Administrative Officers

Vice Chancellor and Dean of Engineering - M. Katherine Banks, Ph.D.
Executive Associate Dean - Nagamangala K. Anand, Ph.D.
Senior Associate Dean for Academic Affairs - Valerie E. Taylor, Ph.D.
Associate Dean for Undergraduate Programs - Prasad Enjeti, Ph.D.
Assistant Dean for Graduate Programs - John C. Criscione, Ph.D.
Senior Associate Dean for Research - Dimitris Lagoudas, Ph.D.
Associate Dean for Research - Costas Georghiades, D.Sc.
Assistant Dean for Finance - Michelle Mitchell, B.B.A.

General Statement

Engineering is the application of science and mathematics to the solution of relevant problems in our society. To a great extent, our current standard of living and high level of technology are due to the diligent and innovative efforts of engineers. In spite of the increasing expense of basic resources, modern engineers have succeeded in maintaining stable costs for a wide variety of goods, and at the same time have used their design and analysis abilities to introduce new products and technologies for the betterment of society.

The accelerating pace of industrial and technological developments has created an ever-increasing demand for highly qualified, professional engineers to maintain the momentum already achieved, and to extend and direct the course of these developments. The ever-expanding population and the increased demands for goods and services have imposed new challenges to provide effective solutions while minimizing unwanted side effects. Engineers recognize that all actions taken have their respective costs, and that solutions to long-standing societal problems are found in careful, thorough planning and study. With a pragmatic background in problem solving, engineers are perhaps best qualified to address society’s problems.

The complexities of the current environment are such that all resources must be used in the best possible manner. Thus, the Dwight Look College of Engineering, through its curricula, strives to educate and train engineers who have the breadth of vision to formulate and solve the problems of today and the future. It is expected that a student who conscientiously applies himself or herself and successfully completes an engineering program will be technically trained and socially educated, thereby being well prepared to make a significant contribution to the world in which he or she works.

The mission of the Dwight Look College of Engineering is to serve Texas, the nation and the global community by providing engineering graduates who are well founded in engineering fundamentals, instilled with the highest standards of professional and ethical behavior, and prepared to meet the complex technical challenges of society.

To achieve this mission the Dwight Look College of Engineering is committed to:

- ensuring an academic environment conducive to our faculties achieving the highest levels of academic and research excellence;
- building upon our traditional partnerships with industry, engineering practitioners and former students, to enhance our impact on the profession of engineering;
- encouraging excellence, innovation and cross-disciplinary initiatives in education and research;
- providing national and international leadership in undergraduate and graduate engineering education;
- becoming the engineering college of choice for the increasingly diverse citizenry of the state; and
- encouraging and supporting opportunities for our students to grow beyond their chosen disciplines by participation in ethics courses, leadership programs, study-abroad programs and research.

A student engineer can pursue any one of several degree plans, according to personal ambitions, interests and abilities. The student may choose the traditional BS degree and consider advanced research-oriented graduate programs leading to the MS and PhD degrees. Alternatively, the student may select the Doctor of Engineering program which is directed toward professional engineering.

Within the Dwight Look College of Engineering, the undergraduate programs in aerospace, biological and agricultural, biomedical, chemical, civil, computer, electrical, industrial, mechanical, nuclear, ocean, petroleum and radiological health engineering are accredited by the Engineering Accreditation Commission of ABET, www.abet.org. The electronic systems engineering technology program and the manufacturing and mechanical engineering technology program are accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org. The Computer Science program is accredited by the Computing Accreditation Commission of ABET, www.abet.org.

Entrance and Enrollment Requirements

The minimum requirements for entrance to the University are listed in the earlier pages of this catalog. Because of the importance of science and mathematics to engineering, high school students who aspire to a career in engineering are encouraged to take as many of these courses as possible. In particular, high school preparation should include four years of mathematics and four years of science emphasizing algebra, geometry, trigonometry, calculus, chemistry, physics and biology.

