Erik Jonsson School of Engineering and Computer Science

Interdisciplinary Programs

The Erik Jonsson School of Engineering and Computer Science offers Bachelor of Science programs in Computer Engineering and in Telecommunications Engineering. These programs are delivered by faculty from the Department of Computer Science and Electrical Engineering.

Telecommunications Engineering (BSTE)

Affiliated Faculty

**Professors:** Naofal Al-Dhahir, Farokh B. Bastani, András Faragó, Andrea Fumagalli, John H. L. Hansen, Jason Jue, Latifur Khan, Kamran Kiasaleh, Duncan L. MacFarlane, Hlaing Minn, Won Namgoong, Aria Nosratinia, Balakrishnan Prabhakaran, Ravi Prakash, Balaji Raghavachari, Mohammad Saquib, Lakshman Tamil, Murat Torlak, Subbarayan Venkatesan, W. Eric Wong, I-Ling Yen, Si Qing Zheng

**Professor Emeritus:** William J. Pervin

**Associate Professors:** Jorge A. Cobb, Neeraj Mittal, Kamil Sarac

**Assistant Professors:** Joseph Callenes-Sloan, Myoungsoo Jung

**Senior Lecturers:** Charles (Pete) Bernardin, Nathan B. Dodge, P. K. Rajasekaran, Marco Tacca

**Affiliated Faculty:** Cong Liu

Goals for the Telecommunications Engineering Program

The focus of the UT Dallas' Telecommunications Engineering degree is to provide excellent education in modern communications networks and systems. Our graduates shall be uniquely qualified to apply traditional engineering design and problem solving skills in modern telecommunications.

Program Educational Objectives for Telecommunications Engineering

Within a few years after graduation, graduates of the Telecommunications Engineering Program should:

- Have a successful, long-lived, engineering based career path.
• Meet the needs of industry.
• Contribute to, and/or lead, engineering based teams.
• Actively pursue continuing (lifelong) learning.

High School Preparation

Engineering education requires a strong high school preparation. Pre-engineering students should have high school preparation of at least one-half year in trigonometry and at least one year each in elementary algebra, intermediate and advanced algebra, plane geometry, chemistry, and physics, thus developing their competencies to the highest possible levels and preparing to move immediately into demanding college courses in calculus, calculus-based physics, and chemistry for science majors. It is also essential that pre-engineering students have the competence to read rapidly and with comprehension, and to write clearly and correctly.

Lower-Division Study

All lower-division students in either Electrical Engineering or Telecommunications Engineering concentrate on mathematics, science, and introductory engineering courses, building competence in these cornerstone areas for future application in upper-division engineering courses. The following requirements apply both to students seeking to transfer to UT Dallas from other institutions as well as to those currently enrolled at UT Dallas, whether in another school or in the Erik Jonsson School of Engineering and Computer Science.

ABET Accreditation

The BS program in Telecommunications Engineering is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Academic Progress in Telecommunications Engineering

In order to make satisfactory academic progress as a Telecommunications Engineering major, a student must meet all university requirements for academic progress, and must earn a grade of C- or better in each of the "major requirements" courses. No "Major Requirements" course (as listed under Section II of the BSTE degree requirement) may be taken until the student has obtained a grade of C- or better in each of the prerequisites (if a higher grade requirement is stated for a specific class, the higher requirement applies).

Bachelor of Science in Telecommunications Engineering

*Degree Requirements (125 semester credit hours)*

I. Core Curriculum Requirements: 42 semester credit hours
Communication: 6 semester credit hours

   RHET 1302 Rhetoric
   ECS 3390 Professional and Technical Communication³

Mathematics: 3 semester credit hours

   MATH 2417 Calculus I⁴

Life and Physical Sciences: 6 semester credit hours⁵

   PHYS 2325 Mechanics
   PHYS 2326 Electromagnetism and Waves

Language, Philosophy and Culture: 3 semester credit hours

   Select any 3 semester credit hours from Language, Philosophy and Culture core courses (see advisor)

Creative Arts: 3 semester credit hours

   Select any 3 semester credit hours from Creative Arts core courses (see advisor)

American History: 6 semester credit hours

   Select any 6 semester credit hours from American History core courses (see advisor)

Government / Political Science: 6 semester credit hours

   GOVT 2305 American National Government
   GOVT 2306 State and Local Government

Social and Behavioral Sciences: 3 semester credit hours

   ECS 3361 Social Issues and Ethics in Computer Science and Engineering⁶

Component Area Option: 6 semester credit hours

   MATH 2417 Calculus I⁴
   MATH 2419 Calculus II⁴
   PHYS 2125 Physics Laboratory⁵

II. Major Requirements: 77 semester credit hours⁷
Major Preparatory Course: 25 semester credit hours beyond Core Curriculum

