that 23 percent of its undergraduates are female, a number that exceeds the national average.

Each year, the WomEngineers Welcome Dinner connects incoming female freshmen with faculty, female-focused student engineering organizations, and one another.

Every other year, the WomEngineers Day Conference offers networking opportunities and career advice for current and prospective students.

Study Abroad Programs

Students stay one semester or shorter in English-speaking or foreign-language-based schools around the world. Choose between individual trips or pre-arranged faculty-led trips, where a small group lives and travels together.

Global Initiatives

Small student groups travel abroad to participate in an engineering-focused service project of local impact. On past trips, students have restored an animal sanctuary footbridge, constructed school walls, and built outdoor stoves for family homes.
The summer before my senior year in high school, I participated in a pre-college engineering program here at UT known as HITES. I experienced what it was like to be a college student in engineering and afterwards I knew UT was the perfect home for me. I also attended a Tennessee Louis Stokes Alliance Minority Program (TLSAMP) Intercollegiate Summer Bridge Program offered by the Engineering Office of Diversity Programs that gave me a jumpstart on college life the summer before my freshman year.

For the past two summers, I have interned with the Tennessee Valley Authority at the Sequoyah Nuclear Plant in Soddy-Daisy, Tennessee, as an equipment reliability intern. My role was to assist in identifying and managing threats to plant asset reliability that could adversely affect plant or business operations. Interning has given me a real-world perspective of what it’s like working as an engineer outside the classroom.

I love to stay involved on campus as much as possible. I currently help recruit for UT through the Minority Enhancement for the University of Tennessee program (ME4UT) and Volunteer Team. These programs aid the Office of Undergraduate Admissions in recruiting and building relationships with multicultural students and student athletes, respectively.

I’m also involved in several societies on campus such as the National Society of Black Engineers, TLSAMP, TLSAMP STEAM Mentoring program, and Brothers United for Excellence. I serve as a mentor to elementary students through the Big Brothers Big Sisters of East Tennessee to stay involved in my community. These are just a couple of things our campus has to offer, but there are unlimited organizations and opportunities for students here at UT.
Admission Requirements

tiny.utk.edu/TCEadmission

The college has established admissions criteria for incoming freshmen based on several performance criteria, including completion of core academic subjects, GPA scores on these subjects, and standardized test (SAT or ACT) scores.

The fall 2017 incoming freshman class has an average GPA of 4.0 and ACT of 30.6.

A Success Prediction Indicator (SPI) number of 60 and a math ACT of 25 or a math SAT of 590 if taken after March 2016 (math SAT of 570 if taken before March 2016) are minimum standards used for admission to the college. The SPI is calculated by adding an individual’s ACT mathematics score to ten times their core high school GPA (based on a 4.0 scale).

SPI EXAMPLE:
A student with a high school core GPA of 3.5 and an ACT mathematics score of 28 would have an SPI of 63 using the formula \((3.5 \times 10) + 28 = 63\). SAT scores are converted to an equivalent ACT score to perform this calculation.

Students who wish to pursue an engineering degree at UT, but who do not meet the college admission criterion, may enroll as University Undecided and complete appropriate mathematics, science, and other courses before applying again for admission to the college.

Ready to apply?
Visit admissions.utk.edu
Transfer Students

tiny.utk.edu/TCEtransfer

Transfer students, including internal UT transfers, must meet the minimum requirements stated below to be considered for admission to a major within the college. The final admission decision for the major resides with the department head or designee.

Students must have earned a minimum 2.8 cumulative average and a C or better in each of these specific courses, or their equivalent: ENGL 101*, CHEM 120* (for computer science students: COSC 102* and COSC 130 or equivalents), and MATH 141* (and subsequent courses in the three sequences, if taken).

If the student has completed any physics course, he/she must have earned a grade of C or better.

The overall record will be evaluated for quality and seriousness of purpose. An excessive number of withdrawals, incompletes, repeated courses, or failures may result in denial.

Visit the Engineering Advising Office in 316A Perkins Hall to speak with a discipline-specific advisor and co-create an academic plan. An advising session is held with the major items of consideration being the same as for external transfer students.

If external transfer students are denied admission to the college, the student must contact Undergraduate Admissions to declare a new major for admission to UT.

Transferring from a community college?

Check out the new TranSCEnD Program for scholarships and other resources specific to your needs.

engr.utk.edu/transcend
Scholarships and Financial Aid
onestop.utk.edu

Generally, three types of financial aid are available: scholarships, loans, and part-time employment. These can be offered individually or in combination according to the needs of the family and the student.

The college also awards more than $1 million in scholarships to qualified undergraduate students. To qualify for engineering scholarships, students must be accepted into both UT and the college and then apply at onestop.utk.edu/financial-aid/apply.

Hope Scholarship
In-state students with a 3.0 minimum GPA
$3,500 annually

Volunteer Scholarship
3.8 minimum GPA, as well as:

- 34-36 ACT/1520-1600 SAT Score
  $8,000 (in-state) or $18,000 (out-of-state)

- 30-33 ACT/1390-1510 SAT Score
  $5,000 (in-state) or $15,000 (out-of-state)

- 28-29 ACT/1310-1380 SAT Score
  $3,000 (in-state) or $10,000 (out-of-state)

Students do not need to apply for specific scholarships, as the Scholarship Committee will match qualified students with available awards.

Get answers to specific financial aid questions:

UT Office of Financial Aid
onestop.utk.edu
865-974-3131
UT Campus at a Glance

- Founded in 1794
- 22,000+ undergraduates from 40 US states and 31 foreign countries
- 27 new-and-improved facilities in the past 5 years
- 17-to-1 student-to-faculty ratio
- Smokey, a bluetick coonhound, is our mascot
- 23 NCAA championships & 195 SEC championship team titles

Campus Connections

Center for International Education
Visas, programs abroad, and more
international.utk.edu

Dining & Meal Plans
dining.utk.edu

Housing & LLCs
housing.utk.edu (see page 16)

OneStop Student Services
Financial aid, payments, registration, student records, dates and deadlines.
onestop.utk.edu

Student Disability Services
sds.utk.edu

Transfer Students
transfer.utk.edu (see page 32)

Veteran Student Services
veterans.utk.edu

Take a Tour

Schedule a Campus Visit
tiny.utk.edu/campus-tours

Schedule an Engineering Visit
tiny.utk.edu/tce-tours

Engineering at UT

3,200+ undergraduate engineering students
23 percent female students

Admission Requirements
SPI of 60, Math ACT of 25 or Math SAT of 590 (see page 30)

12 Degree Programs (see pages 6-13):
• Aerospace Engineering
• Biomedical Engineering
• Biosystems Engineering
• Chemical Engineering
• Civil Engineering
• Computer Engineering
• Computer Science
• Electrical Engineering
• Industrial Engineering
• Materials Science & Engineering
• Mechanical Engineering
• Nuclear Engineering

Find More Pre-Application Details Online
engr.utk.edu/future-students/apply

Call the College
Academic & Student Affairs: 865-974-2454
Engineering Advising: 865-974-4008

UT Application Deadlines
Nov 1: Priority admission & competitive scholarships
Dec 15: Regular admission & institutional scholarships
Office of Academic and Student Affairs
101 Perkins Hall
Knoxville, TN 37996-2011
Ph: 865-974-2454
tce@utk.edu
engr.utk.edu

Schedule a campus tour:
tiny.utk.edu/campus-tours

Schedule an engineering tour:
tiny.utk.edu/tce-tours

What can I do with an engineering degree?