A critical step in an engineering education is proper individual placement in the first courses undertaken. The Dwight Look College of Engineering strongly recommends the following guidelines to students participating in the math advanced placement examinations in high school. Incoming engineering students can earn advanced placement (AP) credits for MATH 151 with a score of 4 on the Calculus AB exam or 3 on the BC exam, and for MATH 151 and MATH 152 by a score of 4 on the BC exam. While the student can accept these AP credits and enroll in the next course in the engineering mathematics sequence, the college recommends a more conservative decision about accepting advanced placement credits in math. Students who earn a 4 or 5 on the Calculus AB exam or a 3 or 4 on the BC exam are recommended to begin in MATH 151. Students who score a 5 on the Calculus BC exam are recommended to begin in MATH 151 or MATH 152. These conservative recommendations help ensure students have thoroughly mastered the content that is fundamental to the engineering curriculum. Students should discuss their choice with their assigned undergraduate academic advisor before registering for mathematics classes. New Student Conferences and associated Credit by
Examination tests provide information to advisors so that students begin at a level which may differ from the printed curriculum, but is appropriate to their aptitudes and background. All freshmen admitted into engineering are required to complete the Math Placement Exam (MPE) before the New Student Conferences and should review algebra, trigonometry and geometry prior to taking the MPE.

Because of the importance of computing in the disciplines housed within the Dwight Look College of Engineering, all entering students are required to possess a portable, network-ready personal computer capable of running software appropriate to their academic program, effective Fall 2014. Details about the personal computer needed to meet the requirement can be found on our website. No student will be denied admission to Texas A&M University based on an inability to purchase a computer.

Students who meet the University and college entrance requirements are admitted into the Dwight Look College of Engineering with a preference to a major field of study and receive a designation of “ENGE”. Students can apply to a major degree granting program after completing at least one semester and after learning about the different engineering disciplines from professional engineers. Before applying for entry to a major, students must complete a minimum of three courses that are applicable to their intended major degree program. The three courses are defined as follows: one engineering course, one math course, and one science course that are in the intended degree plan. The application process is competitive. Students must be accepted in a major by the end of their fourth semester or they will be blocked from further registration in the Dwight Look College of Engineering.

As an aid to making a decision, the freshman courses ENGR 111 and ENGR 112 introduce students to engineering problems from the various disciplines. In addition, students may attend departmental presentations, career fairs and other activities sponsored by student engineering professional societies. Academic Advisors at New Student Conferences will help students select courses to fit their preferences and abilities.

Transfer students will be admitted directly to a major degree granting program through the admissions process.

**Freshman Curriculum**

The freshman year is identical for degrees in aerospace engineering, biomedical engineering, civil engineering, computer engineering, electrical engineering, industrial engineering, mechanical engineering, nuclear engineering, ocean engineering, and petroleum engineering thus allowing a student with adequate grades to change majors within the Dwight Look College of Engineering. The freshman year is slightly different for chemical engineering and radiological health engineering in that students take CHEM 101/CHEM 111 and CHEM 102/CHEM 112 instead of CHEM 107/CHEM 117. Students pursuing degrees in biological and agricultural engineering, computer science, engineering technology, or industrial distribution should refer to the specific curriculum for these majors. It is recognized that many students will change the sequence and number of courses taken in any semester. Deviations from the prescribed course sequence, however, should be made with care to ensure that prerequisites for all courses are met.

**Fast Track Program**

Each participating department in the Dwight Look College of Engineering has streamlined its program for Fast Track participants by substituting specific graduate courses for selected undergraduate offerings. Academically qualified students take these 600-level courses during their senior year, earning graduate credit while fulfilling undergraduate requirements through “credit by exam.” The individual department sets its own grade and exam requirements for earning dual credit. The department also establishes the maximum number of credit hours allowed for acceleration, usually five to seven.

**Industry-University Cooperative Education**

Cooperative education is a study-work plan of education in which a student alternates periods of attendance in college or university with periods of employment in industry related to his or her major. Students who choose this degree plan must complete at least 12 months of experience in order to receive the cooperative education certificate. The practice of engineering is an art which is learned through practice as well as in the classroom. The cooperative education program provides the education that can be achieved from practice by having the student work with professional engineers on the job. Consequently, the student who graduates with the cooperative education certificate has both the academic background and the practical experience to qualify him or her for more meaningful employment in the profession of engineering. The cooperative education work periods also provide an income for students that allows them to pay for their school expenses.

Those who wish additional information concerning this program should contact the Associate Director of Cooperative Education.

**Advanced Study**

Students who rank in the upper half of their undergraduate class should give serious consideration to developing their full intellectual potential in engineering by continuing with advanced studies at the graduate level. Two routes are available for students. The traditional master of science and doctor of philosophy degrees should be considered by students who wish to go into research fields. For those students interested in the practice of professional engineering, the master of engineering and doctor of engineering degrees should be given serious consideration. The professional doctor of engineering degree was established in the fall of 1974 to fill a need for better-educated engineers in the practice of engineering. Students may enter this program at any time after they receive the bachelor’s degree in engineering by applying and being accepted to a departmental graduate program within the Dwight Look College of Engineering. Master’s level degrees require a minimum of one year of course work after the bachelor’s, and the doctoral degrees require a minimum of an additional two years of coursework. The doctor of philosophy also requires a dissertation based on research by the student, and the doctor of engineering requires at least one year of internship experience in industry or government.