**CHEM 1111** General Chemistry Laboratory I

**CHEM 1311** General Chemistry I

**ECS 1200** Introduction to Engineering and Computer Science

**CS 1337** Computer Science I

**ENGR 2300** Linear Algebra for Engineers

**TE 2305** Discrete Mathematics for Computing I

**CS 2336** Computer Science II

**TE 1202** Introduction to Electrical Engineering

**MATH 2417** Calculus I

**MATH 2419** Calculus II

**MATH 2420** Differential Equations with Applications

**PHYS 2125** Physics Laboratory I

**PHYS 2126** Physics Laboratory II

**PHYS 2325** Mechanics

**PHYS 2326** Electromagnetism and Waves

Major Core Courses: 52 semester credit hours beyond Core Curriculum

**CS 3340** Computer Architecture

**CS 4141** Digital Systems Laboratory

**CS 4341** Digital Logic and Computer Design

**ECS 3361** Social Issues and Ethics in Computer Science and Engineering

**ECS 3390** Professional and Technical Communication

**EE 3150** Communications Systems Laboratory

**ENGR 3300** Advanced Engineering Mathematics

**EE 3350** Communications Systems

**EE 4360** Digital Communications

**EE 4361** Introduction to Digital Signal Processing

**TE 3101** Electrical Network Analysis Laboratory

**TE 3102** Signals and Systems Laboratory
**TE 3301** Electrical Network Analysis

**TE 3302** Signals and Systems

**ENGR 3341** Probability Theory and Statistics

**TE 3345** Data Structures and Introduction to Algorithmic Analysis

**TE 4348** Operating Systems Concepts

**TE 4365** Introduction to Wireless Communication

**TE 4367** Telecommunication Networks

**TE 4388** Senior Design Project I

**TE 4389** Senior Design Project II

**TE 4390** Computer Networks

**III. Elective Requirements: 6 semester credit hours**

**Free Electives: 6 semester credit hours**

Both lower-and upper-division courses may count as free electives, but students must complete at least 51 semester credit hours of upper-division courses to qualify for graduation.

Degree programs in the Erik Jonsson School of Engineering and Computer Science are governed by various accreditation boards that place restrictions on classes used to meet the curricular requirements of degrees they certify. For this reason, not all classes offered by the university can be used to meet elective requirements. Please check with your academic advisor before enrolling in classes you hope to use as free electives.

**Fast Track Baccalaureate/Master’s Degrees**

In response to the need for advanced education in telecommunications engineering, a Fast Track program is available to well-qualified UT Dallas undergraduate students. The Fast Track program is designed to accelerate a student's education so that both a BSTE and an MSTE degree can be earned in five years of full-time study. This is accomplished by (1) taking courses (typically electives) during one or more summer semesters, and (2) beginning graduate coursework during the senior year. Details are available from the Associate Dean for Undergraduate Education.

**Honors Program**

The Telecommunications Engineering Program offers upper-division Honors for outstanding students in the BS Telecommunications Engineering degree program. This program offers special sections of designated classes and other activities designed to enhance the educational experience of exceptional students. Admission to the Honors programs requires a 3.500 GPA (grade point average) in at least 30 semester credit hours of coursework. Graduation with Honors requires a
3.500 or better GPA and completion of at least 6 honors classes. These honors classes must include either Senior Honors (CE 4399) or Undergraduate Research in Telecommunications Engineering (TE 4V98) and a Senior Honors Thesis must be completed within one of those two classes. (While the topics may be related, the Senior Thesis does not replace the need for the student to complete a regular Senior Design Project.) The other 5 honors classes can come from a mixture of Graduate level (up to a count of 4) classes and special honor sections of regular undergraduate TE classes (up to a count of 2). Current undergraduate honors courses include but are not limited to: CE 2310 or EE 2310 (H), EE 3350 or TE 3350 (H), CE 4399 and TE 4V98. Course grades in the 6 honor classes used to determine Honors status must be B- or higher to qualify.

Departmental Honors with Distinction may be awarded to students whose Senior Honors Thesis is judged by a faculty committee to be of exemplary quality. Only students graduating with Departmental Honors are eligible. Thesis/projects must be submitted by the deadline that applies to MS Theses in the graduating semester to allow for proper evaluation. Students interested in Honors with Distinction are encouraged to start working on their thesis/project a year prior to graduation.

Minors

The School of Engineering and Computer Science does not offer minors in Telecommunications Engineering at this time.

1. Incoming freshmen must complete and pass UNIV 1010 Freshman Seminar and the corresponding school-related freshman seminar course. Erik Jonsson School of Engineering and Computer Science majors must enroll and receive credit for ECS 1200 which will satisfy the UNIV 1010 graduation requirement. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.

2. Curriculum Requirements can be fulfilled by other approved courses. The courses listed are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.

3. Semester credit hours fulfill the communication component of the Core Curriculum.

4. Three semester credit hours of Calculus are counted under Mathematics Core, and five semester credit hours of Calculus are counted as Component Area Core.

5. Six semester credit hours of Physics are counted under Science core, and one semester credit hour of Physics (PHYS 2125) is counted as Component Area Option Core.

6. Semester credit hours contribute to the Social and Behavioral Sciences component of the Core Curriculum.

7. Students must pass each of the EE, CS, Math and Science courses listed in this degree plan and each of their prerequisites, with a grade of C- or better.

8. Transfer students with sufficient background may petition to substitute upper-division hours in the major for this class.

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