For more information concerning these programs, please refer to the Texas A&M University Graduate and Professional Catalog or contact the Office of the Dean of Engineering.

The engineering programs also provide a foundation for further education in the fields of medicine, law or business. An engineering background will prepare the individual to understand, contribute to and embrace technical advances in these fields.

**The Texas A&M Engineering Academies**

The Texas A&M Engineering Academies are co-enrollment programs between Texas A&M University, Dwight Look College of Engineering and selected two-year institutions. The Engineering Academies provide talented students an opportunity to pursue their engineering degree and take courses previously reserved for students admitted to the Dwight

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Look College of Engineering. The admission process for the Engineering Academies is unique to each partner institution. Ultimately, the final offer of admission to the Academy is made by Texas A&M University.

Texas A&M Engineering Academy students are able to progress in engineering courses offered by the college, which allows participants an opportunity to graduate with their peers in the Dwight Look College of Engineering. The Engineering Academies are two year programs. At the conclusion of the second year, students who successfully complete program requirements will be fully admitted to Texas A&M University without an additional application process. An option to apply for early matriculation is offered to Engineering Academy students who have satisfied the required course and GPA requirements identified for the respective institution. This option is available as early as the first year, second semester. Program students may also apply for transfer admission to Texas A&M University via the transfer admission process before completion of the two-year program, however additional application fees will be assessed.

Eligible students receive financial aid based upon their combined credit hours from both institutions.

For more information, including specific requirements for each of the partner institutions, visit Texas A&M Engineering Academies (https://engineering.tamu.edu/academies).

**Majors**

**Dwight Look College of Engineering**
- Bachelor of Science in Biological and Agricultural Engineering

**Department of Aerospace Engineering**
- Bachelor of Science in Aerospace Engineering

**Department of Biomedical Engineering**
- Bachelor of Science in Biomedical Engineering

**Artie McFerrin Department of Chemical Engineering**
- Bachelor of Science in Chemical Engineering

**Zachry Department of Civil Engineering**
- Bachelor of Science in Civil Engineering
- Bachelor of Science in Civil Engineering, Coastal and Ocean Engineering Track
- Bachelor of Science in Civil Engineering, Construction Engineering and Management Track
- Bachelor of Science in Civil Engineering, Environmental Engineering Track
- Bachelor of Science in Civil Engineering, General Civil Engineering Track
- Bachelor of Science in Civil Engineering, Geotechnical Engineering Track
- Bachelor of Science in Civil Engineering, Structural Engineering Track
- Bachelor of Science in Civil Engineering, Transportation Engineering Track
- Bachelor of Science in Civil Engineering, Water Resources Engineering Track
- Bachelor of Science in Ocean Engineering

**Department of Computer Science and Engineering**
- Bachelor of Science in Computer Engineering, Computer Science Track
- Bachelor of Science in Computer Science

**Department of Electrical and Computer Engineering**
- Bachelor of Science in Computer Engineering, Electrical Engineering Track
- Bachelor of Science in Electrical Engineering

**Department of Engineering Technology and Industrial Distribution**
- Bachelor of Science in Electronic Systems Engineering Technology
- Bachelor of Science in Engineering Technology, Manufacturing and Mechanical Engineering Option
- Bachelor of Science in Industrial Distribution

**Department of Industrial and Systems Engineering**
- Bachelor of Science in Industrial Engineering

**Department of Mechanical Engineering**
- Bachelor of Science in Mechanical Engineering

**Department of Nuclear Engineering**
- Bachelor of Science in Nuclear Engineering
- Bachelor of Science in Radiological Health Engineering

**Harold Vance Department of Petroleum Engineering**
- Bachelor of Science in Petroleum Engineering

**Minors**

**Department of Aerospace Engineering**
- Aerospace Engineering Minor

**Department of Biomedical Engineering**
- Biomedical Engineering Minor

**Artie McFerrin Department of Chemical Engineering**
- Chemical Engineering Minor

**Department of Computer Science and Engineering**
- Computer Science Minor

**Department of Electrical and Computer Engineering**
- Electrical Engineering Minor
Department of Engineering Technology and Industrial Distribution

- Embedded Systems Integration Minor

Department of Industrial and Systems Engineering

- Industrial Engineering Minor

Department of Materials Science and Engineering

- Materials Science and Engineering Minor

Department of Nuclear Engineering

- Nuclear Engineering Minor
- Radiological Health Engineering Minor

Harold Vance Department of Petroleum Engineering

- Petroleum Engineering Minor

Certificates

The Dwight Look College of Engineering has designed the following certificate programs to offer ambitious students the opportunity to go beyond the traditional curriculum and gain specific knowledge in a concentration area. Students are required to consult with their academic advisor prior to submitting an application for a certificate. Enrolling and being accepted into a certificate program does not guarantee registration into required courses. Each certificate, with the exception of the Business Management Certificate, will be recognized on the candidate’s transcript. A coordinator reviews each student’s coursework via a certificate worksheet and requirements met prior to certification. Certificate coordinators are given the discretion to determine the eligibility of students in other colleges and/or majors to pursue Dwight Look College of Engineering certificates. For specific information on each certificate available, visit the Dwight Look College of Engineering website.

Dwight Look College of Engineering

- Business Management Certificate for Engineering Students
- Engineering Honors Certificate
- Engineering Project Management Certificate
- International Engineering Certificate
- Polymer Specialty Certificate
- Safety Engineering Certificate

Department of Biomedical Engineering

- Engineering Therapeutics Manufacturing Certificate
- Quality Engineering for Regulated Medical Technologies Certificate

Department of Industrial and Systems Engineering

- Data Center Operations Engineering Certificate
- Engineering Systems Management Certificate

Harold Vance Department of Petroleum Engineering

- Energy Engineering Certificate

Masters

Dwight Look College of Engineering

- Master of Engineering in Engineering
- Master of Science in Interdisciplinary Engineering
- Master of Science in Safety Engineering

Department of Aerospace Engineering

- Master of Engineering in Aerospace Engineering
- Master of Science in Aerospace Engineering

Department of Biomedical Engineering

- Master of Engineering in Biomedical Engineering
- Master of Science in Biomedical Engineering

Artie McFerrin Department of Chemical Engineering

- Master of Engineering in Chemical Engineering
- Master of Science in Chemical Engineering

Zachry Department of Civil Engineering

- Master of Engineering in Civil Engineering
- Master of Engineering in Ocean Engineering
- Master of Science in Civil Engineering
- Master of Science in Ocean Engineering

Department of Computer Science and Engineering

- Master of Computer Science in Computer Science
- Master of Engineering in Computer Engineering, Computer Science
- Master of Science in Computer Engineering, Computer Science
- Master of Science in Computer Science

Department of Electrical and Computer Engineering

- Master of Engineering in Computer Engineering, Electrical Engineering
- Master of Engineering in Electrical Engineering
- Master of Science in Computer Engineering, Electrical Engineering
- Master of Science in Electrical Engineering

Department of Engineering Technology and Industrial Distribution

- Master of Industrial Distribution in Industrial Distribution
Department of Industrial and Systems Engineering
- Master of Science in Engineering Systems Management
- Master of Engineering in Industrial Engineering
- Master of Science in Industrial Engineering

Department of Materials Science and Engineering
- Master of Engineering in Materials Science and Engineering
- Master of Science in Materials Science and Engineering

Department of Mechanical Engineering
- Master of Engineering in Mechanical Engineering
- Master of Science in Mechanical Engineering

Department of Nuclear Engineering
- Master of Engineering in Nuclear Engineering
- Master of Science in Health Physics
- Master of Science in Nuclear Engineering

Harold Vance Department of Petroleum Engineering
- Master of Engineering in Petroleum Engineering
- Master of Science in Petroleum Engineering

Doctoral

Dwight Look College of Engineering
- Doctor of Engineering in Engineering
- Doctor of Philosophy in Interdisciplinary Engineering

Department of Aerospace Engineering
- Doctor of Philosophy in Aerospace Engineering

Department of Biomedical Engineering
- Doctor of Philosophy in Biomedical Engineering

Artie McFerrin Department of Chemical Engineering
- Doctor of Philosophy in Chemical Engineering

Zachry Department of Civil Engineering
- Doctor of Philosophy in Civil Engineering
- Doctor of Philosophy in Ocean Engineering

Department of Computer Science and Engineering
- Doctor of Philosophy in Computer Engineering, Computer Science
- Doctor of Philosophy in Computer Science